ICONIP 2024

31st International Conference on Neural Information Processing

December 2–6, 2024
Auckland, New Zealand

PROGRAMME

ICONIP 2024

31st International Conference on Neural Information Processing

December 2–6, 2024 · Auckland, New Zealand iconip2024.org

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Welcome Message from the General Chairs

On behalf of the Organizing and Program Committees, it is our great pleasure to welcome you to the 31st International Conference on Neural Information Processing (ICONIP 2024). As the flagship conference of the Asia Pacific Neural Network Society (APNNS), ICONIP has been a premier annual event since 1994, bringing together researchers, educators, and professionals in neural networks.

This year, we are thrilled to host ICONIP 2024 in the beautiful city of Auckland, New Zealand, from December 2-6. Our goal is to provide a high-level international forum for sharing cutting-edge research, addressing emerging challenges, and fostering collaboration across disciplines.

It has received 1301, record high submissions from 67 countries and regions. The conference will feature a rich program, including keynote lectures from distinguished scholars: Professor Fang Chen, Nikola K Kasabov, Danilo Mandic, Giovanni Russello, and Yong-Duan Song, providing us with state-of-the-art research, innovation, latest developments, and novel applications. Furthermore, to tackle key issues and engage in discussions on current hot topics, we have arranged three insightful panel discussions featuring 15 esteemed moderators and panellists: Professors Jonathan Chan, Kenji Doya, Irwin King, Seiichi Ozawa, Fang Chen, Nikola K Kasabov, Giovanni Russello, Keving Wong, Zeng-Guang Hou, Derong Liu, Huajin Tang, Chu Kiong Loo, Mark Sagar, David Brown, Kaizhu Huang and Alexander Sumich.

In addition, the program includes tutorials, workshops, special sessions, oral and poster presentations that showcase the latest advancements in neural information processing. We extend our deepest gratitude to all who have contributed to the success of ICONIP 2024. Special thanks go to our colleagues for their meticulous review of submissions, the Programme and Advisory Committees, the APNNS Governing Board, and our dedicated volunteers for their unwavering support. We are especially grateful to our keynote speakers, panellists, authors, and all participants for sharing their expertise and making this conference a memorable event.

We wish you a productive and inspiring conference, and we hope you enjoy both the academic program and the vibrant culture of Auckland. Welcome to ICONIP 2024!

ICONIP2024 General Chairs

Maryam Doborjeh

Mufti Mahmud

Michael Witbrock

Welcome Message from the Program Chairs

Welcome to ICONIP 2024! We are delighted to host this year's International Conference on Neural Information Processing in Auckland, New Zealand, from December 2-6, 2024. ICONIP has a longstanding tradition of bridging theory and applications in neural information processing, and this year is no different. The conference will highlight four key areas: “Theory and Algorithms,” “Cognitive Neurosciences,” “Human-Centered Computing,” and “Applications”.

ICONIP2024 received 1301 submissions from 67 countries and regions, where 319 papers have been accepted for publication in Lecture Note in Computer Science and 472 papers in Communications in Computer and Information Science, respectively. Top 10 countries/regions in terms of submissions are: China 827, Australia 66, India 61, Japan 60, New Zealand 60, United States 33, United Kingdom 27, Germany 16, France 16, Canada 13, followed by Hong Kong, Poland, South Korea, Philippines, Pakistan, Bangladesh, Tunisia, Macao, Fiji, each with more than 5 submissions. The papers presented at the conference cover a broad spectrum of fields, such as machine learning, pattern recognition, speech processing, neurodynamics, neural data analysis, neuromorphic hardware, information security, sensing, intelligent robots and brain-like intelligence, biomedical engineering, computational finance, etc.

In addition to our regular technical sessions featuring oral and poster presentations, the conference programme will include invited sessions, panel discussions, and tutorials covering the latest topics of interest in the field.

We extend our heartfelt gratitude to the technical program committee, reviewers, and organizing committee members for their invaluable efforts in making this conference possible. Special thanks to our keynote speakers, panellists, authors, and participants for their contributions and dedication to the ICONIP community.

We hope you enjoy the conference and the opportunity to connect with fellow researchers. If time allows, we encourage you to explore the vibrant city of Auckland and the natural beauty of New Zealand.

Welcome to Auckland, and we wish you a memorable and productive ICONIP 2024!

ICONIP2024 Programme Chairs

Kevin Wong

Andrew Chi Sing Leung

Zohreh Doborjeh

M Tanveer

ICONIP2024 Programme at a Glance (2-6 December 2024)									
Monday, 2 December 2024									
8.00 – 18.30	**Registration open**								WG Building, AUT
Room	WG404		WG126			WG308			
09.00 - 11.00	Tutorial 1 **Multimodal AI and Spiking Neural Networks for Advanced Biomedical Applications**		Tutorial 2 **Potential AI applications in Forensic Brainwave Analysis (FBA)**			Tutorial 3 **Exploring User Experience in VR and Immersive Environments Using the 4E/MoBI Approach**			
11.00 – 11.30	Morning Tea								WG201 Foyer Space
11.30 - 13.30	Tutorial 4 **Quantum Metaheuristics: Applications to Automatic Data Clustering**		Tutorial 5 **Preference-Based Combinatorial Optimization**			Tutorial 6 **Tackling Bias in Large Language Models**			
13.30 – 14.30	Lunch								WG201 Foyer Space
14.30 – 16.30	Tutorial 7 **Collaborative Learning and Optimization**		Tutorial 8 **Machine Learning for Streaming Data**			Tutorial 9 **Exploring Recent Advances in Deep Learning Architectures for Image Recognition**			
18.30 – 20.30	**ICONIP 2024 Welcome Function**								WG Building, AUT
Tuesday, 3 December 2024									
8.00 – 17.00	**Registration open**								WG Building, AUT
08.30 – 09.00	**Conference Opening**								WG403 Lecture Theatre
09.00 – 09.45	**Keynote 1: Advancing Human Potential Through AI** Fang Chen *Chair: Nikola Kasabov*								WG403 Lecture Theatre
09.45 – 10.30	**Panel 1: Navigating High-Impact Research Publication: Strategies for Maximizing Reach and Influence** Moderator: Zeng-Guang Hou Panellists: Fang Chen, Derong Liu and Nikola K Kasabov								WG403 Lecture Theatre
10.30 – 11.00	**Morning Tea** **Poster Session 1**								WG201 Foyer Space
Room	WG701	WG802	WG308	WG126	WG404				
11.00 – 12.30	**Session 1A** Machine Learning 1 *Chair: Seichi Ozawa*	**Session 1B** Causality & Explainable AI *Chair: Thomas Li*	**Session 1C** **WORKSHOP:** AI Education *Chair: Mike Watts*	**Session 1D** **WORKSHOP:** The 17th International Workshop on Artificial Intelligence and Cybersecurity (AICS2024) *Chair: Ian Welch & Paul Pang*	**Session 1E** **WORKSHOP: g.tec** From 10-20 to Ultra-high Density - Closed Loop Brain Computer Interface Advances with g.tec BCI Research and Clinical Systems *Chair: Christy Li*				
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11.00 – 12.30	**Session 1F** **ONLINE** Causality & Explainable AI 1	**Session 1G** **ONLINE** Computational Intelligence	**Session 1H** **ONLINE** Control and Decision Theory	**Session 1I** **ONLINE** Machine Learning 1	**Session 1J** **ONLINE** Neural Network Models 1	**Session 1K** **ONLINE** Time Series Analysis & Optimisation	**Session 1L** **ONLINE** Affective Computing & Brain Computer Interfaces	**Session 1M** **ONLINE** Bioinformatics	**Session 1N** **ONLINE** Biomedical Informatics 1
12.30 – 13.30	**Lunch** **Poster Session 1**								WG201 Foyer Space
Room	WG701	WG802	WG308	WG126	WG404				
13.30 – 15.00	**Session 2A** Machine Learning 2 *Chair: David Brown*	**Session 2B** Natural Language Processing 1 *Chair: Zhibing Liu*	**Session 2C** **WORKSHOP:** AI Education *Chair: Mike Watts*	**Session 2D** **WORKSHOP:** The 17th International Workshop on Artificial Intelligence and Cybersecurity (AICS2024) *Chair: Ian Welch*	**Session 2E** **WORKSHOP: g.tec** From 10-20 to Ultra-high Density - Closed Loop Brain Computer Interface Advances with g.tec BCI Research and Clinical Systems *Chair: Christy Li*				

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13.30 – 15.00	**Session 2F** **ONLINE** Causality & Explainable AI 2	**Session 2G** **ONLINE** Natural Language Processing 1	**Session 2H** **ONLINE** Human Activity Recognition 1	**Session 2I** **ONLINE** Machine Learning 2	**Session 2J** **ONLINE** Neural Network Models 2	**Session 2K** **ONLINE** Human Computer Interaction	**Session 2L** **ONLINE** Recommender Systems 1	**Session 2M** **ONLINE** Big Data Analytics	**Session 2N** **ONLINE** Biomedical Informatics 2
15.00 – 15.30	**Afternoon Tea** **Poster Session 1**								WG201 Foyer Space
15.00 – 19.00	**APNNS Board of Governors Meeting**								WG703
Room	WG701		WG802		WG308		WG126		WG404
15.30 – 17.00	**Session 3A** Machine Learning 3 *Chair: Mridula Verma*		**Session 3B** Brain Computer Interfaces *Chair: Robin Palmer*		**Session 3C** Computational Intelligence 1 *Chair: Malek Mouhoub*		**Session 3D** Control Theory and Optimisation *Chair: Siddhartha Bhattacharyya*		**Session 3E** Application of Computational Intelligence in Engineering
Room	Zoom Meeting ID: 85478866507	Zoom Meeting ID: 82809315448	Zoom Meeting ID: 87373212799	Zoom Meeting ID: 87018701898	Zoom Meeting ID: 85938618146	Zoom Meeting ID: 83253599602	Zoom Meeting ID: 87559100889	Zoom Meeting ID: 87004195305	Zoom Meeting ID: 82564004590
15.30 – 17.00	**Session 3F** **ONLINE** Data Mining 1	**Session 3G** **ONLINE** Healthcare 1	**Session 3H** **ONLINE** Computer Vision 1	**Session 3I** **ONLINE** Machine Learning 3	**Session 3J** **ONLINE** Neural Network Models 3	**Session 3K** **ONLINE** Computer Vision 9	**Session 3L** **ONLINE** Recommender Systems 2	**Session 3M** **ONLINE** Computer Vision 17	**Session 3N** **ONLINE** Biomedical Informatics 3
Wednesday, 4 December 2024									
08.00 – 17.00	**Registration Open**								AUT, WG Building
09.00 – 09.45	**Keynote 2: Evolving Multimodal Associative Memories in Brains and Machines: This is all we need** Nikola K. Kasabov *Chair: Mufti Mahmud*								WG403 Lecture Theatre
09.45 – 10.30	**Panel 2: Transitioning from Academia to Industry: Bridging Research and Real-World Applications** Moderator: Jonathan Chan Panellists: Mark Sagar, Kenji Doya, Chu Kiong Loo and David Brown								WG403 Lecture Theatre
10.30 – 11.00	**Morning Tea** **Poster Session 2**								WG201 Foyer Space
Room	WG701		WG802		WG308		WG126		WG404
11.00 – 12.30	**Session 4A** Machine Learning 4 *Chair: Xiulin Wang*		**Session 4B** Neural Data Analysis *Chair: Kenji Doya*		**Session 4C** Healthcare 1 *Chair: Mike Watts*		**Session 4D** **WORKSHOP:** Neural Models of Infants and Child Development *Chair: Alistair Knott*		**Session 4E** Human Centred Systems *Chair: El-Sayed El-Alfy*
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11.00 – 12.30	**Session 4F** **ONLINE** Data Mining 2	**Session 4G** **ONLINE** Healthcare 2	**Session 4H** **ONLINE** Computer Vision 2	**Session 4I** **ONLINE** Machine Learning 4	**Session 4J** **ONLINE** Neural Network Models 4	**Session 4K** **ONLINE** Computer Vision 10	**Session 4L** **ONLINE** Information Retrieval	**Session 4M** **ONLINE** Computer Vision 18	
12.30 – 13.30	**Lunch** **Poster Session 2**								WG201 Foyer Space
Room	WG701		WG802		WG308		WG126		WG404
13.30 – 15.00	**Session 5A** Machine Learning 5 *Chair: Yvonne Chan Cashmore*		**Session 5B** Data Mining 1 *Chair: M Tanveer*		**Session 5C** Healthcare 2 *Chair: Zaineb Chelly Dagdia*		**Session 5D** **WORKSHOP:** Neural Models of Infants and Child Development *Chair: Alistair Knott*		**Session 5E** Computer Vision 1 *Chair: Yanbin Liu*
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13.30 – 15.00	**Session 5F** **ONLINE** Data Mining 3	**Session 5G** **ONLINE** Information Security 1	**Session 5H** **ONLINE** Computer Vision 3	**Session 5I** **ONLINE** Machine Learning 5	**Session 5J** **ONLINE** Neural Network Models 5	**Session 5K** **ONLINE** Computer Vision 11	**Session 5L** **ONLINE** Language Processing and Models 1	**Session 5M** **ONLINE** Computer Vision 19	

15.00 – 15.30	**Afternoon Tea** **Poster Session 2**							WG201 Foyer Space
Room	WG701	WG802	WG308	WG126	WG404			
15.30 – 17.00	**Session 6A** Information Retrieval *Chair: Sugam Budhraja*	**Session 6B** Data Mining 2 *Chair: Sara Zandi*	**Session 6C** Information Security *Chair: Thien Phuc Doan*	**Session 6D** SS: Computationally Intelligent Techniques for Biological Data Analysis *Chair: David Brown*	**Session 6E** Computer Vision 2: *Chair: M Tanveer*			
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15.30 – 17.00	**Session 6F** **ONLINE** Data Mining 4	**Session 6G** **ONLINE** Information Security 2	**Session 6H** **ONLINE** Computer Vision 4	**Session 6I** **ONLINE** Machine Learning 6	**Session 6J** **ONLINE** Multimedia Information Processing 1	**Session 6K** **ONLINE** Computer Vision 12	**Session 6L** **ONLINE** Language Processing and Models 2	**Session 6M** **ONLINE** Computer Vision 20
18.00 – 22.00	**Conference Gala Dinner/Annual General Meeting of APNNS**							WG201 Foyer Space
Thursday, 5 December 2024								
08.00 – 17.00	**Registration Open**							AUT, WG Building
09.00 – 09.45	**Keynote 3: Human Centred Cyber Security** Giovanni Russello *Chair: Michael Witbrock*							WG403 Lecture Theatre
09.45 – 10.30	**Panel 3: Navigating Responsible AI: Opportunities, Threats, and Ethical Boundaries** Moderator: Irwin King Panellists: Giovanni Russello, Seiichi Ozawa, Kaizhu Huang and Alexander Sumich							WG403 Lecture Theatre
10.30 – 11.00	**Morning Tea** **Poster Session 3**							WG201 Foyer Space
Room	WG701	WG802	WG308	WG126	WG404			
11.00 – 12.30	**Session 7A** SS: Computer Vision and Sensor Signal Processing for Enhancing Life Quality and Safety *Chair: Boris Bačić*	**Session 7B** Natural Language Processing 2 *Chair: Sajib Mistry*	**Session 7C** **WORKSHOP:** Privacy Compliant Health Data As A Service For AI Development *Chair: Mufti Mahmud*	**Session 7D** Computer Vision 3 *Chair: Kien Tran*	**Session 7E** Computational Intelligence 2 *Chair: Zohreh Doborjeh*			
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11.00 – 12.30	**Session 7F** **ONLINE** Data Mining 5	**Session 7G** **ONLINE** Information Security 3	**Session 7H** **ONLINE** Computer Vision 5	**Session 7I** **ONLINE** Machine Learning 7	**Session 7J** **ONLINE** Multimedia Information Processing 2	**Session 7K** **ONLINE** Computer Vision 13	**Session 7L** **ONLINE** Language Processing and Models 3	**Session 7M** **ONLINE** Computer Vision 21	**Session 7N** **ONLINE** Computational Intelligence 1
12.30 – 13.30	**Lunch** **Poster Session 3**							WG201 Foyer Space
Room	WG701	WG802	WG308	WG126	WG404			
13.30 – 15.00	**Session 8A** Neural Network Models 1 *Chair: Mahsa Mohaghegh*	**Session 8B** Natural Language Processing 3 *Chair: Faizad Ullah*	**Session 8C** **WORKSHOP:** Privacy Compliant Health Data As A Service For AI Development *Chair: Mufti Mahmud*	**Session 8D** Computer Vision 4 *Chair: Boris Bačić*	**Session 8E** SS: AI in Environmental, Conservation and Geospatial Applications 1 *Chair: Akbar Ghobakhlou*			

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13.30 – 15.00	**Session 8F** **ONLINE** Language Processing and Models 4	**Session 8G** **ONLINE** Robotics and Control	**Session 8H** **ONLINE** Computer Vision 6	**Session 8I** **ONLINE** Machine Learning 8	**Session 8J** **ONLINE** SS: AI in Environmental, Conservation and Geospatial Applications	**Session 8K** **ONLINE** Computer Vision 14	**Session 8L** **ONLINE** Language Processing and Models 5	**Session 8M** **ONLINE** SS: Computational Cognitive Neuroscience	**Session 8N** **ONLINE** Computational Intelligence 2
15.00 – 15.30	**Afternoon Tea** **Poster Session 3**								WG201 Foyer Space

Room	WG701	WG802	WG308	WG126	WG404
15.30 – 17.00	**Session 9A** Neural Network Models 2 *Chair: Seiichi Ozawa*	**Session 9B** Neurodynamics *Chair: Alexander Sumich*	**Session 9C** **WORKSHOP**: Privacy Compliant Health Data As A Service For AI Development *Chair: Mufti Mahmud*	**Session 9D** Computer Vision 5 *Chair: Kenneth Johnson*	**Session 9E** SS: AI in Environmental, Conservation and Geospatial Applications 2 *Chair: Akbar Ghobakhlou*

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15.30 – 17.00	**Session 9F** **ONLINE** Language Processing and Models 6	**Session 9G** **ONLINE** SS: Computationally Intelligent Techniques for Biological Data Analysis 1	**Session 9H** **ONLINE** Computer Vision 7	**Session 9I** **ONLINE** Machine Learning 9	**Session 9J** **ONLINE** SS: Computer Vision and Sensor Signal Processing for Enhancing Life Quality and Safety	**Session 9K** **ONLINE** Computer Vision 15	**Session 9L** **ONLINE** Language Processing and Models 7	**Session 9M** **ONLINE** Applied AI 1	**Session 9N** **ONLINE** Computational Intelligence 3

Friday, 6 December 2024

08.00 – 12.30	**Registration Open**	AUT, WG Building
09.00 – 09.45	**Keynote 4: Interpretable Convolutional NNs and Graph CNNs: Role of Domain Knowledge** Danilo Mandic *Chair: Jonathan Chan*	WG403 Lecture Theatre
09.45 – 10.30	**Keynote 5: Intermittent Sensoring and Control for Energy, Communication, and Computation Savings: Recent Developments and Future Trends** Yongduan Song *Chair: Seiichi Ozawa*	WG403 Lecture Theatre
10.30 – 11.00	**Morning Tea**	WG201 Foyer Space

Room	WG701	WG802	WG308	WG126
11.00 – 12.30	**Session 10A** Multimedia Information Processing *Chair: Chu Kiong Loo*	**Session 10B** SS: Advancements in Optimization through Artificial Intelligence *Chair: Reza Enayatollahi*	**Session10C** SS: Computational Cognitive Neuroscience *Chair: Zohreh Doborjeh*	**Session 10D** Computer Vision 6 *Chair: Dmitrii Kaplun*

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11.00 – 12.30	**Session 10F** **ONLINE** Natural Language Processing 1	**Session 10G** **ONLINE** SS: Computationally Intelligent Techniques for Biological Data Analysis 2	**Session 10H** **ONLINE** Computer Vision 8	**Session 10I** **ONLINE** Machine Learning 10	**Session 10J** **ONLINE** Computer Vision 16	**Session 10K** **ONLINE** Language Processing and Models 8	**Session 10L** **ONLINE** Applied AI 2	**Session 10M** **ONLINE** Computational Intelligence 4
12.30 – 13.00	**Conference Closing Session**							WG403 Lecture Theatre

Contents

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Derong Liu	Southern University of Science and Technology, China
Seiichi Ozawa	Kobe University, Japan
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Hanchuan Peng	SEU-Allen Institute for Brain & Intelligence, China
Nelishia Pillay	University of Pretoria, South Africa

Conference Venue

We’re very pleased to welcome you to Auckland University of Technology (AUT) in 2024.

AUT's City Campus is home to the popular Sir Paul Reeves (WG) Building. The building offers a range of unique function spaces spread across four levels. The eco-friendly design offers flexible, light open spaces with an abundance of natural light.

The WG Building reflects what students around the world want from their learning spaces - areas throughout that are flexible, contemporary and invite collaboration. The building incorporates digital technology, sustainable environmental materials and accessibility is of a high standard.

Getting There

Auckland Airport is about 45 minutes away by bus, car or taxi. SkyDrive departs every 15 minutes to the city, and costs about NZ$18 each way. If you are traveling by taxi, they are located outside the domestic and international terminals and cost approximately NZ$70 into the city. If you are traveling by car, take the Southern Motorway north, exit at Wellesley Street and follow the signs that direct to 'University'.

AUT is a quick 10-minute walk from Britomart - Auckland's central bus and train station, and the Intercity Bus terminal is a short walk away.

Carparks are limited in Auckland City. However, the closest and best options are the Wilson's car park on Wakefield Street. Click here for more details.

A map of the campus can be downloaded here. You can access the WG Building from a number of locations, the main two of which are noted below:

- 2 Governor Fitzroy Place, Auckland 1010
- Main Entry Gate 3, 35 Wellesley Street East, Auckland 1010

Google Maps

Auckland University of Technology

Sir Paul Reeves Building – WG Building
2 Governor Fitzroy Place
Auckland 1010

Phone: +64 9 921 9999
Website: www.aut.ac.nz

Registration Information

The conference registration desk will be located close to the main entrance of the **WG building** which is accessed from the Plaza you can see located between the WG and WF building on the next page.

All rooms for the conference keynote, panels, tutorials and workshop sessions are located in the WG building.

The numbers against the rooms in the programme relate to the level the room is on i.e. WG308 is on level 3, you may need to take the elevator to some of the higher levels. There will be volunteers on hand to help direct you.

Registration opening times:

Monday, 2 December 2024	8.00 – 18.30
Tuesday, 3 December 2024	8.00 – 17.00
Wednesday, 4 December 2024	8.00 – 17.00
Thursday, 5 December 2024	8.00 – 17.00
Friday, 6 December 2024	8.00 – 12.30

Rooms at AUT
We are using the following rooms at AUT for the conference sessions:

WG403 – Main lecture theatre for Keynote and Panels session.

WG404 – Tutorials, Workshops and Parallel sessions

WG308 – Tutorials, Workshops and Parallel sessions

WG126 – Tutorials, Workshops and Parallel sessions

WG701 – Parallel sessions

WG802 - Parallel sessions

WG201 Foyer – Catering, Exhibitors and Gala Dinner

WG128 Foyer - Posters

Wi-Fi Access
You will have access to complimentary Wi-Fi for the duration of the conference. Please login to the network using the details below. The login details will also be displayed on your nametag:

Network: ICONIP2024
Password: ICONIP2024!

AUT CITY CAMPUS

55 Wellesley Street East, Auckland

SCHOOLS

Art & Design – Level 3, WE building
Business – Level 1, WF building
Communication Studies – Level 12, WG building
Engineering, Computer & Mathematical Sciences – Level 3, WZ building
Future Environments – Level 11, WG building & level 3, WZ building
Hospitality & Tourism Reception – Level 3, WH building & level 3, WB building
Law – Level 3, WY building
Science – Level 1, WS building
Social Sciences & Humanities – Level 3, WB building
Te Ara Poutama Reception – Level 3, WB building

STUDENT HUB

Level 2, WA building

SERVICES AND FACILITIES

AUT International – Level 16, WO building
AUT Security – Corner St Paul & Wakefield St, WO building
AUT Shop/UBIQ – WH102, WH building
AUT Student Association (AUTSA) – Level 2, WC building
Learning Lab – Level 3, WA building
Library – Level 4, WA building
PinkLime (print services) – Level 3, WA building
Student Accommodation – WR building
Student Accommodation & Recreation Centre – WQ building
Student Counselling & Mental Health – WB204, WB building
Student Medical Centre – WB219, WB building
Tech Central – Level 4, WA building

- Student Hub
- Student lounge & study space
- Café
- Library
- Gym
- Conference facility
- City Campus–South Campus shuttle bus stop
- Baby feeding rooms
- Mobility parks
- Defibrillator

WA4 Hikuwai Plaza, outside library
WB222 Health & Counselling Centre
WF01 Lift lobby
WG1 Help desk in the atrium
WH209 Piko restaurant
WO2 Security reception
WS01 Lift lobby
WY1 Mayoral Drive – lift lobby
WQ3 Reception area

For more details, use MazeMaps

Instructions for Oral and Poster Presentations

Oral Presentations:

- Each presentation slot is a maximum of 15 minutes, this includes 3 minutes Q&A. The session chair will indicate when the allocated time is running out. Please ensure that you stop when advised to by the chair to ensure that all presenters get the same amount of time to present and that the programme runs on time.
- Your presentation should be uploaded to the Dropbox link provided prior to your presentation session. We also recommend you bring your presentation along on a USB. We also have the facility for you to upload your presentation on-site at the conference. Please ensure you report to the AV techs at least 2 hours before you are due to present, to check and/or upload your presentation.
- The room will have a data projector and screen as standard.

Poster and Abstract Presentations

- Please print your poster and bring it to the conference. The poster format should be A0 portrait size. You will be provided with Velcro dots to hang your poster up on your designated poster board. We recommend you print your poster on paper or thin card and not on fabric.
- Please put your poster up before morning tea on the day of your presentation and remove it after afternoon tea. You are asked to stand with your poster during the break times so that people may converse with you about your work.

History of ICONIP Congress Venue Data

The 31st International Conference on Neural Information Processing	Auckland, New Zealand	2024
The 30th International Conference on Neural Information Processing	Changsha, China	2023
The 29th International Conference on Neural Information Processing	IIT Indore, India	2022
The 28th International Conference on Neural Information Processing	Bali, Indonesia	2021
The 27th International Conference on Neural Information Processing	Bangkok, Thailand	2020
The 26th International Conference on Neural Information Processing	Sydney, Australia	2019
The 25th International Conference on Neural Information Processing	Siem Reap, Cambodia	2018
The 24th International Conference on Neural Information Processing	Guangzhou, China	2017
The 23rd International Conference on Neural Information Processing	Kyoto, Japan	2016
The 22nd International Conference on Neural Information Processing	Istanbul, Turkey	2015
The 21st International Conference on Neural Information Processing	Kuching, Malaysia	2014
The 20th International Conference on Neural Information Processing	Daegu, Korea	2013
The 19th International Conference on Neural Information Processing	Doha, Qatar	2012
The 18th International Conference on Neural Information Processing	Shanghai, China	2011
The 17th International Conference on Neural Information Processing	Sydney, Australia	2010
The 16th International Conference on Neural Information Processing	Bangkok, Thailand	2009
The 15th International Conference on Neural Information Processing	Auckland, New Zealand	2008
The 14th International Conference on Neural Information Processing	Kitakyushu, Japan	2007
The 13th International Conference on Neural Information Processing	Hong Kong	2006
The 12th International Conference on Neural Information Processing	Taipei	2005
The 11th International Conference on Neural Information Processing	Calcutta, India	2004
The 10th International Conference on Neural Information Processing	Istanbul, Turkey	2003
The 9th International Conference on Neural Information Processing	Singapore	2002
The 8th International Conference on Neural Information Processing	Shanghai, China	2001
The 7th International Conference on Neural Information Processing	Taejon, Korea	2000
The 6th International Conference on Neural Information Processing	Perth, Australia	1999

The 5th International Conference on Neural Information Processing	Kitakyushu, Japan	1998
The 4th International Conference on Neural Information Processing	Dunedin, New Zealand	1997
The 3rd International Conference on Neural Information Processing	Hong Kong	1996
The 2nd International Conference on Neural Information Processing	Beijing, China	1995
The 1st International Conference on Neural Information Processing	Seoul, Korea	1994

Keynote Lectures

Keynote Lecture 1

Date: 3 December 2024

Time: 9.00 – 9.45

Location: WG403 Lecture Theatre

Chair: **Nikola K. Kasabov**

Advancing Human Potential Through AI

Fang Chen
University of Technology Sydney, Australia

Abstract: In a time of rapid technological evolution, the intersection of artificial intelligence and human potential offers remarkable opportunities for advancing experiences, expertise, training, and performance. This keynote will delve into how AI-driven systems can be harnessed to optimize human-machine teaming, fostering environments where humans and machines work seamlessly to enhance outcomes.

Our work addresses key challenges at the intersection of human and machine interactions. By integrating methodologies from AI, data science, human-computer interaction (HCI), and behavioural sciences and neurosciences, we seek to understand and positively influence human behaviour and interaction with information, systems, robots, and each other. I will cover key topics of AI-driven multimodal cognitive load measurement, human-machine trust and calibration, adaptive learning for humans and AI, and the ethical implications of these advancements. We will explore adaptive learning systems, personalized programs, and intelligent solutions that augment human performance, emphasizing practical applications and case studies.

Finally, the talk will address the ethical considerations and challenges of implementing AI systems that align with human values, aiming for a future where AI is a transformative force for realizing human potential in a dynamic world.

Distinguished Professor **Fang Chen** is a globally recognized leader in AI and data science. She currently serves as the Executive Director of the Data Science Institute at the University of Technology Sydney. Previously, she held roles as Dean of the Faculty at Beijing Jiaotong University and senior leadership positions at Intel, Motorola, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). She serves as the Steering Committee Chair for ACM Intelligent User Interfaces.

Her extensive expertise lies in developing innovative, data-driven solutions that address complex challenges across large-scale networks in sectors such as transportation, water, energy, agriculture, telecommunications, education, health, and real estate. She is a committed advocate for ethical and human-centered AI practices.

Among her many accolades, Distinguished Professor Chen won the prestigious Australian Museum Eureka Prize for Excellence in Data Science in 2018, often referred to as the "Oscar" of Australian Science. She also received the NSW Premier's Prize for Science and Engineering in 2021, the

Australia and New Zealand "Women in AI" Award, and the "Brian Shackle Award" in 2017 for her outstanding contribution to the field of human interaction with computers and information technology, awarded by IFIP.

With her extensive experience in industry, government, and academia, Distinguished Professor Chen excels in developing strategies for innovation, shaping digital transformation initiatives, and creating world-class R&D for various sectors. She actively contributes to numerous boards and expert panels, including the Australian Federal Industry Science and Innovation Australia Board, the NSW Government AI Review Board, which established the AI assurance framework for the NSW Government, and the Singapore National Research Foundation's expert panel. She also serves on the ITS Australia Board and several startup company boards.

Distinguished Professor Chen has an impressive track record in research, with over 400 peer-reviewed publications in science and engineering and several influential books. Additionally, she holds more than 30 patents across eight countries, showcasing her significant contributions to the field.

Keynote Lecture 2

Date: 4 December 2024

Time: 9.00 – 9.45

Location: WG403 Lecture Theatre

Chair: **Mufti Mahmud**

Evolving Multimodal Associative Memories in Brains and Machines: This is all we need

Nikola K. Kasabov
Auckland University of Technology, New Zealand

Abstract: **Evolving multimodal associative memories (EMAM)** are systems that associate and capture incrementally and continuously related items, objects and processes of multiple modalities to create dynamic structures in time and space, that can be recalled/triggered using partial modality information. Examples are the spatio-temporal associative memories in brains and nature, where both spatial and temporal information are dynamically integrated. Despite the fact that majority of data, that is dealt with in machine learning and AI across information and data sciences, are multimodal temporal- or spatio/spectro temporal, there are still no efficient methods for building EMAM. Early methods, such as Hopfield networks and Kosko's bidirectional associative memories, still very popular nowadays, are designed to deal with static, vector-based data. The now popular large language models can generate associations specifically for semantic entities based on pre-trained networks.

The talk argues that the human brain functions in its cognitive functions, including consciousness, as a dynamic spatio-temporal EMAM. Then the talk introduces brain-inspired spiking neural network (SNN) architectures, exemplified by NeuCube [1,2] for the development of EMAM. Applications for classification and prediction of biological and brain signals, audio-visual data, environmental data, financial and economic data are presented.

Future directions are outlined towards the development of hybrid SNN, where a SNN is used for capturing spatio-temporal characteristics from continusly incoming data and other ML methods are used for evolving classification, prediction and knowledge discovery. The talk concludes that EMAM could be the way for the future brain-inspired AI [3], including conscious machines.

Professor **Nikola K Kasabov** is a Life Fellow of IEEE, Fellow of the Royal Society of New Zealand, Fellow of the INNS College of Fellows, DVF of the Royal Academy of Engineering UK. He has *Doctor Honoris Causa* from Obuda University, Budapest. He is the Founding Director of KEDRI and Professor at Auckland University of Technology and director of Knowledge Engineering Ltd. He is also Visiting Professor at IICT Bulgarian Academy of Sciences and Dalian University, China and Honorary Professor at the University of Auckland NZ and Peking University in Shenzhen.

Kasabov has been twice President of the Asia Pacific Neural Network Society (APNNS, 1997 and 2008) and the International Neural Network Society (INNS, 2009-2010). He has been a chair and a member of several technical committees of IEEE Computational Intelligence Society and Distinguished Lecturer of IEEE (2012-2014). He is the Editor of Springer Handbook of Bio-Neuroinformatics, EiC of Springer Series of Bio-and Neuro-systems and co-EiC of the Springer journal Evolving Systems. Kasabov holds MSc in computer engineering and PhD in mathematical sciences from TU Sofia, Bulgaria. His main research interests are in the areas of neural networks,

intelligent information systems, soft computing, neuroinformatics. He has published more than 700 publications, highly cited internationally. He has extensive academic experience at various academic and research organisations in Europe and Asia, including: TU Sofia Bulgaria; University of Essex UK; University of Otago, NZ; Shanghai Jiao Tong University and CASIA Beijing; ETH/University of Zurich; University of Trento, Italy; University of Kaiserslautern, Germany and other. Kasabov has received a number of awards, among them: INNS Ada Lovelace Meritorious Service Award; NN journal Best Paper Award for 2016; APNNA 'Outstanding Achievements Award'; INNS Gabor Award for 'Outstanding contributions to engineering applications of neural networks'; EU Marie Curie Fellowship; German DAAD Fellowship; Bayer Science Innovation Award NZ; APNNA Excellent Service Award; RSNZ Science and Technology Medal; Innovator of the year, NZ; AUT NZ Medal; Medal "Bacho Kiro" and Honorary Citizen of Pavlikeni, Bulgaria; Honorary Member of the Bulgarian-, the Greek- and the Scottish Societies for Computer Science.

Keynote Lecture 3

Date: 5 December 2024

Time: 9.00 – 9.45

Location: WG403 Lecture Theatre

Chair: **Michael Witbrock**

Human Centred Cyber Security

Giovanni Russello
University of Auckland, New Zealand

Abstract: Phishing attacks are projected to incur a staggering cost of US$30 billion to the global economy in 2023 alone, with estimates indicating a continued rise. Over the next decade, expenses linked to ransomware—often resulting from successful phishing attacks—are anticipated to increase tenfold, reaching an annual total of US$300 billion.

Most of the current efforts to thwart phishing have concentrated on technological solutions or what we refer to as "blame-the-user" strategies. However, both approaches fall short. While technological measures have been effective, blocking approximately 90 percent of malicious emails, the remaining 10 percent—given the enormous volume of phishing emails (160 million per day)—still pose a significant threat. Likewise, user-based interventions, despite awareness initiatives aimed at training users to recognize suspicious emails, have not fully addressed the issue. Surprisingly, 65 percent of companies falling victim to phishing attacks had undergone some form of prior training.

In this talk, I will present some of the approaches developed with my collaborators, which emphasize the need to focus on individuals and the contexts in which they encounter and respond to phishing attacks.

Professor **Giovanni Russello** is a Cyber Security specialist and the Head of the School of Computer Science at the University of Auckland, New Zealand. Giovanni previously served as the Director of the Cyber Security Research Programme, a multi-million-dollar project funded by the Ministry of Business Innovation and Enterprise aimed at enhancing New Zealand's cyber security posture and fostering collaboration between New Zealand and Australian researchers. Additionally, he is the founding Co-Director of the Cyber Security Foundry, the first multi-disciplinary center in New Zealand for Cyber Security, focused on strengthening collaboration between industry and academia. From 2013 to 2014, Giovanni held the position of founding CEO at a startup targeting the smartphone security market.

His research interests include human-centered cyber security, policy-based security systems, privacy and confidentiality in cloud computing, smartphone security, and applied cryptography.

Keynote Lecture 4

Date: 6 December 2024

Time: 9.00 – 9.45

Location: WG403 Lecture Theatre

Chair: **Jonathan Chan**

Interpretable Convolutional NNs and Graph CNNs: Role of Domain Knowledge

Danilo Mandic
Imperial College London, United Kingdom

Abstract: The success of deep learning (DL) and convolutional neural networks (CNN) has also highlighted that NN-based analysis of signals and images of large sizes poses a considerable challenge, as the number of NN weights increases exponentially with data volume – the so called Curse of Dimensionality. In addition, the largely ad-hoc fashion of their development, albeit one reason for their rapid success, has also brought to light the intrinsic limitations of CNNs - in particular those related to their black box nature. To this end, we revisit the operation of CNNs from first principles and show that their key component – the convolutional layer – effectively performs matched filtering of its inputs with a set of templates (filters, kernels) of interest. This serves as a vehicle to establish a compact matched filtering perspective of the whole convolution-activation-pooling chain, which allows for a theoretically well founded and physically meaningful insight into the overall operation of CNNs. This is shown to help mitigate their interpretability and explainability issues, together with providing intuition for further developments and novel physically meaningful ways of their initialisation. Such an approach is next extended to Graph CNNs (GCNNs), which benefit from the universal function approximation property of NNs, pattern matching inherent to CNNs, and the ability of graphs to operate on nonlinear domains. GCNNs are revisited starting from the notion of a system on a graph, which serves to establish a matched-filtering interpretation of the whole convolution-activation-pooling chain within GCNNs, while inheriting the rigour and intuition from signal detection theory. This both sheds new light onto the otherwise black box approach to GCNNs and provides well-motivated and physically meaningful interpretation at every step of the operation and adaptation of GCNNs. It is our hope that the incorporation of domain knowledge, which is central to this approach, will help demystify CNNs and GCNNs, together with establishing a common language between the diverse communities working on Deep Learning and opening novel avenues for their further development.

Danilo P. Mandic is a Professor of Machine Intelligence with Imperial College London, UK, and has been working in the areas of machine intelligence, statistical signal processing, big data, data analytics on graphs, bioengineering, and financial modelling. He is a Fellow of the IEEE and the current President of the International Neural Network Society (INNS). Dr Mandic is the Director of the Laboratory for Artificial Intelligence and Data Analytics (AIDA-LAb, www.aidalab.co.uk), and has more than 600 publications in international journals and conferences. He has published two research published two research monographs on neural networks, entitled "Recurrent Neural Networks for Prediction", Wiley 2001, and "Complex Valued Nonlinear Adaptive Filters: Noncircularity, Widely Linear and Neural models", Wiley 2009 (both first books in their respective areas), and has co-edited books on Data Fusion (Springer 2008) and Neuro- and Bio-Informatics (Springer 2012).

He has also co-authored a two-volume research monograph on tensor networks for Big Data, entitled "Tensor Networks for Dimensionality Reduction and Large Scale Optimization" (Now Publishers,

2016 and 2017), and more recently a research monograph on Data Analytics on Graphs (Now Publishers, 2021). Dr Mandic is a 2018 recipient of the Dennis Gabor Award for "Outstanding Achievements in Neural Engineering", given by the International Neural Networks Society. He is the 2023 Winner of The Prize Paper Award, given by the IEEE Engineering in Medicine and Biology Society for his Smart Helmet article, the 2018 winner of the Best Paper Award in IEEE Signal Processing Magazine for his article on tensor decompositions for signal processing applications, and the 2021 winner of the Outstanding Paper Award in the International Conference on Acoustics, Speech and Signal Processing (ICASSP) series of conferences. Dr Mandic has served in various roles in the Word Congress on Computational Intelligence (WCCI) and International Joint Conference on Neural Networks (IJCNN) series of conferences, and as an Associate Editor for IEEE Transactions on Neural Networks and Learning Systems, IEEE Signal Processing Magazine and IEEE Transactions on Signal Processing. He has given more than 80 Keynote and Tutorial lectures in international conferences and was appointed by the World University Service (WUS), as a Visiting Lecturer within the Brain Gain Program (BGP), in 2015. Danilo is currently serving as a Distinguished Lecturer for the IEEE Computational Society and a Distinguished Lecturer for the IEEE Signal Processing Society. Dr Mandic is a 2014 recipient of President Award for Excellence in Postgraduate Supervision at Imperial College and holds eight patents.

Keynote Lecture 5

Date: 6 December 2024

Time: 9.45 –10.30

Location: WG403 Lecture Theatre

Chair: **Seiichi Ozawa**

Intermittent Sensoring and Control for Energy, Communication, and Computation Savings: Recent Developments and Future Trends

Yong-Duan Song
National Institute of Aerospace, USA

Abstract: Utilizing discontinuous or intermittent feedback signals to generate intermittent control actions for nonlinear dynamic systems is both an intriguing and challenging topic. This presentation will provide an overview of recent advancements in various methods for intermittent sensing and control, with a particular focus on dynamic event-triggering techniques. Additionally, some of the latest findings from the speaker's research group will be discussed.

Professor **Yong-Duan Song** is a Fellow of IEEE, Fellow of AAIA, Fellow of International Eurasian Academy of Sciences, and Fellow of Chinese Automation Association. He was one of the six Langley Distinguished Professors at National Institute of Aerospace (NIA), USA and register professional engineer (USA). He is currently the dean of Research Institute of Artificial Intelligence at Chongqing University. Professor Song is the Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems (TNNLS) and the founding Editor-in-Chief of the International Journal of Automation and Intelligence.

Panels

Panel 1: Navigating High-Impact Research Publication: Strategies for Maximizing Reach and Influence

Date: 3 December 2024

Time: 9.45 - 10.30

Location: WG403 Lecture Theatre

Zeng-Guang Hou (Moderator)
Chinese Academy of Sciences, China

Zeng-Guang Hou is a Professor and Deputy Director of the State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences (CAS). He is a VP of Chinese Association of Automation (CAA), and the Asia Pacific Neural Network Society (APNNS). Dr. Hou is a Fellow of CAA and IEEE. He also serves as an AE of IEEE Transactions on Cybernetics, SMC Magazine, IEEE/CAA Journal of Automatica Sinica, and an editorial board member of Neural Networks.

Dr. Hou was a recipient of the Dennis Gabor Award of the International Neural Network Society (INNS) in 2023, the Outstanding Achievement Award of Asia Pacific Neural Network Society (APNNS) in 2017, and IEEE Transactions on Neural Networks Outstanding Paper Award in 2013, etc. His research interests include computational intelligence, robotics and intelligent systems.

Fang Chen (Panellist)
University of Technology Sydney, Australia

Distinguished Professor Fang Chen is a globally recognized leader in AI and data science. She currently serves as the Executive Director of the Data Science Institute at the University of Technology Sydney. Previously, she held roles as Dean of the Faculty at Beijing Jiaotong University and senior leadership positions at Intel, Motorola, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). She serves as the Steering Committee Chair for ACM Intelligent User Interfaces.

Her extensive expertise lies in developing innovative, data-driven solutions that address complex challenges across large-scale networks in sectors such as transportation, water, energy, agriculture, telecommunications, education, health, and real estate. She is a committed advocate for ethical and human-centered AI practices.

Among her many accolades, Distinguished Professor Chen won the prestigious Australian Museum Eureka Prize for Excellence in Data Science in 2018, often referred to as the "Oscar" of Australian Science. She also received the NSW Premier's Prize for Science and Engineering in 2021, the Australia and New Zealand "Women in AI" Award, and the "Brian Shackle Award" in 2017 for her outstanding contribution to the field of human interaction with computers and information technology, awarded by IFIP.

With her extensive experience in industry, government, and academia, Distinguished Professor Chen excels in developing strategies for innovation, shaping digital transformation initiatives, and creating

world-class R&D for various sectors. She actively contributes to numerous boards and expert panels, including the Australian Federal Industry Science and Innovation Australia Board, the NSW Government AI Review Board, which established the AI assurance framework for the NSW Government, and the Singapore National Research Foundation's expert panel. She also serves on the ITS Australia Board and several startup company boards.

Distinguished Professor Chen has an impressive track record in research, with over 400 peer-reviewed publications in science and engineering and several influential books. Additionally, she holds more than 30 patents across eight countries, showcasing her significant contributions to the field.

Derong Liu (Panellist)
Southern University of Science and Technology, China

Derong Liu received the Ph.D. degree in electrical engineering from University of Notre Dame, Indiana, USA, in 1994. He was a Staff Fellow with General Motors Research and Development Center, from 1993 to 1995. He was an Assistant Professor with the Department of Electrical and Computer Engineering, Stevens Institute of Technology, from 1995 to 1999. He joined the University of Illinois Chicago in 1999, and became a Full Professor of Electrical and Computer Engineering and of Computer Science in 2006. He was selected for the "100 Talents Program" by the Chinese Academy of Sciences in 2008, and he served as the Associate Director of The State Key Laboratory of Management and Control for Complex Systems at the Institute of Automation, from 2010 to 2016. He is currently a chair professor with the School of System Design and Intelligent Manufacturing, Southern University of Science and Technology, Shenzhen, China. Dr. Liu was the Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems, from 2010 to 2015. He served as the President of Asia Pacific Neural Network Society in 2018. Dr. Liu received the Faculty Early Career Development Award from the National Science Foundation in 1999, the University Scholar Award from University of Illinois from 2006 to 2009, the Overseas Outstanding Young Scholar Award from the National Natural Science Foundation of China in 2008, and the Outstanding Achievement Award from Asia Pacific Neural Network Assembly in 2014. He received the International Neural Network Society's Gabor Award in 2018; the IEEE Systems, Man and Cybernetics Society Andrew P. Sage Best Transactions Paper Award in 2018; the IEEE Transactions on Neural Networks and Learning Systems Outstanding Paper Award in 2018; the IEEE/CCA J. Automatica Sinica Hsue-Shen Tsien Paper Award in 2018. He is recipient of the IEEE CIS Neural Network Pioneer Award in 2022. He has been named a highly cited researcher consecutively for six years from 2017 to 2022 by Clarivate. Currently, he is the Editor-in-Chief of Artificial Intelligence Review, and the Chair IEEE Guangzhou Section. He is a Fellow of the IEEE, a Fellow of the International Neural Network Society, a Fellow of the International Association for Pattern Recognition, and a Member of Academia Europaea (The Academy of Europe).

Nikola K. Kasabov (Panellist)
Auckland University of Technology, New Zealand

Professor Nikola K Kasabov is a Life Fellow of IEEE, Fellow of the Royal Society of New Zealand, Fellow of the INNS College of Fellows, DVF of the Royal Academy of Engineering UK. He has *Doctor Honoris Causa* from Obuda University, Budapest. He is the Founding Director of KEDRI and Professor at Auckland University of Technology and director of Knowledge Engineering Ltd. He is also Visiting Professor at IICT Bulgarian Academy of Sciences and Dalian University, China and Honorary Professor at the University of Auckland NZ and Peking University in Shenzhen.

Kasabov has been twice President of the Asia Pacific Neural Network Society (APNNS, 1997 and 2008) and the International Neural Network Society (INNS, 2009-2010). He has been a chair and a member of several technical committees of IEEE Computational Intelligence Society and Distinguished Lecturer of IEEE (2012-2014). He is the Editor of Springer Handbook of Bio-Neuroinformatics, EiC of Springer Series of Bio-and Neuro-systems and co-EiC of the Springer journal Evolving Systems. Kasabov holds MSc in computer engineering and PhD in mathematical sciences from TU Sofia, Bulgaria. His main research interests are in the areas of neural networks, intelligent information systems, soft computing, neuroinformatics. He has published more than 700 publications, highly cited internationally. He has extensive academic experience at various academic and research organisations in Europe and Asia, including: TU Sofia Bulgaria; University of Essex UK; University of Otago, NZ; Shanghai Jiao Tong University and CASIA Beijing; ETH/University of Zurich; University of Trento, Italy; University of Kaiserslautern, Germany and other. Kasabov has received a number of awards, among them: INNS Ada Lovelace Meritorious Service Award; NN journal Best Paper Award for 2016; APNNA 'Outstanding Achievements Award'; INNS Gabor Award for 'Outstanding contributions to engineering applications of neural networks'; EU Marie Curie Fellowship; German DAAD Fellowship; Bayer Science Innovation Award NZ; APNNA Excellent Service Award; RSNZ Science and Technology Medal; Innovator of the year, NZ; AUT NZ Medal; Medal "Bacho Kiro" and Honorary Citizen of Pavlikeni, Bulgaria; Honorary Member of the Bulgarian-, the Greek- and the Scottish Societies for Computer Science.

Huajin Tang (Panellist)
Zhejiang University, China

Huajin Tang received a Ph.D. degree from the National University of Singapore in 2005. He was an R&D Engineer with STMicroelectronics, Singapore, from 2004 to 2006. From 2006, he was a postdoc at the Queensland Brain Institute, University of Queensland, Australia. From 2008 to 2015, he was the Lab Head of Robotic Cognition at the Institute for Infocomm Research (A*STAR) Singapore. He has been a Professor and Director of the Neuromorphic Computing Research Center at Sichuan University, China. Currently,

he is a Professor at the College of Computer Science and Technology at Zhejiang University. Prof. Tang is now EIC for IEEE Trans. on Cognitive and Developmental Systems (TCDS), and a Board of Governor member of International Neural Networks Society (INNS).

Panel 2: Transitioning from Academia to Industry: Bridging Research and Real-World Applications

Date: 4 December 2024

Time: 9.45 - 10.30

Location: WG403 Lecture Theatre

Jonathan Chan (Moderator)
King Mongkut's University of Technology, Thailand

Dr. Jonathan H. Chan is an Associate Professor of Computer Science at the School of Information Technology, King Mongkut's University of Technology Thonburi (KMUTT), Thailand. Jonathan holds a B.A.Sc., M.A.Sc., and Ph.D. degree from the University of Toronto and was a visiting professor back there on several occasions; he also holds a status as a visiting scientist at The Centre for Applied Genomics at Sick Kids Hospital in Toronto. Besides being the Section Editor of Heliyon Computer Science (Cell Press, SCIE-indexed), he is also an Action Editor of Neural Networks (Elsevier, SCI-indexed), Networks (Elsevier, SCI-indexed), and served on the editorial board of several other journals. In addition, he has served on the program, technical and/or advisory committees for numerous major international conferences, and he has organized/co-organized many international conferences. In addition, he is a founding member and the past Chair of the IEEE-CIS Thailand Chapter, and he is the current President (2023-2024) of the Asia Pacific Neural Network Society (APNNS). Moreover, Jonathan has been a member of International Neural Network Society (INNS) since 2010, serving as the Secretary of INNS in 2011-2012, and set up the INNS Thailand Chapter in 2012. He is a senior member of INNS, IEEE, ACM, and APNNS, as well as a member of the Professional Engineers of Ontario (PEO) in Canada. His research interests include intelligent systems, cognitive computing, biomedical informatics, and data science and machine learning in general.

Mark Sagar (Panellist)
University of Auckland, New Zealand

Double Academy Award winner Dr. Mark Sagar is the co-founder and Former Chief Science Officer of Soul Machines and Director of the Laboratory for Animate Technologies at the Auckland Bioengineering Institute. Mark and his team are bringing technology to life, pioneering the creation of autonomously animated virtual humans with virtual brains and nervous systems — capable of highly expressive face-to-face interaction and real-time learning and emotional response— to create the next generation of human interaction with biologically inspired artificial intelligence. Mark has a Ph.D. in engineering from the University of Auckland and was a postdoctoral fellow at MIT. He previously worked as the special projects supervisor at Weta Digital and Sony Pictures Imageworks and developed technology for the digital characters in blockbusters such "Avatar," "King Kong," and "Spiderman 2." His pioneering work in computer-generated faces was recognized with two consecutive Scientific and Engineering Oscars in 2010 and 2011. Mark was elected as a fellow of the Royal Society of New Zealand in 2019 and was named New Zealand Innovator of the Year in 2022.

Kenji Doya (Panellist)
Okinawa Institute of Science and Technology, Japan

Prof. Kenji Doya is a Professor of Neural Computation Unit, Okinawa Institute of Science and Technology (OIST) Graduate University. He took his PhD in engineering in 1991 at University of Tokyo. After postdoctoral training at U. C. San Diego and Salk Institute, in 1994 he joined Advanced Telecommunications Research International (ATR) as a Senior Researcher. In 2004, he was appointed as a Principal Investigator of the OIST Initial Research Project and started Okinawa Computational Neuroscience Course (OCNC) as the chief organizer.

As OIST established itself as a Graduate University in 2011, he became a Professor and served as the Vice Provost for Research till 2014. He is interested in reinforcement learning in both 29 natural and artificial creatures. He served as a Co-Editor in Chief of Neural Networks from 2008 to 2021 and the Chairperson of Japan Neuroscience Society Meeting (Neuro2022) in Okinawa. He currently serves as a board member of International Neural Network Society (INNS) and Asia-Pacific Neural Network Society (APNNS), and the President of Japanese Neural Network Society (JNNS). He received INNS Donald O. Hebb Award in 2018, APNNS Outstanding Achievement Award and JNNS Academic Award in 2019, and age-group 2nd place at Ironman Malaysia in 2022.

Chu Kiong Loo (Panellist)
Department of Artificial Intelligence, University of Malaya, Malaysia

Chu Kiong Loo (Senior Member, IEEE) received the B.Eng. degree (Hons.) in mechanical engineering from the University of Malaya, Kuala Lumpur, Malaysia, and the Ph.D. degree from Universiti Sains Malaysia, George Town, Malaysia. He was a Design Engineer with various industrial firms. He is currently the Founder of the Advanced Robotics Laboratory, University of Malaya. He is also a Professor of computer science and information technology with the University of Malaya. He has been involved in the application of research into the Peruss quantum associative model and Pribram's holonomic brain in humanoid vision projects. He has led many projects funded by the Ministry of Science in Malaysia and the High Impact Research Grant from the Ministry of Higher Education, Malaysia. His current research interests include brain-inspired quantum neural networks, constructivism-inspired neural networks, synergetic neural networks, and humanoid research.

David Brown (Panellist)
Nottingham Trent University, United Kingdom

David is Chair of the International Conference on Disability, Virtual Reality and Associated Technology. He is both a Principal and Co-Investigator on a range of European and UKRI projects investigating the role of enabling technologies, including applications of VR, serious games, social robotics and multimodal affect recognition platforms to support learning and positive mental wellbeing for students with Intellectual Disabilities and Autism. He is Associate Editor for Frontiers: Virtual Reality in Medicine (https://www.frontiersin.org/journals/virtual-reality/sections/virtual-reality-in-medicine)

Panel 3: Responsible AI: Opportunities, Threats, and Ethical Boundaries

Date: 5 December 2024

Time: 9.45 - 10.30

Location: WG403 Lecture Theatre

Irwin King (Moderator)
University of Hong Kong, Hong Kong

Professor Irwin King is a distinguished scholar in machine intelligence. He currently holds the position of Professor and Immediate Past Chair at the Department of Computer Science & Engineering, The Chinese University of Hong Kong. His research interests span various areas including machine learning, social computing, AI, and data mining. He is a Fellow of esteemed societies and associations such as the IEEE, INNS, AAIA, HKIE, and ACM Distinguished Member. Professor King obtained his B.Sc. degree in Engineering and Applied Science from the California Institute of Technology (Caltech). He further pursued his M.Sc. and Ph.D. degrees in Computer Science from the University of Southern California (USC).

Giovanni Russello (Panellist)
University of Auckland, New Zealand

Professor Giovanni Russello is a Cyber Security specialist and the Head of the School of Computer Science at the University of Auckland, New Zealand. Giovanni previously served as the Director of the Cyber Security Research Programme, a multi-million-dollar project funded by the Ministry of Business Innovation and Enterprise aimed at enhancing New Zealand's cyber security posture and fostering collaboration between New Zealand and Australian researchers. Additionally, he is the founding Co-Director of the Cyber Security Foundry, the first multi-disciplinary center in New Zealand for Cyber Security, focused on strengthening collaboration between industry and academia. From 2013 to 2014, Giovanni held the position of founding CEO at a startup targeting the smartphone security market.

His research interests include human-centered cyber security, policy-based security systems, privacy and confidentiality in cloud computing, smartphone security, and applied cryptography.

Seiichi Ozawa (Panellist)
Kobe University, Japan

Seiichi Ozawa is currently the director of The Center for Mathematical and Data Sciences, Kobe University, Japan. His current research interests are machine learning, continuous learning, cybersecurity, privacy-preserving data mining, financial document analysis, and smart agriculture. He is currently an associate editor of IEEE Trans. on Cybernetics and 2 international journals. He is Vice-President of INNS and the Immediate-Past President of APNNS. He is also serving as Financial Chair and Program Co-Chair of IEEE WCCI 2024 in Yokohama. 30 K.

Kai-Zhu Huang (Panellist)
Duke Kunshan University, China

Kaizhu Huang works on trustworthy machine learning, and neural/biomedical information processing. Before joining DKU, he was a full professor at Xi'an Jiaotong-Liverpool University (XJTLU) and Associate Dean of research in School of Advanced Technology, XJTLU. He worked at Fujitsu Research Centre, CUHK, University of Bristol, National Laboratory of Pattern Recognition, Chinese Academy of Sciences from 2004 to 2012.

He was the recipient of the 2011 Asia Pacific Neural Network Society Young Researcher Award. He received the best paper or book awards for seven times. He has published 9 books and over 250 international research papers including 130+ journal papers (e.g. IEEE T-PAMI, IEEE T-IP, IEEE T-NNLS, IEEE T-CYB, JMLR) and 120+ conference papers (e.g. AAAI, IJCAI, SIGIR, NeurIPS, UAI, CIKM, ICDM, ICML, ECML, CVPR, ICCV). He serves as associated editors/advisory board members in a number of international journals and book series. He was invited as a keynote speaker in more than 40 international conferences or workshops.

Alexander Sumich (Panellist)
Nottingham Trent University, United Kingdom

Prof Sumich is Professor of Mental Health and Biopsychology. He teaches on modules related to biological models of mental health, particularly depression, schizophrenia and maladaptive aggressive behaviour. Prof Sumich co-directs the Centre for Public and Psychosocial Health and co-leads the Affect, Personality and Embodied Brain (APE) Research Group. He also has several duties related to research conduct (Research Ethics, Research Staffing, Research Mentoring, Internal REF assessments).

Dr. Sumich has over 20 years of research experience in cognition and the neurobiology of psychiatric illness, including mood disorders. He obtained an MA (I) in psychology from Auckland University and a PhD in psychology as applied to medicine at the Institute of Psychiatry, London. He is Adjunct Professor in Psychology at Auckland University of Technology (AUT), NZ, Treasurer of the British Society for the Psychology of Individual Differences (BSPID) and associate Editor for Personality and Individual Differences (PAID).

Prof Sumich's research interests include the use of neuroimaging and electrophysiological methods to understand the neurobiology of affect and affect-driven behaviours (depression, empathy, aggression) and perception (e.g., Hallucinations, anomalous experiences) in clinical and nonclinical populations. He is particularly interested in the role that the immune system plays in mental health, and ways to support healthy brain function.

Tutorials

Tutorial 1: Multimodal AI and Spiking Neural Networks for Advanced Biomedical Applications

Tutorial Organiser

Balkaran Singh
Auckland University of Technology, New Zealand

Sugam Budhraja
Auckland University of Technology, New Zealand

Zohreh Doborjeh
Auckland University of Technology, New Zealand

Wilson Goh
Nanyang Technological University, Singapore

Alexander Sumich
Nottingham Trent University, United Kingdom

Date: 2 December 2024

Time: 9.00 - 11.00

Location: WG404

Abstract:
This tutorial provides a comprehensive introduction to spiking neural networks, multimodal learning and its transformative potential in the biomedical field. Part 1 focuses on Spiking Neural Networks (SNNs), starting with a foundational overview and diving into feedforward SNNs, training strategies, and practical demonstrations using Python libraries. Participants will then explore reservoir SNNs with a focus on the NeuCube-Py library, showcasing its unique capabilities through a biomedical case study. This section emphasizes the application of spiking neural networks in handling temporal and spatial complexities in biomedical datasets.

Part 2 delves into Multimodal Learning, highlighting its critical role in integrating diverse data types for biomedical applications. Attendees will learn fusion strategies for data integration, principles of multimodal AI, and their applications in diagnosis, prognosis, and treatment. This segment will present the latest research, practical implementation techniques, and future trends in this rapidly evolving area.

Description & Outline:
Part 1: Spiking Neural Networks (SNNs) (1 Hour)

1. Foundational Concepts (10 Mins)
   - Artificial Neural Networks and Spiking Neural Networks.
   - Neuron Models.
2. Feedforward Spiking Neural Networks (10 Mins)
   - Architectural Overview.
   - Training algorithms: ANN to SNN conversion, surrogate gradient methods.
3. Practical Demonstrations (10 Mins)
   - Implementing and training simple SNNs using Spiking Jelly and SNN torch in python.
4. Reservoir Spiking Neural Networks (20 Mins)
   - Introduction to NeuCube.

- Practical demonstration of NeuCube-Py.

5. Case Study: Using NeuCube for modelling depression (10 Mins)

Part 2: Multimodal Learning (1 Hour)

1. Introduction to Multimodal Learning (10 Mins)
   - Role of multimodal AI in biomedical applications.
   - Challenges in integrating heterogeneous data.
2. Fusion Strategies for Data Integration (15 Mins)
   - Early, late, and hybrid fusion techniques.
   - Practical applications in biomedical contexts.
3. Applications and Case Studies (15 Mins)
   - Mosaic LSM for longitudinal data analysis.
   - Predicting future status of patients at ultra-high risk for psychosis.
4. Advancements in multimodal learning for biomedical domain (10 Mins)
   - Key architectures (e.g., attention mechanisms, transformers).
   - Representation learning for multimodal datasets.
5. Future Trends (10 mins)
   - Challenges and opportunities in biomedical research.

Target Audience:
This tutorial is tailored for a wide range of participants, including biomedical researchers aiming to leverage advanced AI methods to address complex challenges in their field, as well as data scientists and AI practitioners eager to explore the capabilities of spiking neural networks and multimodal learning. Additionally, it serves students and academics interested in the latest advancements in artificial intelligence and its applications in biomedicine.

Balkaran Singh (Auckland University of Technology)

Balkaran Singh is PhD student at AUT. He is broadly interested in various fields of machine learning including, the optimisation in neural networks, continual learning, meta learning and spiking neural networks. His background is in computer science and applied statistics.

Sugam Budhraja (Auckland University of Technology)

Sugam Budhraja is a PhD candidate in AI at the Auckland University of Technology, New Zealand. His research focuses on modeling multimodal longitudinal data for the diagnosis and prognosis of mental health disorders. As part of a joint-funded project by MBIE NZ and SDSC Singapore, Sugam has developed expertise in integrating diverse data types such as clinical assessments, neuro-cognitive tests, gene expression, and social functioning.

Zohreh Doborjeh (Auckland University of Technology)

Dr Zohreh Doborjeh is a Senior Research Fellow and Lecturer, holding master's and bachelor's degrees with honours in Psychology, and a Ph.D. in Computational Cognitive Neuroscience.
She has 10 years of research and teaching experience in the subjects of psychology, neuroscience, and neuroinformatics across different universities in New Zealand including the School of Population Health at the University of Auckland, the Knowledge Engineering and Discovery Research Institute (KEDRI) at Auckland University of Technology, and the School of Psychology at The University of Waikato.

Zohreh's research interests are early diagnosis and prognosis of mental health issues and suggesting personalised interventions with respect to integration of neuroimaging, genetic, and behavioural datasets using advanced computational AI modelling techniques.

In addition to her research, Zohreh is a certified Mindfulness Facilitator and serves as the Associate Editor of the Mindfulness (Springer) journal and Psychology and AI journal. Zohreh's contributions have earned her several prestigious awards, including the 2024 Asia Pacific Neural Network Society (APNNS) Young Researcher Award, the 2021 Global Young Scientist Award, the 2021 Early Career Award, the 2020 Outstanding Doctoral Award, and three Best International Paper Awards (2017-2019).

Wilson Goh (Nanyang Technological University, Singapore)

Asst Prof Wilson Goh graduated with a PhD in Bioinformatics and Computational Systems Biology, from Imperial College London. He is the Chief Data Scientist and Deputy Director of AI in Medicine at Nanyang Technological University (NTU). Wilson is also the director of the Biodatascience lab at NTU.

Alexander Sumich (Nottingham Trent University, United Kingdom)

Prof Sumich is Professor of Mental Health and Biopsychology. He teaches on modules related to biological models of mental health, particularly depression, schizophrenia and maladaptive aggressive behaviour. Prof Sumich co-directs the Centre for Public and Psychosocial Health and co-leads the Affect, Personality and Embodied Brain (APE) Research Group. He also has several duties related to research conduct (Research Ethics, Research Staffing, Research Mentoring, Internal REF assessments).

Dr. Sumich has over 20 years of research experience in cognition and the neurobiology of psychiatric illness, including mood disorders. He obtained an MA (I) in psychology from Auckland University and a PhD in psychology as applied to medicine at the Institute of Psychiatry, London. He is Adjunct Professor in Psychology at Auckland University of Technology (AUT), NZ, Treasurer of the British Society for the Psychology of Individual Differences (BSPID) and associate Editor for Personality and Individual Differences (PAID).

Prof Sumich's research interests include the use of neuroimaging and electrophysiological methods to understand the neurobiology of affect and affect-driven behaviours (depression, empathy, aggression) and perception (e.g., Hallucinations, anomalous experiences) in clinical and nonclinical populations. He is particularly interested in the role that the immune system plays in mental health, and ways to support healthy brain function.

Tutorial 2: Potential AI applications in Forensic Brainwave Analysis (FBA)

Tutorial Organiser

Robin Palmer
University of Canterbury, New Zealand

Date: 2 December 2024

Time: 9.00 - 11.00

Location: WG126

Abstract:
Forensic brainwave analysis (abbreviated hereafter as 'FBA'- also called 'brain fingerprinting') is a forensic science procedure that has the objective of establishing whether a person has knowledge of given information contained in their brain. This knowledge is detected by using an EEG (Electroencephalography) to measure certain brainwave responses of the person being tested, who, sitting in front of a computer, clicks on various pre-loaded images, sentences and phrases in a controlled environment. It can be used as a pre-trial investigative tool (to eliminate people as possible suspects), during trial proceedings to settle disputes that may arise in the course of the trial, and for numerous ancillary applications.

The FBA technique relies on detecting and interpreting the behavior of only the electrical brainwave known as 'P300'. The P300 brainwave is emitted from the brain as soon as the brain detects information of particular significance (within 300 milliseconds). The P300 brainwave is effectively the key indicator of unique knowledge – things only the guilty or involved person would know. The technique relies solely on the detection and interpretation of EEG signals and no oral or written responses are required from the subject. Therefore, the responses are completely outside the subject's control, and cannot be manipulated by the subject.

AI Applications
Potential AI applications being investigated include using AI to detect structural and content anomalies and inconsistencies when creating stimuli (statements and images to be presented to subjects on the computer screen during FBA testing); identifying unsuitable test subjects at the pre-testing stage, and collating and summarizing test results post-testing.

Robin Palmer (University of Canterbury)

Professor of Law and Director of Clinical Legal Programmes at the University of Canterbury; Consulting and training in Justice sector reform; Forensic Brainwave Analysis and deception-detection systems; International Corruption; International tax evasion and money-laundering; Clinical law, Legal Aid and public- interest law; general and specialist legal and management skills; forensic investigation and case and trial management; focused reading, writing and speaking skills. Barrister in selected law cases. Author, co-author and editor of various books.

Tutorial 3: Exploring User Experience in VR and Immersive Environments Using the 4E/MoBI Approach

Tutorial Organiser

Francisco Parada
Universidad Diego Portales, Chile

Claudio Aguayo
Auckland University of Technology, New Zealand

Date: 2 December 2024

Time: 9.00 - 11.00

Location: WG308

Abstract:
This tutorial at the 31st International Conference on Neural Information Processing (ICONIP 2024) aims to explore new avenues in understanding user experience (UX) in virtual and immersive (Mixed and Extended Reality, i.e., XR) environments through the 4E/MoBI approach. Participants will delve into the integration of neural information processing within virtual reality (VR) and immersive scenarios. The 4E/MoBI method utilises mobile EEG data collection devices allowing for on-site recording, framed within a 4E cognition approach. This session is tailored for scientists, researchers, and practitioners interested in enhancing user experience design through multimodal data analytics and computational neuroscience. The primary objective is to provide attendees with a comprehensive understanding of how mobile brain/body imaging (MoBI) technologies (e.g., Electroencephalography (EEG), Electrocardiography (ECG), Oculography), implemented under the Embodied, Extended, Embedded, and Enacted (4E) Cognition perspective, can be employed to gather and analyse UX and neurobehavioral data in diverse VR and immersive environments. This will be achieved through theoretical discussions, live demonstrations, and hands-on practice, focusing on multimodal methodologies. The tutorial will enhance participants' skills in understanding of using MoBI technologies, multimodal data collection and analysis, and application of findings to improve immersive and virtual experiences design and practice across disciplines. The tutorial aligns with ICONIP 2024's focus on neural information processing theory and applications, particularly within human-centred computing and cognitive neuroscience. Attendees will gain valuable insights into cutting-edge neuroimaging techniques and tools, empowering them to apply innovative methodologies in their own research and practice. By the end of the session, participants will be equipped with practical knowledge to advance the field of immersive and virtual environments through enhanced user experience design and neural data integration.

Description & Outline:
Description & Outline (120 minutes):
Welcome and Introduction (5 minutes)
Presentation of speakers
Presentation of objectives
Theoretical Framework (30 minutes)
Introduction to the 4E-cognition principles
Introduction to the Mobile Brain/Body Imaging (MoBI) approach
Combining mobile EEG (MoBI) with other data collection methods such as eye-tracking and self-report measures.
Applications and Case Studies (30 mins)
Theoretical foundations of user experience immersive learning and VR
Insights from Dr. Aguayo’s research on digital innovation in education design, targeting multicultural audiences.
Practical examples from clinical neuroscience and architecture (space design) studies.

Live Demonstration: User Experience Data Collection in VR (40 minutes)
Basics of setting MoBI equipment up
Basics of setting VR and immersive equipment up
Q&A and Discussion (15 mins)
Open floor for questions and discussion on the application of these methodologies in various research contexts
Discussion on future research directions and collaborations
Recap of key points
Final thoughts and takeaways

Target Audience:
This tutorial is aimed at a wide range of scientists, researchers, and practitioners –including educational technologists, designers and learning scientists– interested in using cutting-edge neuroimaging technologies to understand the neural and behavioural mechanisms of user experiences in immersive and virtual environments. Human-Computer Interaction (HCI) researchers studying interactions within virtual reality and immersive environment applications, along with data scientists and machine learning practitioners applying neural data analytics to user experience, will find the session highly relevant. Additionally, psychologists, clinicians, rehabilitation and behavioural scientists exploring cognitive and emotional user interactions in VR, and VR/XR educators, designers and developers seeking to integrate user experience and neurobehavioral data into their applications, will benefit from this tutorial.

Since it is an introductory tutorial to a transdisciplinary field, attendees are not required to have advanced knowledge. It is recommended to have a basic understanding of neural information processing, cognitive neuroscience, or educational technology. Familiarity with functional neuroimaging technologies, VR environments, 4E cognition, or data analysis techniques is beneficial but not mandatory. The tutorial will provide both foundational knowledge and advanced insights into the 4E/MoBI approach, catering to beginners and experienced professionals alike.

Francisco Parada (Universidad Diego Portales)

After studying Psychology and Neuroscience in Santiago de Chile I started my Ph.D. in Cognitive Psychology and Neural Sciences at Indiana University-Bloomington. In 2014 I started my post-doctoral work at Harvard Medical School. In 2016 I accepted a position as Director of the Cognitive & Social Neuroscience Laboratory at Universidad Diego Portales in Santiago de Chile.

Claudio Aguayo (Auckland University of Technology)

Claudio Aguayo is an Associate Professor in Digital Innovation in Education in Te Ara Poutama, the Faculty of Māori and Indigenous Development at Auckland University of Technology (AUT). As a biologist trained in the Santiago school of cognition with a PhD in Education, Claudio draws on three distinct interdisciplinary areas– complexity science, education and technology, and cognitive sciences to explore how digital tools can be best designed to enhance human experience in learning environments. Claudio is the Director of AUT's AppLab, where he leads the exploration and growing understanding of the design and application of cutting edge digital technologies for learning in a range of educational settings. His interests include practice-based research and applied critical

making, mixed reality (XR) in education, socio-ecological sustainability, art+science, culturally-responsive practice, indigenous worldviews, and 4E+ cognition and digital design, among others.

Tutorial 4: Quantum Metaheuristics: Applications to Automatic Data Clustering

Tutorial Organiser

Siddhartha Bhattacharyya
VSB Technical University of Ostrava, Czech Republic

Jan Platos
VSB Technical University of Ostrava, Czech Republic

Date: 2 December 2024

Time: 11.30 - 13.30

Location: WG404

Abstract:
Cluster analysis is a popular technique aiming to segregate a set of data points into groups called clusters, where the number of clusters is predefined. This always requires a priori information about the number of clusters, which is not always available in most real-time applications. Hence, traditional clustering techniques suffer from inappropriate choices regarding the number of clusters. This can be alleviated if the number of clusters in a dataset can be determined automatically without recourse to any a priori information.

Automatic determination of the optimum number of clusters from a dataset is challenging in the computer vision community. The automatic determination process entails optimizing a specific dataset's optimal number of clusters. Different metaheuristics are widely used for solving these complex optimization problems. However, the conventional metaheuristics are time-complex and unsuitable for real-time applications.

Lately, with the advent of the quantum computing paradigm, scientists have embarked on evolving quantum metaheuristics, which have been found to be suited for real-time applications due to their higher convergence speed.

In this tutorial, quantum computing principles and metaheuristic techniques are explored to design Quantum Metaheuristics, which can be applied to compute an optimum number of clusters in a dataset in real time to obviate human intervention.

Description & Outline:
The tutorial will cover the following topics.

1. Clustering Essentials: The tutorial will start with a brief introduction to clustering and its applications, highlighting the essential considerations for a clustering process while providing insights into the state-of-the-art clustering algorithms, their merits, and demerits [1]. Subsequently, it will walk through the differentiation between good and bad clustering, paving the way for the foundation of Cluster Validity Indices (CVI) [2] and their implications. To this end, the basics of different CVIs will be touched upon.

Time allotted: 15 minutes

2. Automatic Clustering: Subsequently, the tutorial will introduce the realm of automatic clustering with reference to the need and benefit of automating the clustering process in real-time applications [3]. The challenges and issues in this direction will be discussed with real-life examples and illustrations.

Time allotted: 20 minutes

3. Automatic Clustering as an Optimization Problem: The next part of the tutorial will put forward the role of optimization in automatic clustering [4]. The need to optimize and automate the clustering process will be presented to the audience in this part of the tutorial.

The pros and cons of the state-of-the-art in this direction will be elaborated so that the audience can assimilate the need for automatic clustering.

Time allotted: 15 minutes

4. Quantum Computing Fundamentals: The next part of the tutorial will introduce the basics of the quantum computing paradigm with reference to qubits (the fundamental element in a quantum computer) and their representations, characteristic features of quantum computing, and their applications to computing in a quantum framework [5]. The obvious implications and advantages of the quantum computing framework will become evident in this part of the tutorial.

Time allotted: 20 minutes

5. Quantum Metaheuristics: This part of the tutorial will present the core concepts of the tutorial dealing with the philosophy behind conjoining quantum computing principles with the classical metaheuristics to evolve quantum/quantum-inspired metaheuristics [6]. The process of evolving such quantum metaheuristic algorithms will be explained step by step while highlighting the encoding procedures and relevant evolutionary operators in the quantum domain. In addition, step-by-step implementation of these algorithms on a quantum computer using quantum gates and circuits will also be illustrated with reference to the automatic clustering of benchmark datasets.

Time allotted: 45 minutes

6. Concluding Remarks: Finally, the tutorial will sum up the process of automatic clustering using quantum metaheuristics, stressing the takeaways.

Time allotted: 5 minutes

References:

[1] Jain, A.K.; Dubes, R.C. Algorithms for Clustering Data; Prentice-Hall, Inc.: Hoboken, NJ, USA, 1988.

[2] Liu, Y.; Li, Z.; Xiong, H.; Gao, X.;Wu, J.;Wu, S. Understanding and Enhancement of Internal Clustering Validation Measures. IEEE Trans. Cybern. 2013, 43, 982–994.

[3] Lei, T.; Liu, P.; Jia, X.; Zhang, X.; Meng, H.; Nandi, A.K. Automatic Fuzzy Clustering Framework for Image Segmentation. IEEE Trans. Fuzzy Syst. 2020, 28, 2078–2092.

[4] Tseng, L.Y.; Bien Yang, S. A genetic approach to the automatic clustering problem. Pattern Recognit. 2001, 34, 415–424.

[5] Nielsen, M.A.; Chuang, I.L. Quantum Computation and Quantum Information: 10th Anniversary Edition; Cambridge University Press: Cambridge, UK, 2010.

[6] Dey, A.; Bhattacharyya, S.; Dey, S.; Konar, D.; Platos, J.; Snasel, V.; Mrsic, L.; Pal, P. A Review of Quantum-Inspired Metaheuristic Algorithms for Automatic Clustering. Mathematics. 11, 2018, 2023.

Target Audience:

The tutorial is targeted to young scientists and researchers aspiring to undertake research on evolving novel metaheuristic algorithms in a quantum framework for application to diverse real-life problems. Prior knowledge of evolutionary intelligence is required.

Siddhartha Bhattacharyya (VSB Technical University of Ostrava, Czech Republic)

Siddhartha Bhattacharyya is a Senior Research Scientist at VSB Technical University of Ostrava, Czech Republic. His research interests include soft computing, pattern recognition, multimedia data processing, hybrid intelligence, and quantum computing. He is an acclaimed author with over 400 publications, including 100 plus authored/edited volumes with reputed publishers. Bhattacharyya's honors include receiving the SEARCC International Digital Award ICT Educator of the Year (2017), the Distinguished HoD Award, and the Distinguished Professor Award conferred by the Computer Society of India, Mumbai Chapter (2017), ACM Distinguished Speaker (2018-2020), and IEEE Computer Society Distinguished Visitor (2021-2024). He was inducted into the ACM Hall of Fame in 2020 as a mark of appreciation for his contributions to hybrid computational

intelligence and quantum computing research.
Bhattacharyya is an editor of the Journal of Pattern Recognition Research, Associate Editor of several reputed journals, including Applied Soft Computing, IEEE Access, Evolutionary Intelligence, and IET Quantum Communications.

Jan Platos (VSB Technical University of Ostrava, Czech Republic)

Jan Platos received a Ph.D. degree in Computer science in 2010. He became a Full professor in 2021 at the Department of Computer Science. Since 2021, he has been Dean of the Faculty of Electrical Engineering and Computer Science, VSB-TUO. He has co-authored more than 240 scientific articles published in proceedings and journals. His citation report consists of 975 citations and an H-index of 13 on the Web of Science, 1593 citations and an H-index of 18 on Scopus, and 2395 citations and an H-index of 22 on Google Scholar. His primary fields of interest are machine learning, artificial intelligence, industrial data processing, text processing, data compression, bioinspired algorithms, information retrieval, data mining, and quantum computing.

Tutorial 5: Preference-Based Combinatorial Optimization

Tutorial Organiser

Malek Mouhoub
University of Regina, Canada

Date: 2 December 2024

Time: 11.30 - 13.30

Location: WG126

Abstract:
Combinatorial problems refer to those applications where we look for the existence of a good/best consistent scenario satisfying a set of constraints while optimizing some objectives. The objectives include user's qualitative and quantitative preferences that reflect desires and choices that need to be satisfied as much as possible. Moreover, constraints and objectives might not be explicitly defined and often come with uncertainty due to lack of knowledge, missing information, or variability caused by events which are under nature's control. Finally, in some applications such as timetabling, urban planning and robot motion planning, these constraints and objectives can be temporal, spatial or both. In the latter case, we are dealing with entities occupying a given position in time and space.

In this tutorial, we will show how to overcome the challenges we face when solving a given combinatorial problem under user's preferences. The approach that we will adopt is based on the Constraint Satisfaction Problem (CSP) paradigm and its variants. Solving techniques include both exact methods and metaheuristics. Exact methods include the backtracking algorithm and its variants. Constraint propagation and variable/value ordering heuristics are covered, showing how they can be applied to improve the performance of backtracking in practice. Metaheuristics include Stochastic Local Search (SLS) methods and nature-inspired techniques. We will consider cases where constraint problems occur in dynamic environments, as well as situations where some of the relevant information is incomplete/uncertain. We will also review extensions of CSPs to quantitative preferences (soft constraints) and conditional qualitative preferences. Finally, to deal with requirements and desires that are not explicitly defined, we will explore different constraint acquisition and preference learning algorithms.

Description & Outline:

1. Introduction to Combinatorial Problems [20 min]
2. Systematic Search Techniques [20 min]
3. Metaheuristics [20 min]
4. Change, Uncertainty, and Preferences [30 min]
5. Machine Learning for Modeling and Solving [20 min]
6. Conclusion [10 min]

Combinatorial problems refer to those applications where we either look for the existence of a consistent scenario satisfying a set of constraints (decision problem), or for one or more good/best solutions meeting a set of requirements while optimizing some objectives (optimization problem). These latter objectives include user's preferences that reflect desires and choices that need to be satisfied as much as possible. Moreover, constraints and objectives (in the case of an optimization problem) often come with uncertainty due to lack of knowledge, missing information, or variability caused by events which are under nature's control. Finally, in some applications such as timetabling, urban planning and robot motion planning, these constraints and objectives can be temporal, spatial or both. In this latter case, we are dealing with entities occupying a given position in time and space. Because of the importance of these problems in so many fields, a wide variety of techniques and programming languages from artificial intelligence, computational logic, operations research, and discrete mathematics, are being developed to tackle problems of this kind. While these tools have

provided very promising results at both the representation and the reasoning levels, they are still impractical to dealing with many real-world applications.

Using the Constraint Satisfaction Problem (CSP) formalism, we will explore several exact and approximate solving techniques to address the challenges and limitations listed above. Given that problem modeling is a tedious task requiring strong expertise and background, we will rely on machine learning techniques to automate this process. In this context, we will explore different constraint acquisition and preference learning algorithms.

Target Audience:
This is an introductory tutorial to graduate students, researchers, and practitioners in computer science and engineering. Basic background in Algorithms, Discrete Mathematics, and Artificial Intelligence is necessary.

Malek Mouhoub (University of Regina)

Dr. Malek Mouhoub is a Professor and SaskPower Research Chair in Artificial Intelligence at the University of Regina in Canada. Dr. Mouhoub was the head of the Department, from 2016 until 2019. Dr. Mouhoub's research interests include Constraint Solving, Spatial and Temporal Reasoning, Preference Reasoning, Constraint and Preference Learning, Scheduling and Planning, Vehicle Routing, Precision Farming, Efficient Grid-wide Energy Consumption, and Geographic Information Systems (GIS).

Dr. Mouhoub's research is primarily supported by the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canada Foundation for Innovation (CFI), and the Mathematics of Information Technology and Complex Systems (MITACS) federal grants.

Dr. Mouhoub is the past treasurer and member of the executive of the Canadian Artificial Intelligence Association (CAIAC). Dr. Mouhoub received the 2022 CAIAC Distinguished Service Award. Dr. Mouhoub was the program co-chair for the 30th Canadian Conference on Artificial Intelligence (AI 2017), IEA/AIE 2018, and IFIP CIIA 2018.

Tutorial 6: Tackling Bias in Large Language Models

Tutorial Organiser

Vithya Yogarajan
University of Auckland, New Zealand

Gillian Dobbie
University of Auckland, New Zealand

Date: 2 December 2024

Time: 14.30 - 16.30

Location: WG802

Abstract:
Large language models (LLMs) are powerful decision-making tools widely adopted in healthcare, finance, and transportation. Embracing the opportunities and innovations of LLMs is inevitable. However, LLMs inherit stereotypes, misrepresentations, discrimination, and societies' biases from various sources resulting in concerns about equality, diversity, and fairness.

The tutorial provides an overview of bias in LLMs—what it is, how it is detected and measured, and methods for mitigating bias. It incorporates real-world examples from New Zealand, where Māori are the indigenous population and underrepresented. After describing bias and its sources in the LLM development pipelines, the tutorial delves into current methods for detecting bias and the evaluation metrics recently introduced for bias measurement. It covers the state of the art in mitigating bias in LLMs. Since the area is in its infancy, the tutorial concludes with many open research questions. The examples provide participants the opportunity to delve into the methods that are introduced through hands-on exercises.

Description & Outline:
The launch of OpenAI's ChatGPT in November 2022 [12] is potentially the most significant milestone in the advances of large language models (LLMs). It is reported that ChatGPT gained over 100 million users within the first two months of release. The underlying technology of such LLMs is the key to innovations, and there are examples of LLMs exhibiting remarkable capabilities across high-stakes decision applications in healthcare, criminal justice and finance[18, 5, 11]. However, introducing and using LLMs comes with biases and disparities, resulting in concerns about equity [13, 9, 16, 10]. For example, [6] found 83% of the occupation prompts generated text using GPT-3 with male identifiers, and [1] shows GPT-3's output has a higher violent bias against Muslims than other religious groups.

Bias can be defined as the disparate treatment or outcomes between social groups that arise from historical and structural power imbalances [2, 4, 7], and can be related to gender, social status, race, language, disability, and more. This can incorporate representational harms such as misrepresentation, stereotyping, disparate system performance, and direct and indirect discrimination [2, 4, 7]. LLMs inherit stereotypes and misrepresentations of societies from the training data [3, 17], and can also amplify these biases [8, 1]. In addition to the training data, sources of bias can arise from various stages of the machine-learning pipeline, including data collection, algorithm design, and user interactions.

We begin the tutorial by providing an overview of LLMs, defining and explaining bias, and discussing the ongoing research in this space. Throughout the tutorial, we provide examples of scenarios for Aotearoa New Zealand (NZ) [16, 15, 14]. We then provide an overview of bias metrics and bias benchmark datasets, with hands-on examples, followed by debiasing techniques. The effectiveness of mitigating bias in LLMs will depend on the debiasing techniques used. It can be

measured by considering the relative change in the bias of LLMs before and after applying the method [14]. An outline of the tutorial with estimated durations is provided below:

1. Introduction to LLMs and bias [Duration: 15 mins]
   (a) Overview of Large Language Models (LLMs)
   (b) Overview and definition of bias
      - Bias definition and its types
      - Sources of bias in LLM development pipelines
      - Downstream task and impact
   (c) Current research trends
   (d) Interactive/hands-on Examples (NZ)

2. Bias detection
   (a) Bias metrics [Duration: 25 mins]
      - Overview of bias metrics
      - Holistic Evaluation of Language Models (HELM) bias score
      - Toxicity
      - Regard score
      - Honest score
      - Interactive/hands-on Examples (NZ)
   (b) Benchmark Datasets [Duration: 15 mins]

BREAK [Duration: 10 mins]

3. Bias mitigation [Duration: 40 mins]
   (a) Overview of mitigation techniques
      - Data-related
      - Prompt-based
      - In-training
      - Intra-processing
      - Guardrails
   (b) Interactive/hands-on Examples

4. Open Research Avenues and closing remarks [Duration: 10 mins]

References

[1] Abid, A., Farooqi, M., Zou, J.: Persistent anti-muslim bias in large language models. In: AAAI/ACM Conference on AI, Ethics, and Society. pp. 298–306 (2021)
[2] Barocas, S., Hardt, M., Narayanan, A.: Fairness and Machine Learning: Limitations and Opportunities. MIT Press (2023)
[3] Bender, E.M., Gebru, T., McMillan-Major, A., Shmitchell, S.: On the dangers of stochastic parrots: Can language models be too big? In: ACM FAccT. pp. 610–623 (2021)
[4] Blodgett, S.L., Barocas, S., Daum´e III, H., Wallach, H.: Language (technology) is power: A critical survey of “bias” in NLP. In: ACL. pp. 5454–5476 (2020)
[5] Bommasani, R., Hudson, D.A., Adeli, E., Altman, R., Arora, S., von Arx, S., Bernstein, M.S., Bohg, J., Bosselut, A., Brunskill, E., et al.: On the opportunities and risks of foundation models. arXiv preprint arXiv:2108.07258 (2021)
[6] Brown, T.B., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., Ne

Target Audience:
The target audiences include peer researchers, students, policymakers, and industry practitioners who work with or plan to use LLMs for research or applications. This tutorial will help them understand the techniques for detecting and mitigating bias in LLMs. We will also provide examples and applications with code walk-throughs for a hands-on experience of these techniques.

Vithya Yogarajan (University of Auckland)

Vithya Yogarajan is a Research Fellow at the School of Computer Science at the University of Auckland. Vithya's primary research interest lies at the intersection of Artificial Intelligence (AI) and mitigating bias, with a special focus on applications of AI in the health sector.

Gillian Dobbie (University of Auckland)

Gillian Dobbie is a Professor at the School of Computer Science at the University of Auckland. She leads the school's flagship Ethical Computing project. Gillian's work ranges from theory to application, from proving algorithms' correctness to experimental computer science. She has published more than 130 peer-reviewed research papers and served as a reviewer for numerous highly regarded conferences and journals.

Vithya and Gillian have collaborated on mitigating bias and developing bias benchmark datasets. They have published several papers together in this emerging research area.

Tutorial 7: Collaborative Learning and Optimization

Tutorial Organiser

Kai Qin
Swinburne University of Technology, Australia

Date: 2 December 2024

Time: 14.30 - 16.30

Location: WG404

Abstract:
Machine learning (ML) and optimization are two essential missions that Computational Intelligence (CI) aims to address. Accordingly, many CI-based ML and optimization techniques have been proposed, where deep neural networks (used for ML) and evolutionary algorithms (used for optimization) are the most well-known representatives. Intrinsically, CI-based ML and optimization are closely related. On the one hand, CI-based ML consists of various model-centric or data-centric optimization tasks. On the other hand, CI-based optimization is often formulated into ML-assisted search problems. In recent years, there emerges a new research frontline in CI, namely Collaborative Learning and Optimization (COLO), which studies how to synergize CI-based ML and optimization techniques while unleashing the unprecedented computing power (e.g., via supercomputers) to generate more powerful ML and optimization techniques for solving challenging problems.

This tutorial aims at introducing this newly emerging research direction. Specifically, we will first introduce CI, CI-based ML and optimization techniques, and their relationships, and then describe COLO from three aspects, i.e., how to make use of ML techniques to assist optimization (Learn4Opt), how to leverage optimization techniques to facilitate ML (Opt4Learn), and how to synergize ML and optimization techniques to deal with real-world problems which involve ML and optimization as two indispensable and interwoven tasks (LearnOpt), where the most representative research hotspot in each of these three aspects, i.e., automated construction of deep neural networks, data-driven evolution optimization, and predictive optimization will be discussed in detail.

The organizer is the co-founder of the research direction of COLO and has given talks about the similar topic, as tutorials, invited talks, keynotes, in various international forums in the past, such as PRICAI 2021, 2022 IEEE CIS Summer School on Deep Learning and Computational Intelligence: Theory and Applications, IJCNN 2023, and IJCNN 2024.

Description & Outline:
Main Topics:
Part I: Learning and optimization in Computational Intelligence (CI)
- Introduction to CI
- Fundamentals of machine learning and optimization
- CI-based (machine) learning: Neural Networks
- CI-based optimization: Evolutionary Computation
- Relationship between learning and optimization

Part II: Optimization for learning (Opt4Learn)
- Basics: why, what and how
- Automated construction of deep neural networks: overview, examples and outlook

Part III: Learning for optimization (Learn4Opt)
- Basics: why, what and how
- Data-driven evolutionary optimization: overview, examples and outlook

Part IV: Learning + optimization (LearnOpt)
- Basics: why, what and how
- Predictive optimization: overview, examples and outlook

Target Audience:
Researchers and students from both academia and the industry who are studying or interested in the integration of machine learning and intelligent optimization to create powerful machine learning or decision-making techniques.

Kai Qin (Swinburne University of Technology)

Kai Qin is a Professor at Swinburne University of Technology, Melbourne, Australia. Currently, he is the Director of Swinburne Intelligent Data Analytics Lab and the Deputy Director of Swinburne Space Technology and Industry Institute. His major research interests include machine learning, evolutionary computation, collaborative learning and optimization, computer vision, remote sensing, services computing, and edge computing. He was a recipient of the 2012 IEEE Transactions on Evolutionary Computation Outstanding Paper Award and the 2022 IEEE Transactions on Neural Networks and Learning Systems Outstanding Associate Editor. He serves as the Associate Editor for several top-tier journals, e.g., IEEE TEVC, IEEE TNNLS, IEEE CIM, NNs, and SWEVO. He was the General Co-Chair of the 2022 IEEE International Joint Conference on Neural Networks (IJCNN 2022) held in Padua, Italy, and was the Chair of the IEEE CIS Neural Networks Technical Committee during the 2021-2022 term.

Tutorial 8: Machine Learning for Streaming Data

Tutorial Organiser

Guilherme Weigert Cassales
University of Waikato, New Zealand

Heitor Gomes
Victoria University of Wellington, New Zealand

Yibin Sun
University of Waikato, New Zealand

Date: 2 December 2024

Time: 14.30 - 16.30

Location: WG126

Abstract:
Machine Learning for Data Streams (MLDS) has been an important area of research since the late 1990s, and its usage in industry has grown significantly over the last few years. However, there is still a gap between cutting-edge research and the readily available tools, which makes it challenging for practitioners, including experienced data scientists, to implement and evaluate these methods in this highly complex domain.
Our tutorial aims to bridge this gap with a dual focus. We discuss research topics, such as concept drift and anomaly detection for streams, while providing practical demonstrations of their implementation and assessment using Python. By catering to both researchers and practitioners, the tutorial aims to empower them to design and conduct experiments and extend existing methodologies.

Description & Outline:
Machine learning for data streams (MLDS) attempts to extract knowledge from a stream of non-IID data.
It has been a significant research area since the late 1990s, with increasing adoption in the industry over the past few years due to the emergence of Industry 4.0, where more industry processes are monitored online. Practitioners will presented with challenges such as detecting concept drifts, incremental models models, and efficient approaches to learn from data streams.
Despite commendable efforts in open-source libraries, a gap persists between pioneering research and accessible tools, presenting challenges for practitioners, including experienced data scientists, in implementing and evaluating methods in this complex domain. Our tutorial addresses this gap with a dual focus. We discuss advanced research topics, such as partially delayed labeled streams, while providing practical demonstrations of their implementation and assessment using Python. By catering to both researchers and practitioners, this tutorial aims to empower users in designing, conducting experiments, and extending existing methodologies.
In this tutorial, our objective is to familiarize attendees with applying diverse machine-learning tasks to streaming data. Beyond an introductory overview, where we delineate the learning cycle of typical supervised learning tasks, we steer our focus towards pertinent challenges seldom addressed in conventional tutorials, such as: Prediction Intervals for regression tasks, Concept drift detection, visualization and evaluation, Anomaly detection using incremental algorithms, and the trade-offs of runtime and predictive performance when using the parallel bagging ensembles.
Outline
Part 1: Machine Learning for Data Streams

- Supervised learning
  – Learning cycle
  – Evaluation procedures
  – Classification algorithms

* Incremental decision trees
* Ensemble methods [Gunasekara et al., 2024]
– Regression algorithms [Sun et al., 2022]
– Prediction Intervals [Sun et al., 2024]
– Practical examples
- QA (5 minutes)
- Concept drifts
  – Basic concepts (definitions and categorizations)
  – Detecting concept drifts
  – Evaluating and visualizing detections
  – Using drift detectors in beyond data streams
  – Practical examples

Part 2: Unsupervised learning (Clustering and Anomaly Detection)

- Clustering
  – Micro-clusters
  – Online and offline steps
  – Algorithms
  * CluStream
  – Evaluation procedures
  – Practical examples
- Anomaly Detection
  – Assumptions and limitations
  – Algorithms
  * Half Space Trees
  * Online Isolation Forest
  * Adaptive Isolation Forest*
  – Evaluation procedures
  – Practical examples

Part 3: Parallel ensembles using mini-batch

- Assumptions
- Data locality
- Algorithms
  – Mini-batching for bagging ensembles
- Evaluation procedures
- Practical examples

Target Audience:
This tutorial's target audience includes researchers and practitioners, especially those interested in learning from data streams, evolving data, and/or IoT applications. No previous experience in machine learning for data streams is required, but familiarity with traditional machine learning concepts and frameworks (like scikit-learn) is expected.

Guilherme Weigert Cassales (University of Waikato, New Zealand)

Guilherme earned his PhD in "Improving data locality of bagging ensembles for data streams through mini-batching" from the Federal University of S˜ao Carlos, and he currently works as a postdoctoral fellow at the AI Institute of Waikato university. His research interests primarily revolve around StreamLearning, with interests that permeate Anomaly Detection,Explainability, and High Performance Computing. He has been the convener of the University of Waikato's Data Stream Mining (COMPX523 Masters) on 2023 and 2024. Guilherme has contributed to this field by working on the optimization streaming bagging ensembles, co-developing an online

method based on Isolation Forests for Data Streams, and being part of the Accelerated WEKA development team. Guilherme has served a few conferences as a PC member (i.e., ECAI, KDD, ECML, CCGrid), and is part of CapyMOA's development team.

Heitor Gomes (Victoria University of Wellington, New Zealand)

Heitor is a senior lecturer at the Victoria University of Wellington (VuW) in New Zealand. Before joining VuW, Heitor was a senior research fellow and co-director of the AI Institute at the University of Waikato where he taught from 2020 to 2022 the "data stream mining" (COMPX523) course.

Heitor's main research area is the application of machine learning for data streams in a variety of tasks.

In this field, he has contributed to ensemble learning for both regression and classification tasks, worked on unsupervised drift detection, and in 2023, he was awarded a grant to conduct research on developing novel theories and algorithms for partially delayed labeled streams.

Besides participating as a PC member of a multitude of conferences (KDD, IJCAI, ECML, PAKDD, ...) Heitor is also an active contributor to open-source projects like MOA (Massive Online Analysis), StreamDM (a real-time analytics open-source software library built on top of Spark Streaming), and river (where he supervises students and postdocs since the inception of the project).

Yibin Sun (University of Waikato, New Zealand)

Yibin is a fourth-year Ph.D. student at the University of Waikato in New Zealand, where he previously earned his Master's degree in Information Technology. Yibin's research centres on advancing machine learning algorithms for streaming data scenarios, with a primary focus on regression and classification tasks. Yibin's interest extends to addressing challenges like concept drifts and implementing anomaly detection techniques for data streams.

Tutorial 9: Exploring Recent Advances in Deep Learning Architectures for Image Recognition

Tutorial Organiser

Heyang (Thomas) Li
University of Canterbury, New Zealand

Date: 2 December 2024

Time: 14.30 - 16.30

Location: WG308

Abstract:
This tutorial aims to provide an in-depth exploration of recent advances in deep learning architectures for image recognition. We will cover state-of-the-art techniques, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformer-based models, highlighting their applications and performance in various domains. Attendees will gain practical insights into implementing and fine-tuning these architectures for real-world image recognition tasks.

Description & Outline:
1. Introduction to Deep Learning for Image Recognition (20 minutes)
    - Overview of deep learning principles
    - Importance of image recognition in computer vision
    - Brief history of deep learning in image recognition
2. Convolutional Neural Networks (CNNs) (20 minutes)
    - Fundamentals of CNNs
    - Popular CNN architectures (e.g., VGG, ResNet, EfficientNet)
    - Transfer learning for image recognition
3. Recurrent Neural Networks (RNNs) for Sequential Image Analysis (20 minutes)
    - Introduction to RNNs and their variants (e.g., LSTM, GRU)
    - Applications of RNNs in sequential image analysis
    - Case studies and practical examples
4. Transformer-Based Models for Image Recognition (20 minutes)
    - Overview of transformer architecture
    - Transformer-based models for image recognition (e.g., Vision Transformer)
    - Comparative analysis with CNNs and RNNs
5. Practical Implementation and Tips (20 minutes)
    - Best practices for training deep learning models
    - Optimization techniques for image recognition tasks
    - Tools and resources for practitioners

Target Audience:
This tutorial is designed for researchers, practitioners, and graduate students with a basic understanding of deep learning concepts and an interest in image recognition. Familiarity with Python programming and deep learning frameworks (e.g., TensorFlow, PyTorch) is recommended but not required.

Heyang (Thomas) Li (University of Canterbury)

Dr. Thomas Li is a Senior Lecturer in Statistics and Data Science at University of Canterbury (UC), School of Mathematics and Statistics. His current research areas involve image processing and classification, 3D projective geometry, phylogenetic trees, classification trees, and deep learning applications. He currently leads the UC Spatial And Image Learning (SAIL) group, working on research in collaboration with NZ Transport Agency, Christchurch City Council, Christchurch Airport and Stats NZ. UC SAIL group is kindly support by the School, UC R&I, KiwiNet and MBIE.

Thomas completed his 3D tomography PhD research at The Australian National University, in the Department of Applied Mathematics. He has published papers in highly ranked international peer reviewed journals, presentations at international conferences, obtained over $500k of research fund, and two US patents that currently actively used in the industry.

Thomas has a wide research network in Australia and New Zealand, and are open to related research collaborations, and interests from prospective PhD students. He has been a regular invited speaker to major conferences, and have given tutorials and workshops in 3 conferences, including recently in the Australia Data Mining conference.

Workshops

Workshop: The 17th International Workshop on Artificial Intelligence and Cybersecurity (AICS2024)

Workshop Organisers

Dr. Ian Welch
Victoria University of Wellington, New Zealand

Dr. Tao Ban
National Institute of Information and Communications Technology, Japan

Date: 3 December 2024

Part 1: Session 1D
Time: 11.00 - 12.30

Part 2: Session 2D
Time: 13.30 - 15.00

Location: WG126

The purpose of the 17th International Artificial Intelligence and Cyber Security Workshop (AICS2024) is to raise awareness of cybersecurity, promote the potential of industrial applications, and give young researchers exposure to the main issues related to the topic and ongoing works in this area. AICS2024 will provide a forum for researchers, security experts, engineers, and research students to demonstrate new technologies, present the latest research works, share ideas, and discuss future directions in the fields of artificial intelligence and cybersecurity.

Speaker 1:
13.30 - 14.00 Kazushi Ikeda (NAIST, Japan)
Talk Title: Theoretical background of deep learning

Speaker 2:
14.00 - 14.30 Richard Kenyon (Datapay AI Labs, New Zealand)
Talk Title: Securing AI Chatbots in Enterprise Applications: Cybersecurity challenges for GenAIApplications in compliance driven industries like Payroll, Tax, and Employment

Kazushi Ikeda (NAIST, Japan)

Kazushi Ikeda got his B.E., M.E., and Ph.D. in Mathematical Engineering from University of Tokyo in 1989, 1991, and 1994. He joined Kanazawa University as an assistant professor in 1994 and became a junior/senior associate professor of Kyoto University in 1998 and 2003, respectively. He has been a full professor of NAIST since 2008.

Talk title: Theoretical background of deep learning

Deep learning has changed our society as the most powerful AI tool. However, it is used without theoretical backgrounds since many techniques in deep learning are heuristics. This talk introduces some of the theoretical works on the effects of such techniques to the performance of deep learning.

Richard Kenyon (Datapay AI Labs, New Zealand)

Richard Kenyon is the Associate Director of Datapay AI Labs. During his 25 years working in Software Engineering the power of automation has always been top of mind for releasing 'latent capacity' within teams. He started his career (back in the 1990s) doing post graduate research into the application of Neural Networks to Multivariate Data with application in the Biotechnology Industry for optimising Penicillin fermentations before moving into industry and has been following the advances in AI and ML ever since. He has worked on various ML based systems for analysing unstructured content including content secured in Government document management systems and is excited about the potential of GenAI and ML to build Enterprise Business Applications with Natural Language interfaces.

Talk title: Securing AI Chatbots in Enterprise Applications: Cybersecurity challenges for GenAIApplications in compliance driven industries like Payroll, Tax, and Employment

As organisations increasingly adopt generative AI chatbots to navigate complex legal and policy driven environments—such as payroll, tax regulations, employment legislation, union agreements, employment contracts, and company policies—cybersecurity becomes a critical concern. This talk delves into the intersection of cybersecurity and AI within enterprise environments where chatbots and agentic systems provide assistance on sensitive and regulated information.

Workshop: AI Education

Workshop Organisers

Dr. Michael Watts
Media Design School, New Zealand

Ranpreet Kaur
Media Design School, New Zealand

Dr. Akbar Ghobakhlou
Auckland University of Technology, New Zealand

Date: 3 December 2024

Part 1: Session 1C
Time: 11.00 - 12.30

Part 2: Session 2C
Time: 13.30 - 15.00

Location: WG308

There has been an explosion in the applications of Artificial Intelligence (AI). While Large Language Models such as ChatGPT have garnered much of the attention, other AI technologies have also found wide application, such as the predictive keyboards on mobile devices, and facial recognition systems in supermarkets. Some technology venture capitalists have reported that 80% of the funding pitches they receive involve AI. Many business owners believe that AI is going to put them out of business, unless they adapt to the technology. Others are desperately searching for ways to get onto the AI bandwagon. This surge in interest in AI has led to a worldwide shortage of AI engineers. Furthermore, the inappropriate application of AI, whether through the use of biased data or unethical applications, has also led to social and economic fallout.

The increased public awareness of AI technologies has also led to a proliferation of media commentary, of varying degrees of competence, and governmental regulation. Some students have taken to using AI tools to assist in their assignments, while others have changed their career pathways due to a perception that AI is going to destroy their future job prospects. There is, therefore, a need for education about AI. This need spans nearly all levels of education, from primary school through to postgraduates. At primary and secondary level so that people enter the working world with the basic knowledge of AI and how it affects their lives. At tertiary undergraduate and postgraduate level so that we have a steady supply of engineers and developers who can utilise AI in an appropriate and ethical manner.

This all raises a fundamental question: How is this education being done? This special session is intended to attract papers dealing with all aspects of AI education. Topics of interest include, but are not limited to:

- Incorporating AI into teaching curricula at all levels of education
- The design and implementation of AI-specialist teaching curricula
- Technologies used to teach AI
- Teaching the ethics of AI
- Policy making around AI education
- The teaching of specialist topics within AI

Paper 1:
11.00 - 11.15 Zhenyu Xu, Victor S. Sheng, Kun Zhang
Logic Error Localization in Student Programming Assignments Using Pseudocode and Graph Neural Networks

Paper 2:
11.15 - 11.30 Kirill Krinkin, Tatiana Berlenko
Flipped University: LLM-Assisted Lifelong Learning Environment

Speaker 1:
11.30 - 12.00 Michael Witbrock (University of Auckland, New Zealand)
Talk Title: AI and the End of Useful Skills

Speaker 2:
12.00 - 12.30 Irwin King (The Chinese University of Hong Kong, Hong Kong)
The Critical Role of AI in Learning Analytics and Assessment in the Future of Education

Speaker 3:
13.30 - 14.00 Vishya Yogarajan (University of Auckland)
Talk Title: Embracing AI in Tertiary Teaching

Speaker 4:
14.00 - 14.30 Jonathan Chan (King Mongkut's University of Technology, Thailand)
Talk Title: Balancing AI and Human Interaction in Education

Speaker 5:
14.30 - 15.00 Mufti Mahmud (King Fahd University of Petroleum and Minerals, Saudi Arabia)
Talk Title: AI in Provisioning Personalised Learning Through Engagement Detection

Michael Witbrock (University of Auckland, New Zealand)

Prof. Michael Witbrock is a computer science professor at The University of Auckland, New Zealand, directing the Strong AI Lab (SAIL) and the Natural, Artificial, and Organisational Intelligence Institute (NAOI). He earned a PhD in Computer Science from Carnegie Mellon University and a BSc (Hons) in Physiological Psychology from the University of Otago. His career includes roles such as Science Director at Precision Driven Health (NZ) and leading the "Learning to Reason" AI research group at IBM's Thomas J. Watson Research Centre in the USA.

His research at SAIL merges machine learning, reasoning, and natural language understanding to enhance AI's societal benefits both locally and worldwide. Current projects include developing adaptive quasi-logical systems, constructing deep learning frameworks for robust knowledge bases, applying AI agent systems to scientific research and studying ethical behaviours in animals to guide responsible AI integration into society.

Prof. Witbrock is an active member of the AI Forum NZ and chairs the AI for Good Foundation. He has authored and co-authored numerous publications in deep learning and general AI, and holds several patents, reflecting his interests in reasoning, learning, computational linguistics and general AI. Additionally, as an entrepreneur and investor, he supports innovative ventures in AI and social good, demonstrating a commitment to the positive evolution of technology in society.

Talk Title: AI and the End of Useful Skills

A late 2023 magazine article from the I.M.F estimated at least a 10% chance of significant AI-based job replacement within 5 years. It seems that we should at least plan for this contingency. If it is the case that, unlike previous technologies that have limited (if sometimes broad) ranges of application, AI develops capabilities that encompass all the utilitarian mental (and with robotics, physical) abilities, the conception of human value and its relationship to skills and usefulness are up for revision. Notably, the idea of skills-oriented education has been a significant driver of institutional design over the past fifty years.

If we are to move from the idea of education as a creator of useful skills, what should we move to? And, if this transition turns out to be urgent, how might we start towards a new role for education in human societies, and how might we hedge our bets?

Irwin King (The Chinese University of Hong Kong)

Professor Irwin King, a distinguished professor at the Department of Computer Science & Engineering, The Chinese University of Hong Kong. His research interests span machine learning, social computing, artificial intelligence, and data mining. Professor King's extensive research has been recognized through numerous publications and awards in top-tier venues. He holds prestigious fellowships in the IEEE, INNS, AAIA, and HKIE, and is an ACM Distinguished Member. He serves as the Director of the ELearning Innovation and Technology (ELITE) Centre and the Machine Intelligence and Social Computing (MISC) Lab. Professor King obtained his Bachelor of Science degree from California Institute of Technology (Caltech) and his Master's and Doctorate degrees in Computer Science from the University of Southern California (USC).

Talk title: The Critical Role of AI in Learning Analytics and Assessment in the Future of Education

The increasing adoption of Artificial Intelligence (AI) in higher education presents both opportunities and challenges for institutions, teachers, and students. As AI-driven tools for personalized learning and alternative assessment approaches are poised to replace or transform traditional methods, this presentation delves into the transformative impact of AI on the future of education. We will explore current trends in learning and assessment, examining how AI technology is redefining these practices. This presentation aims to provide a comprehensive understanding of how AI is reshaping assessment practices and driving the future of educational success, catering to learners, educators, administrators, and policymakers.

Dr Vithya Yogarajan (University of Auckland)

Vithya Yogarajan is a Research Fellow at the School of Computer Science, University of Auckland. Vithya's primary research interest lies at the intersection of Artificial Intelligence (AI) and mitigating bias. Vithya has almost a decade of experience working in the NZ healthcare sector and several years of teaching tertiary students in NZ. She is part of various groups and governance bodies working on multi-disciplinary projects with academic and community impact in artificial intelligence and its applications.

Talk title: Embracing AI in Tertiary Teaching

Advances in AI, including generative AI, have generated great expectations for its future impact on education and learning. Teachers, students, and parents at primary, intermediate, high school and

tertiary levels express mixed feelings about adopting AI in education. This talk focuses on tertiary teaching, especially Computer Science, and explores the perceptions and impacts of GenAI's growing role in education. Moreover, highlights of the findings of an extensive questionnaire of computer science lecturers and students conducted by researchers at the University of Auckland are presented

Jonathan Chan (King Mongkut's University of Technology Thonburi, Thailand)

Dr. Jonathan H. Chan is an Associate Professor of Computer Science at the School of Information Technology, King Mongkut's University of Technology Thonburi (KMUTT), Thailand. Jonathan holds a B.A.Sc., M.A.Sc., and Ph.D. degree from the University of Toronto and was a visiting professor back there on several occasions. Furthermore, he holds a status as a visiting scientist at The Centre for Applied Genomics at Sick Kids Hospital in Toronto, and he's the University Ambassador for NVIDIA Deep Learning Institute (DLI) at KMUTT. Jonathan is an Action Editor of Neural Networks (Elsevier, SCI-indexed) and served on the editorial board of several other journals. In addition, he has served on the program, technical and/or advisory committees for numerous major international conferences, and he has organized/co-organized many international conferences. Moreover, he is a founding member and the past Chair of the IEEE-CIS Thailand Chapter, a Board of Governor (BoG) member of the International Neural Network Society (INNS), and he is the current President (2023-2024) of the Asia Pacific Neural Network Society (APNNS). He is a senior member of INNS, IEEE, ACM, and APNNS, as well as a member of the Professional Engineers of Ontario (PEO) in Canada. His research interests include intelligent systems, cognitive computing, biomedical informatics, and data science and machine learning in general.

Talk Title: Balancing AI and Human Interaction in Education

As artificial intelligence (AI) continues to transform educational landscapes, the challenge lies in balancing its capabilities with the essential human elements of teaching and learning. The content of this talk is an example of balancing AI and human interactions. This talk will first present some recent developments from our end. Then, a case study on how The Ministry of Education in Thailand is taking significant strides toward integrating AI-enabled technologies to enhance access to quality education, particularly in underserved and remote areas. In particular, on the potential of AI to create a more equitable educational environment by bridging the gap between high-quality teachers and students in rural locations. Through AI-driven platforms, students will gain access to expert teaching, irrespective of their geographical location, offering equal opportunities for success. However, while AI presents opportunities for personalized, scalable learning, it is crucial to preserve the human dimension of education. Models such as the "Palad Puk Model" from the Buri Ram province in Thailand highlight the importance of local collaboration and community involvement in improving educational standards. Schools are increasingly using AI to assess and enhance teaching quality, yet human agency remains key in contextualizing curricula and fostering the holistic development of students. The challenge moving forward will be to ensure that AI tools complement, rather than replace, the irreplaceable aspects of human interaction—such as empathy, mentorship, and critical thinking—that are integral to effective education. This balance will be critical to ensuring AI's role in creating inclusive, adaptive, and impactful learning environments.

(Mostly generated by ChatGPT 4o mini, using basic prompting and content adapted from Bangkok Post, 2024, followed by post-editing).

Mufti Mahmud (King Fahd University of Petroleum and Minerals, Saudi Arabia)

Mufti Mahmud is a Professor in the Information and Computer Science Department at King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia. With over two decades of experience spanning academia and industry, he has held prominent leadership roles, including his tenure at Nottingham Trent University (NTU), UK. At NTU, he coordinated the Computer Science and Informatics (B11) Unit for the Research Excellence Framework (2021–2023), directed the Cognitive Computing & Brain Informatics (CCBI) research group and served as deputy leader of the Interactive Systems Research Group (ISRG). Prof Mahmud's contributions include over £4 million in research grants and 350+ peer-reviewed publications, earning him a spot among the top 2% of cited scientists in Computer Science since 2021. His accolades include the 2021 NTU VC Outstanding Researcher Award and a prestigious Marie-Curie Postdoctoral Fellowship (2013–2015). He is a Fellow of the Higher Education Academy, Senior Member of IEEE and ACM, and an active member of esteemed societies like the British Computer Society (BCS), International Neural Network Society (INNS), and Sigma Xi Scientific Research Honor Society. His multidisciplinary research focuses on cognitive computing, brain informatics, and advanced AI applications. Prof Mahmud's global impact continues through collaborative projects and contributions to cutting-edge technology and education.

Talk Title: AI in Provisioning Personalised Learning Through Engagement Detection

This talk presents the DiversAsia Engagement App that integrates advanced artificial intelligence and machine learning to enhance student engagement and learning outcomes. The system comprises two core components: a background service running on students' computers for engagement and behavioural state detection and a mobile application for teachers to monitor classroom dynamics in real time. The app analyses multimodal data, i.e., visual focus, emotional states, heart rate, and pose, from commodity webcam to detect engagement and learning behaviours. Teachers receive alerts through haptic feedback and notifications, enabling timely interventions. This innovative tool supports personalised education, bridging technology and pedagogy for improved academic experiences for students with learning disabilities.

Workshop: Neural models of infants and child development

Workshop Organisers

Prof. Alistair Knott
Victoria University of Wellington, New Zealand

Prof. Annette Henderson
University of Auckland, New Zealand

Florian Bednarski
University of Auckland, New Zealand

Date: 4 December 2024

Part 1: Session 4D
Time: 11.00 - 12.30

Part 2: Session 5D
Time: 13.30 - 15.00

Location: WG126

The dramatic advances of neural AI methods we have seen in the last few years are loosely based on the brain's distributed mode of computation but are distinctively unhumanlike in the way they develop. LLMs, for instance, begin learning directly on vast quantities of unembodied mature adult language; it is only at a late stage that their learning is interactively shaped (by alignment) or becomes 'multimodal' (through interfaces with vision or action). By contrast, human infants' learning is fundamentally embodied: from birth, infants must learn to engage with the physical world, by meaningfully deploying their sensory and motor apparatus (Smith and Gasser, 2005). Infants' learning is also fundamentally staged, beginning with the acquisition of basic sensorimotor concepts and abilities, along with conceptions of close caregivers, and building on these (Vygotsky, 1994). Infants' learning is also interactive, driven by targeted real-time input from caregivers (Bornstein et al., 2008), but equally self-guided, driven by infants' own curiosity and experiences (Oudeyer et al., 2007).

Speaker 1:
11:00-11:30 Mark Sagar (University of Auckland)
Talk title: An introduction to BabyX

Speaker 2:
11:30-12:00 Alistair Knott: (Victoria University of Wellington)
Talk title: Events and cognitive modes in BabyX

Speaker 3:
12:00-12:30 Florian Bednarski (University of Auckland)
Talk title: Evaluating interactions with BabyX

Speaker 4:
1:30-2:30 Alison Gopnik (UC Berkeley): Causal Learning as Empowerment
Talk title: Infant contingency learning as a model for AI

Speaker 5:
2:30-3:00 Martin Takac (Comenius University, Bratislava)
Talk title: Under the hood of BabyX: cognitive architecture, emotions, active inference

Mark Sagar (University of Auckland, New Zealand)

Double Academy Award winner Dr. Mark Sagar is the co-founder and Former Chief Science Officer of Soul Machines and Director of the Laboratory for Animate Technologies at the Auckland Bioengineering Institute. Mark and his team are bringing technology to life, pioneering the creation of autonomously animated virtual humans with virtual brains and nervous systems — capable of highly expressive face-to-face interaction and real-time learning and emotional response — to create the next generation of human interaction with biologically inspired artificial intelligence. Mark has a Ph.D. in engineering from the University of Auckland and was a postdoctoral fellow at MIT. He previously worked as the special projects supervisor at Weta Digital and Sony Pictures Imageworks and developed technology for the digital characters in blockbusters such "Avatar," "King Kong," and "Spiderman 2." His pioneering work in computer-generated faces was recognized with two consecutive Scientific and Engineering Oscars in 2010 and 2011. Mark was elected as a fellow of the Royal Society of New Zealand in 2019 and was named New Zealand Innovator of the Year in 2022.

Talk title: An introduction to BabyX

Alistair Knott (Victoria University of Wellington, New Zealand)

Alistair Knott is Professor of Artificial Intelligence at Victoria University of Wellington. He has been an AI and computational linguistics researcher for 30 years. He studied Philosophy and Psychology at Oxford University, then obtained MSc and PhD degrees in AI at the University of Edinburgh. He then moved to New Zealand, working first at Otago University and now at Victoria University of Wellington. Ali's AI research is in computational modelling of cognition, most recently with Soul Machines, where a longstanding project is the development of a model of embodied baby cognition, BabyX. Currently, Ali's work mostly focusses on the social impacts of AI, and on AI regulation. He co-founded Otago University's Centre for AI and Public Policy, where he worked on Government uses of AI, and on the impact of AI on jobs and work. He now works on social media governance at the Global Partnership on AI. Ali has also contributed to the Christchurch Call's Algorithms Workstream, the Global Internet Forum to Counter Terrorism, and the Forum for Information and Democracy.

Talk title: - Events and cognitive modes in BabyX

Florian Bednarski (University of Auckland, New Zealand)

Florian is an interdisciplinary researcher fascinated by infants early learning abilities. How do infants develop agency, what impacts this developmental process and why is it so important for early mental development? – those are the fundamental questions that spark his curiosity. In his research, he is traversing the boundaries between theoretical, conceptual and empirical work in the fields of philosophy and developmental psychology. Beyond this specific interest for basic research he is working to extend his portfolio to practical implications of the results from this interdisciplinary pursuit. Currently he is exploring use cases for mental health and wellbeing applications as well as arguments to strengthen children's rights.

Talk title: Evaluating interactions with BabyX

Alison Gopnik (University of California at Berkeley, USA)

Alison Gopnik is a professor of psychology and affiliate professor of philosophy at the University of California at Berkeley, and a member of the Berkeley AI Research Group. She received her BA from McGill University and her PhD. from Oxford University. She is a leader in cognitive science, particularly the study of children's learning and development. She was one of the founders of the field of "theory of mind", an originator of the "theory theory" of cognitive development, and the first to apply Bayesian probabilistic models to children's learning. She has received the APS Lifetime Achievement Cattell and William James Awards, the Bradford Washburn Award for Science Communication, the SRCD Lifetime Achievement Award for Basic Science in Child Development and the Rumelhart Prize for Theoretical Foundations of Cognitive Science. She is an elected member of the Society of Experimental Psychologists and the American Academy of Arts and Sciences and a Cognitive Science Society, American Association for the Advancement of Science, and Guggenheim Fellow. She was 2022-23 President of the Association for Psychological Science.

She is the author or coauthor of over 150 journal articles and several books including "Words, thoughts and theories" MIT Press, 1997, and the bestselling and critically acclaimed popular books "The Scientist in the Crib" William Morrow, 1999, "The Philosophical Baby; What children's minds tell us about love, truth and the meaning of life" 2009, and "The Gardener and the Carpenter" 2016, Farrar, Strauss and Giroux, the latter two won the Cognitive Development Society Best Book Prize in 2009 and 2016. She has also written widely about cognitive science and psychology for The Wall Street Journal, The New York Times, The Economist, The Atlantic, The New Yorker, Scientific American, The Times Literary Supplement, The New York Review of Books, New Scientist and Slate, among others. Her TED talk on her work has been viewed more than 5.5 million times. She has frequently appeared on TV, radio and podcasts including "The Charlie Rose Show", "The Colbert Report", and "The Ezra Klein Show".

Talk Title: Infant contingency learning as a model for AI

Martin Takac (Comenius University Bratislava, Slovania)

Martin Takac received his PhD in Applied Informatics from Comenius University Bratislava, where he currently holds an Associate Professor position. He teaches cognitive science; his research interests are cognitive modeling, artificial neural networks and developmental AI. He is also interested in the wider impacts of AI on society. He is a member of the Standing Committee on Ethics and Regulation of Artificial Intelligence for the Slovak government, a member of the scientific board of AIslovakIA, the national platform for AI development in Slovakia, a member of the Cognition and Neural Computation Research Group, and Chair of the Slovak Cognitive Science Society.

Talk title: Under the hood of BabyX: cognitive architecture, emotions, active inference

Workshop: Privacy Compliant Health Data As A Service For AI Development

Workshop Organisers

Dr. Mufti Mahmud
King Fahd University of Petroleum and Minerals, Saudi Arabia

Dr. Antti Arrola
University of Turku, Finland

Date: 5 December 2024

Part 1: Session 7C
Time: 11.00 - 12.30

Part 2: Session 8C
Time: 13.30 - 15.00

Part 3: Session 9C
Time: 15.30 - 17.00

Location: WG308

Artificial intelligence (AI) enables data-driven innovations in health care. AI systems, which process vast amounts of data quickly and in detail, show promise both as a tool for preventive health care and clinical decision-making. However, the distributed storage and limited access to health data form a barrier to innovation, as developing trustworthy AI systems require large datasets for training and validation. Furthermore, the availability of anonymous datasets would increase the adoption of AI-powered tools by supporting health technology assessments and education. Secure, privacy compliant data utilization is key for unlocking the full potential of AI and data analytics. In this project we have been developing a solution that enables analyst to utilize encryption-in-use technologies (secure multi-party computation, fully homomorphic encryption and federated learning) to run analytics and build better machine learning models by accessing more data. We have been working on advancing the current state-of-the-art data synthesis methods towards a more generalized approach of synthetic data generation, and also developing metrics for testing and validation, as well as protocols that enable synthetic data generation without access to real-world data (through multi-party computation). These have been put together as a combined effort from 20 partners from 10 European countries and funded by the European Commission under the Horizon Europe Programme.

Speaker 1:

11:00 – 11:05 Mufti Mahmud (King Fahd University of Petroleum and Minerals, Saudi Arabia)
Introduction to the 'Privacy Compliant Health Data As A Service For AI Development' Technologies Session 1

Speaker 2:
11:05 – 11:20 Antti Airola (Assoc. Prof., Turku University of Applied Science, Finland)
Introduction to the PHASE IV AI project

Speaker 3:
11:20 – 11:40 Erkay Savas (Sabancı University, Türkiye)
Federated Learning over Encrypted Data

Speaker 4:
11:40 – 12:00 Artur Rocha (INESC TEC, Portugal)
Talk Title: Data privacy methods and tools

Speaker 5:
12:00 – 12:20 Mariya Georgieva (Tune Insight, Switzerland)
Talk Title: Balancing Data Privacy and Utility: Introduction to Privacy-Enhancing Technologies (PETs)

Speaker 6:
14:00 – 14:20 13:30 – 13:40 Antti Airola (Assoc. Prof., Turku University of Applied Science, Finland)
Talk Title: Summarisation of the Morning Session and Introduction to the afternoon session

Speaker 7:
13:40 – 14:00 Irfan Khan (Turku University of Applied Science, Finland)
Talk Title: Synthetic healthcare data generation

Speaker 8:
14:00 – 14:20 Tunc Asuroglu (VTT, Finland)
Talk Title: Synthetic data, Data quality measures

Speaker 9:
14:20 – 14:40 Ibrahim Sabra (University of Vienna, Austria)
Talk Title: AI-generated Synthetic Data: Legal Standing and Ethical Implications

Speaker 10:
15:30 – 15:55 David Brown (Nottingham Trent University, UK)
Talk Title: Prediction of people at high risk of lung cancer from HER

Speaker 11:
15:55 – 16:20 Hélder Oliveira (INESC TEC, FCUP, Portugal)
Talk Title: Accurate image-based lung Cancer Characterization Using Machine Learning

Speaker 12:
16:20 – 16:45 Christos Chatzichristos (Post-doctoral researcher, KU Leuven, Belgium)
Talk Title: AI-based prediction of lymph node dissection

11:00 – 11:05	Mufti Mahmud King Fahd University of Petroleum and Minerals, KSA	Introduction to the 'Privacy Compliant Health Data As A Service For AI Development' Technologies Session 1	In person
11:05 – 11: 20	Antti Airola University of Turku, Finland	Introduction to the PHASE IV AI project	Online
11:20 – 11:40	Erkay Savas, Sabancı University, Türkiye	Federated Learning over Encrypted Data	Online
11:40 – 12:00	Artur Rocha INESC TEC, Portugal	Data privacy methods and tools	Online
12:00 – 12:20	Mariya Georgieva Tune Insight, Switzerland	Balancing Data Privacy and Utility: Introduction to Privacy-Enhancing Technologies (PETs)	Online
12:20 – 12:30	Open discussion and Q&A		

12:30 to 13:30: Lunch Break

13:30 to 15:00 (GMT+13) PHASE IV AI Technologies Session 2

13:30 – 13:40	Antti Airola University of Turku, Finland	Summarisation of the Morning Session and Introduction to the afternoon session	Online
13:40 – 14:00	Irfan Khan Turku University of Applied Sciences, Finland	Synthetic healthcare data generation	In-person
14:00 – 14:20	Tunc Asuroglu VTT, Finland	Synthetic data, Data quality measures	Online
14:20 – 14:40	Ibrahim Sabra, Kseniia Guliaeva, and Alexandra Marginean University of Vienna, Austria	AI-generated Synthetic Data: Legal Standing and Ethical Implications	Online
14:40 – 15:00	Open discussion and Q&A		

15:00 to 15:30: Tea Break

15:30 to 17:00 (GMT+13) PHASE IV AI Use Case Session

15:30 – 15:55	David Brown Nottingham Trent University, UK	Prediction of people at high risk of lung cancer from EHR	In-person
15:55 – 16:20	Hélder Oliveira INESC TEC, FCUP, Portugal	Accurate image-based lung Cancer Characterization Using Machine Learning	Online
16:20 – 16:45	Christos Chatzichristos KU Leuven, Belgium	AI-based prediction of lymph node dissection	Online
16:45 – 17:00	Open discussion and Q&A		

Mufti Mahmud (King Fahd University of Petroleum and Minerals, KSA)

Mufti Mahmud is a Professor in the Information and Computer Science Department at King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia. With over two decades of experience spanning academia and industry, he has held prominent leadership roles, including his tenure at Nottingham Trent University (NTU), UK. At NTU, he coordinated the Computer Science and Informatics (B11) Unit for the Research Excellence Framework (2021–2023), directed the Cognitive Computing & Brain Informatics (CCBI) research group, and served as deputy leader of the Interactive Systems Research Group (ISRG). Prof Mahmud's contributions include over £4 million in research grants and 350+ peer-reviewed publications, earning him a spot among the top 2% of cited scientists in Computer Science since 2021. His accolades include the 2021 NTU VC Outstanding Researcher Award and a prestigious Marie-Curie Postdoctoral Fellowship (2013–2015). He is a Fellow of the Higher Education Academy, Senior Member of IEEE and ACM, and an active member of esteemed societies like the British Computer Society (BCS), International Neural Network Society (INNS), and Sigma Xi Scientific Research Honor Society. His multidisciplinary research focuses on cognitive

computing, brain informatics, and advanced AI applications. Prof Mahmud's global impact continues through collaborative projects and contributions to cutting-edge technology and education

Antti Airola (University of Turku, Finland)

Antti Airola, an Associate Professor at the Department of Computing, University of Turku, Finland, obtained his PhD from the same institution in 2011. His research focuses on machine learning in health data analytics, emphasizing privacy preservation, evaluation of medical AI models, and healthcare AI applications. Airola's work contributes to the development of methods for secure and effective use of AI in healthcare, addressing key challenges in patient data privacy and the reliability of AI technologies in medical settings. He has co-authored around 100 peer-reviewed publications, has lead projects with over €3 M grant award value in the field of AI, and is a member of ELLIS society.

Erkay Savas (Sabancı University, Türkiye)

Erkay Savas received the BS (1990) and MS (1994) degrees in electrical engineering from the Electronics and Communications Engineering Department at Istanbul Technical University. He completed the PhD degree in the Department of Electrical and Computer Engineering (ECE) at Oregon State University in June 2000. He had worked for various companies and research institutions before he joined Sabanci University in 2002. He has been the dean of Faculty of Engineering and Natural Science, Sabanci University, since July 1, 2020. His research interests include applied cryptography, data and communication security, privacy in biometrics, security and privacy in data mining applications, embedded systems security, and distributed systems. He is a member of IEEE, ACM, the IEEE Computer Society, and the International Association of Cryptologic Research (IACR).

Artur Rocha (INESC TEC, Portugal)

Artur Rocha is a senior researcher at INESC TEC, where he performs his research since 1998. He is a co-coordinator of HumanISE, a centre focused on Human-centered computing and Information Science.
He obtained his PhD on Informatics Engineering and current research interests include platforms and methods for collaborative research, privacy-preserving distributed computation, and big data processing.
From October 1996 to December 1997, he was an associate member of CERN - European Laboratory for High Energy Physics, IT

Mariya Georgieva (Tune Insight, Switzerland)

Mariya Georgieva is a cryptography expert with over 15 years of experience in both academia and industry, currently serving as the Head of Cryptography at Tune Insight. Before joining Tune Insight, she led Inpher's cryptography research team and was an advanced cryptography expert at Gemalto. Her work focuses on developing privacy-preserving solutions such as multiparty computation, fully homomorphic encryption, and federated learning.

Mariya has a proven track record of leading research initiatives and driving innovation in cryptography, transforming complex theoretical concepts into practical, commercially viable applications. For those familiar with homomorphic encryption, Mariya is the "G" in CGGI of TFHE, one of the fastest homomorphic encryption schemes.

She earned her Ph.D. in Computer Science from the University of Caen, France, where she conducted pioneering research in cryptography. She remains actively involved in shaping cryptographic standards through her participation in international standardization bodies such as ISO and the MPC Alliance, contributing to advancements in Secure Multiparty Computation (SMPC) and Fully Homomorphic Encryption (FHE).

Muhammad Irfan Khan (Turku University of Applied Sciences, Finland)

Irfan Khan is a senior researcher in Health-Tech research group in University of Applied Sciences, Finland
His research focuses on machine learning in health data analytics with recent focus on Federated learning in brain image analytics. BS (Bioinformatics, Pakistan), MSc (Computational Systems Biology, Finland, Sweden), M.Eng (Big Data Analytics, Finland)

Tunc Asuroglu (VTT, Finland)

Tunc Asuroglu received the B.S. degree in computer engineering from the TOBB University of Economics and Technology, Türkiye, in 2013, and the M.S. and Ph.D. degrees in computer engineering from Baskent University, Türkiye, in 2015 and 2020, respectively. He was an Assistant Professor with the Department of Computer Engineering, Baskent University. He also worked as a Guest Researcher with the Faculty of Computer Sciences, Østfold University College, Norway. He was a Postdoctoral Research Fellow with the Faculty of Medicine and Health Technology, Tampere University, Tampere, Finland. He worked on many international projects related to health informatics. Currently, he is a Research Scientist with VTT Technical Research Centre of Finland. He is also a visiting researcher with Tampere University. His research interests include the applications of computational intelligence in health informatics and wearable sensor systems.

Ibrahim Sabra (University of Vienna, Austria)

Ibrahim Sabra is an academic, researcher, and consultant specializing in information technology law and human rights law. He serves as a digital policy consultant at Strathmore University's Centre for Intellectual Property and Information Technology Law (CIPIT) in Kenya, where he leads CYRILLA, a U.S. government-funded global initiative. CYRILLA provides a multilingual database of digital rights laws, focusing on their development and impact in the Global South. Ibrahim is also a digital rights researcher with Columbia University's Global Freedom of Expression,

David Brown (Nottingham Trent University, UK)

David is Chair of the International Conference on Disability, Virtual Reality and Associated Technology. He is both a Principal and Co-Investigator on a range of European and UKRI projects investigating the role of enabling technologies, including applications of VR, serious games, social robotics and multimodal affect recognition platforms to support learning and positive mental wellbeing for students with Intellectual Disabilities and Autism. He is Associate Editor for Frontiers: Virtual Reality in Medicine (https://www.frontiersin.org/journals/virtual-reality/sections/virtual-reality-in-medicine)

Hélder Oliveira (INESC TEC, FCUP, Portugal)

Hélder P. Oliveira, born in Porto, Portugal, in 1980, is a Senior Researcher at INESC TEC and Invited Assistant Professor at the Faculty of Sciences, University of Porto. He leads the Visual Computing and Machine Intelligence Area and coordinates the Data Science Hub at INESC TEC. With a Ph.D. in Electrical and Computer Engineering from the University of Porto, Hélder has been involved in numerous research projects, including LuCaS and MICOS, and has collaborated on several industry-related initiatives. His contributions include 20 peer-reviewed papers, one patent, three book chapters, and the creation of public datasets, accumulating 748 citations (h-index: 14). Hélder supervises Ph.D. and M.Sc. students, has mentored 56 theses, and has served on examination juries. He co-founded the BioStar group, co-organized the VISUM summer school, and is active in event organization. His research spans medical imaging, bio-imaging, computer vision, data science, machine learning, and 3D modeling.

Christos Chatzichristos (KU Leuven, Belgium)

He is scientific advisor to AINIGMA Technologies and co-author of multiple successful Horizon-Europe Grants in the field of AI in Healthcare. He gained his PhD in 2019 entitled "Functional Neuroimaging data characterization via tensor representations" from the Department of Informatics and Telecommunications, National and Kapodistrian University of Athens, Greece. He was awarded a Marie Curie Skolodowska fellowship for the completion of his PhD research. Christos obtained a MSc in Biomedical Engineering from KUL and a Diploma (MSc equivalent) in Electrical and Computer

engineering from the Aristotle University of Thessaloniki, Greece. He has been the first author of multiple papers and has received the best paper award in IEEE SPMB 2020, and the best poster award in EURASIP Tensor-based signal processing school 2018. In 2020, won the first price in the world-wide Neureka Challenge for seizure detection.

Workshop: gtec - From 10-20 to Ultra-high Density - Closed Loop Brain Computer Interface Advances with g.tec BCI Research and Clinical Systems

Workshop Organisers

Christy Li
g.tec medical engineering GmbH/ g.tec neurotechnology Hong Kong Ltd

Date: 3 December 2024

Part 1: Session 1E
Time: 11.00 - 12.30

Part 2: Session 2E
Time: 13.30 - 15.00

Location: WG404

With 25 years of experience producing and advancing brain-computer-interface (BCI) technologies, g.tec is going to demonstrate their advanced but easy-to-use BCI research and clinical system from 8 channel to 1024 channels, from wired to wireless, from pure-EEG to multiple biosignal closed loop systems, from BCI research to neurorehabilitation to neuromodulation applications in this workshop. Ready to explore the advanced BCI world? Come join us in this workshop and we explore together research collaboration.

Christy Li (g.tec medical engineering GmbH/ g.tec neurotechnology Hong Kong Ltd)

Christy Li has joined g.tec since 2021 and has been focusing on promoting its ground-breaking brain-computer-Interface and neurotechnology in BCI research, neurorehabilitation, functional mapping and neuromodulation applications. recoveriX is CE, HSA, TGA and MedSafe certified medical device and proven efficacious in many publications. Christy currently focuses on collaborating with researchers, therapists, neurologists and distributors In Asia Pacific countries to deploy BCI and recoveriX neurorehabilitation applications.

Poster Presentations

Tuesday, 3 December 2024

10.30 – 11.00 Poster Session 1 | Morning Tea
12.30-13.30 Poster Session 1 | Lunch
15.00 – 15.30 Poster Session 1 | Afternoon Tea
LOCATION: WG201 Foyer Space

Technical Papers – Poster Presentations

Ruinan Wang, Ian Nabney, Mohammad Golbabaee
P1.01 - 0648 | Efficient Hyperparameter Importance Assessment for CNNs

Hans Jarett Ong, Brian Godwin Lim, Benedict Ryan Tiu, Renzo Roel Tan, Kazushi Ikeda
P1.02 - 5599 | A Compression-Based Dependence Measure for Causal Discovery by Additive Noise Models

Junying Li, Min Chen, Zhiqiang Pu, Jiale Chen
P1.03 - 5535 | Towards Efficient Reinforcement Learning: A Transfer Approach via Task and Environment Difference Elimination

Haoyuan Li, Dan Wang, Zhouhua Peng, Nan Gu, Yi Dong
P1.04 - 6956 | Data-Driven Neural Network Based Finite Control Set Model Predictive Control for Three-level PWM Rectifier

Kuangyu Yang, Lu Liu, Yanping Xu, Zhouhua Peng, Dan Wang
P1.05 8832 | Safety-Certified Target-Reaching of Autonomous Surface Vehicles Based on Optimal Heading Control Barrier Functions

Haoran Zhao, Mingcheng Chen, Weinan Zhang, Yong Yu
P1.06 - 2468 | Adaptive Retrieval-based Gradient Planning for Offline Multi-context Model-based Optimization

Shaocong Han, Jingwei Ge, Yuchen Shi, Yi Zhang
P1.07 - 9827 | An Enhanced MILP-based Verifier for Adversary Robustness of Neural Networks

Isabelle Aguilar, Thomas Bersani-Veroni, Luis Fernando Herbozo Contreras, Armin Nikpour, Damien Querlioz, Omid Kavehei
P1.08 - 0356 | Bio-inspired and Power Efficient Continual Learning of EEG Signals

Shoma Shimizu, Kento Uchida, Atsuo Maki, Shinichi Shirakawa
P1.09 - 6497 | Adaptive Trust Region Radius for Robust Policy Optimization

Ravi Shekhar Tiwari, Tauheed Ahmed, Shabnam Samima
P1.10 - 6568 | Demystifying Enhancement & Gradability of Images: Channel-Based Image Enhancement and K-shot Quality Measurement Assessment Model

Yufeng Xie, Han Wang, Qingshan Li
P1.11 - 7786 | MCLF: A Max-Margin Contrastive Learning Framework for Reinforcement Learning

Kaichuang Zhang, Alina Basharat, Ping Xu
P1.12 - 8424 | Byzantine-Robust Decentralized Federated Learning via Local Performance Checking

Bin Hu, Shi-Qi Liu, Xiao-Liang Xie, Xiao-Hu Zhou, Tao Wang, Ji-Chang Luo, De-Lin Liu, Zeng-Guang Hou, Jia-Xing Wang
P1.13 - *6810 | A Two-Stage Network for Enhanced Intracranial Artery 3D Segmentation in TOF-MRA Volume*

Enhao Chen, Hao Wang, Chi-Sing Leung, Yuxin He
P1.14 - 6570 | Explore Channel pruning Based on l0-norm Sparse Optimization

Itsuki Kanemura, Katsunori Kitano
P1.15 - 0137 | Network structure and recurrent dynamics achieved by maximizing information transfer and minimizing maintenance costs of the network.

Xiaolong Wu, Chang Feng, Hankiz Yilahun, Mingxing Xu, Askar Hamdulla, Thomas Fang Zheng
P1.16 - 7656 | Emotional Atmosphere Soft Label for Emotion Recognition in Conversations

Feiyue Qiu, Wei Wu, Liping Wang
P1.17 - 3184 | CSTFormer: Cross Spatial-Temporal Learning Transformer with Fourier Filtering Operators for Multivariate Time Series Classification

Jianlong Hao, Shengbin Duan, Yali Lv, Xiao-Hu Zhou
P1.18 - 8477 | Transformer-Based Long Time Series Forecasting with Decoupled Information Extraction and Information Complementarity

Shi-Heng Tian, Ziyi Li, Bao-Liang Lu, Wei-Long Zheng
P1.19 - 2318 | Multi-View Fusion Transformer For Emotion Recognition Under Sleep Deprivation

Xinyu Wang, Yuting Ding, Fei Chen
P1.20 - 1526 | Attention Mechanism-Based Mandarin Speech Modalities Classification with EEG Signals

Zhewei Chen, Qing Wang, Zhengzheng Tang, Md Zakir Hossain
P1.21 - 3844 | Graph-Augmented Sparse Attention for Medical Image Segmentation

Peng Gao, Yujian Lee, Zailong Chen, Xubo Liu, Hui Zhang
P1.22 - 7689 | Dynamic Identity-Guided Attention Network for Visible-Infrared Person Re-identification

Extended Abstracts – Poster Presentations

Steffen Albrecht
P1.23 - A001 | How does a GPT perform in Forecasting Severe Respiratory Disease Hospitalizations?

Tao Ban
P1.24 - A002 | Classifying IoT Malware with Limited Data: A Few-Shot Learning Framework

Georg Brandmayr
P1.25 - A003 | Self-Supervised Pretraining for Railway Sound Classification

Baowen Cheng

P1.26 - A004 | Visual-Auditory Multimodal Decoding from Multi-Channel Human Intracranial EEG

Guangshuai Ding

P1.27 - A005 | Doc2Event: Extracting Chinese Document-Level Events into Generation

Atefeh Enayatollahi

P1.28 - A006 | Modeling and Predicting Petroleum Wastewater Treatment Outcomes with Neural Networks

Mojgan Hafezi Fard

P1.29 - A007 | The Effect of Prior Programming Knowledge on Memory Efficiency When Learning a New Language

Narumitsu Ikeda

P1.30 - A008 | A Synaptically Local Spike-Rate-Dependent Plasticity toward Neuromorphic Computing

Zhenhao Li

P1.31 - A009 | Integrating Multi-Temporal Feature Ranking with Forecasting Models for Enhanced Stock Price Prediction

Zijian Lin

P1.32 - A010 | Implicit Alignment and Long Temporal Context Memory Propagation-Based Video Compression Framework

Wednesday, 4 December 2024

10.30 – 11.00 Poster Session 2 | Morning Tea
12.30-13.30 Poster Session 2 | Lunch
15.00 – 15.30 Poster Session 2 | Afternoon Tea
LOCATION: WG201 Foyer Space

Technical Papers – Poster Presentations

Yuting He, Chengtai Li, Heng Yu, Jianfeng Ren, Zheng Wang, Heshan Du, Yinshui Xia
P2.01 - 7847 | Dual-branch StarNet with Mutual Attention and U-Net Denoising for Simultaneously Recognizing Keywords and Speakers

Jiangtao Fan, Anish Jindal, Amir Atapour-Abarghouei
P2.02 - 5060 | Multi-Scale Efficient Spatial Attention on Human Activity Recognition Using Wearable Sensors

Gerard Marcos Freixas, Zunlei Feng, Jin Cheng, Kelvin Ting Zuo Han, Jiacong Hu, Jie Lei, Xingjiao Wu
P2.03 - 6594 | Spatio-Temporal Deviation Calibration for Skeleton-Based Human Action Recognition

Rong-Fei Gu, Yi-dong Zhao, Li-Ming Zhao, Wei-Long Zheng, Bao-Liang Lu
P2.04 - 8858 | A Multi-modal Emotion Recognition Model based on Continuously Labeled EEG Signals

Hao Ni, Canghong Jin, Yuntian Wei, Longxiang Shi
P2.05 - 7371 | Exploring the Influence of Behavioral Intention in Next POI Recommendation by Hypergraph Learning

Zicheng Wang, Pengyu Lu
P2.06 - 2020 | Hypergraph Convolutional Stock Price Prediction Model Based on Hyperbolic Space and Contrast Learning

Na Yu, Tongya Zheng, Kaixuan Chen, Shunyu Liu, Mingli Song
P2.07 - 2276 | Unified Mask Graph Modeling for Incomplete Tabular Learning

Yuqian Wu, Hengyi Luo, Raymond Lee
P2.08 - 1399 | Deep Feature Embedding for Tabular Data

Chunshi Wang, Bin Zhao, Shuxue Ding
P2.09 - 0993 | SCANet: Split Coordinate Attention Network for Building Footprint Extraction

Zhiyuan Wang, Jun Li, Jianhua Xu
P2.10 - 3169 | Attention-based Domain Adaptive YOLO For Cross-domain Object Detection

Wuti Xiong, Valentina Kuklina
P2.11 - 4965 | ForgeryGPT: Cross-domain Face Forgery Detection using Large Vision-Language Models

Hao Tian, Jie Lei, Guoyu Yang, Jiaqi Wu, Yilong Zhang, Zunlei Feng, Ronghua Liang
P2.12 - 4996 | MFCA: Multimodal Object Detection based on Feature Calibration and Aggregation

Bowen You, Sheng Zhang, Yaping Yang

P2.13 - 5371 | Omnidirectional Linear Attention Module for Penalty Shootout Video Understanding
Ge Ren, Gaolei Li, Bo Zhang, Xiaoyang Jiang, Shiyong Qiu, Liangjie Liu, Wei Du, Shuilin Li, Hao Peng, Shenghong Li
P2.14 - 7317 | SegDaemon: Actively Protecting Semantic Segmentation Models Against Intellectual Property Infringement

Chunhui Yang, Luyang Tang, Ronggang Wang
P2.15 - 8684 | Contrastive learning for free-view image compression network

Yaxin Hu, Erhardt Barth
P2.16 - 9558 | How to Efficiently Use Color and Temporal Information for Video Understanding

Jiesong Bai, Yuhao Yin, Qiyuan He, Yuanxian Li, Xiaofeng Zhang
P2.17 - 9571 | Retinexmamba: Retinex-based Mamba for Low-light Image Enhancement

Baptiste Rossigneux, Inna Kucher, Vincent Lorrain, Emmanuel Casseau
P2.18 - 9867 | Importance Resides In Activations: Fast Input-Based Nonlinearity Pruning

Chengji Shen, Zhenjiang Liu, Jie Lei, Huiqiong Wang, Zunlei Feng, Mingli Song
P2.19 - 3141 | Internal Prior Correlation based Deepfake Detection

Luyang Tang, Chunhui Yang, Ronggang Wang
P2.20 - 3464 | Digging into Scene Priors for Generalizable Neural Radiance Fields

Tom Pégeot, Inna Kucher, Adrian Popescu, Bertrand Delezoide
P2.21 - 3510 | Parameter-efficient Fine Tuning with Debiased Sensitivity and Constrained Low-rank Adaptation

Yun Kai Wang, Yanfeng Lu
P2.22 - 5068 | LiSegAgr:Labeled Instance Segmentation for Agricultural Remote Sensing Images through Iterative SAM

Weili Zhang, Yu Guo, Jing Wang, Fei Wang
P2.23 - 6688 | Neural Triangular Mesh Compression Based Efficient Neural Radiance Fields

Karim Haroun, Jean Martinet, Karim Ben Chehida, Thibault Allenet
P2.24 - 9131 | Leveraging local similarity for token merging in Vision Transformers

Brian Moser, Ahmed Anwar, Federico Raue, Stanislav Frolov, Andreas Dengel
P2.25 - 9322 | Federated Learning for Blind Image Super-Resolution

Huining Cui, Xinlei Huang
P2.27 - 2233 | Brain Tumor Detection: Strong Entanglement Improves Quantum Neural Network's Classification Ability

Thursday, 5 December 2024

10.30 – 11.00 Poster Session 3 | Morning Tea
12.30-13.30 Poster Session 3 | Lunch
15.00 – 15.30 Poster Session 3 | Afternoon Tea
LOCATION: WG201 Foyer Space

Technical Papers – Poster Presentations

Hanqing Fu, Gaolei Li, Jun Wu, Jianhua Li, Kai Zhou, Yuchen Liu
P3.01 - 4376 | Spikewhisper: Temporal Spike Backdoor Attacks on Federated Neuromorphic Learning over Low-power Devices

Yifan Li
P3.02 - 6687 | ZKP-HGNN: A Study on Improving Zero-Knowledge Proof (ZKP) Based on Heterogeneous Graph Neural Networks for Anonymous Digital Identity Sharing in Blockchain

Chang Li, Yeo Chai Kiat, Jiwu Jing, Chun Long, Jing Zhao, Qingfeng Pan
P3.03 - 9227 | KDAE: Kernel Density Auto-Encoder for Semi-Supervised Anomaly Detection with Limited Labeled Data

Yuhang Qin, Guiping Xu
P3.04 - 4585 | NCSV: A Multimodal Benchmark for Negative Chinese Short Video Detection with Social Context

Yibin Leng, Huaxiang Zhang, Li Liu, Dongmei Liu
P3.05 - 7828 | Graph Enhanced Cross-Modal Retrieval based on Visual-Language Knowledge Distillation

Yining Huang, Keke Tang, Wanmin Lian, Meilian Chen
P3.06 - 6367 | Leveraging Large Language Models for Enhanced NLP Task Performance through Knowledge Distillation and Optimized Training Strategies

Qiming Bao, Gaël Gendron, Alex Peng, Wanjun Zhong, Neset Tan, Yang Chen, Michael Witbrock, Jiamou Liu
P3.07 - 8379 | Assessing and Enhancing the Robustness of Large Language Models with Task Structure Variations for Logical Reasoning

Shu Zhou, Xin Wang, Zhengda Zhou, Haohan Yi, Xuhui Zheng, Wang Hao
P3.08 - 2113 | The Master-Slave Encoder Model for Improving Patent Text Summarization: A New Approach to Combining Specifications and Claims

Aiyao He, Sijia Cui, Shuai Xu, Yanna Wang, Bo Xu
P3.09 - 8812 | TUMS: Enhancing Tool-use Abilities of LLMs with Multi-structure Handlers

Yuanjiang Cao, Yao Liu, Ruoyu Wang, Quan.Z. Sheng, Lina Yao
P3.10 - 6677 | Improving Efficiency of Unsupervised Skill Discovery by Model Resetting Curriculum

Zerui Wu, Haiming Huang, Lianghong Wu, Weiwei Chen, Zhenkun Wen
P3.11 - 2856 | Area-part Composite Graph Guided Robot Manipulation Reasoning in 3C Assembly

Runze Huang, Mingxing Xu, Thomas Fang Zheng
P3.12 - 8638 | Advancing Respiratory Sound Classification: Integration of Audio Spectrogram Transformer with ConnectMix and NEFTune Augmentation
Hui Ye, Haodong Chen, Xiaoming Chen, Vera Chung
P3.13 - 4741 | Adaptively Augmented Consistency Learning: A Semi-supervised Segmentation Framework for Remote Sensing

Sugam Budhraja, Balkaran Singh, Samuel Tan, Maryam Doborjeh, Zohreh Doborjeh, Edmund Lai, Wilson Goh, Nikola Kasabov
P3.14 - 7793 | NeuroGeMS: An open-source GUI software for multimodal modelling in biomedical research and applications

Mishaim Malik, Benjamin Chong, Justin Fernandez, Vickie Shim, Alan Wang
P3.15 - 8329 | SnE-VNet: A Deep Learning Model with Squeeze and Excitation for Improved 3D Stroke Lesion Segmentation

Linfang Yu, Hao Wang, Yuxin He, Yang Wen, Chi-Sing Leung
P3.16 - 5016 | A Robust Tensor Decomposition Model for Traffic Data Imputation with Capped Frobenius Norm in Smart City

Zhaoqing Leng, Zhengang Zhao, Xiaoyu Zhou, Yican Zhang, Xu Dong
P3.17 - 2236 | SHAPE: Smart Shaping with Adaptation Physically Excited Networks

Sidong Jiang, Rui Zhang, Xi Yang, Bin Dong, Kaizhu Huang
P3.18 - 2686 | Guided Safe Diffusion: Prohibiting Diffusion Models from Generating Inappropriate Content

Zihong Lin, Yucheng Tao, Haopeng Chen
P3.19 - 9004 | FedTS: Leveraging Teacher-Student Architecture in Federated Learning against Model Heterogeneity in Edge Computing Scenarios

Extended Abstracts – Poster Presentations

Prithviraj Tarale
P3.20 - A018 | Distributed Multi-Agent Lifelong Learning

Nobuhiko Wagatsuma
P3.21 - A019 | Analysis of the Mechanism for a Deep Convolutional Neural Network Model to Predict Attentional Selection Using Adversarial Noise

Chamroeun Se
P3.22 - A020 | SHAP-based Ensemble Learning for Assessing Key Factors Influencing Intention to Use Intercity Railway Service

Zhaoxin Wang
P3.23 - A021 | The Potential of Spiking Neural Networks in Predicting Earthquakes in New Zealand

Yifei Yang
P3.24 - A022 | Enhancing Gait Trajectory Prediction through an Adaptive Template Switching for Efficient Gait Prediction

Jiajing Zhang
P3.25 - A023| BG-Planner: A Planning-Based Decision-Making Model for Playing Board Game

Anni Zheng, Wei Qi Yan
P3.26 - A024 | Attention-Based Multimodal Fusion Model For Breast Cancer Diagnostics

Florian Bednarski
P3.27 - A026 | Neural Models of Infants and Child Development
Labani Halder
P3.28 - A027 | Data obfuscation using a > two-layered, controlled approach

Dongnyeong Heo
P3.29 - A028 | Dynamic Preference Multi-Objective Reinforcement Learning for Internet Network Management

Jia Cheng Hu
P3.30 - A029 | The Bidirectional Awareness Induction in Autoregressive Sequence-To-Sequence Models

Vithya Yogarajan
P3.31 - A030 | A Comparative Study of Generative Language Models and Bias Evaluations

Vithya Yogarajan
P3.32 - A031 | Choose Your Prompt Carefully!

Mahsa Mohaghegh, Moe Thu Zar
P3.33 - A032 | Leveraging User Activity Insights to Enhance Notifications Overload in a Knowledge-Sharing Platform

Oral Presentations

Tuesday, 3 December 2024

Session 1

11.00 – 12.30 Session 1A - Machine Learning 1

CHAIR: **Seichi Ozawa**
LOCATION: WG701

11.00 *Joseph Emmanuel Dayo, Prospero Naval*
0953 | USAM-Net: A U-Net based network for improved stereo correspondence and scene depth estimation using features from a pre-trained image segmentation network

11.15 *Ahmad Shahi, Mamehgol Yousefi, Brendon Woodford, Farhaan Mirza, Tapabrata Chakraborti*
2155 | Conformal Adversarial Generative Ensemble

11.30 *Takanori Hashimoto, Teijiro Isokawa, Naotake Kamiura*
2336 | Virtual Command Allocation: Enhancing Hexapod Robot Locomotion through Goal-Conditioned Reinforcement Learning

11.45 *Mashfiqul Huq Chowdhury, Yuichi Hirose, Stephen Marsland, Yuan Yao*
3071 | Deep mixtures of variational autoencoders model for representation learning and clustering tasks

12.00 *Lena Sasal, Daniel Busby, Abdenour Hadid*
3131 | TempoKGAT: A Novel Graph Attention Network Approach for Temporal Graph Analysis

12.15 *Alexander Sboev, Dmitry Kunitsyn, Yury Davydov, Danila Vlasov, Alexey Serenko, Roman Rybka, Yuanchao Liu*
3176 | Direct Correlational Spike-Timing-Dependent Plasticity Learning Applied to Classification Tasks

11.00 – 12.30 Session 1B - Causality & Explainable AI

CHAIR: **Thomas Li**
LOCATION: WG802

11.00 *Nathan Young, Michael Witbrock*
4166 | Transformers As Approximations of Solomonoff Induction

11.15 *Mohamed Dwedar, Fatih Bayram, Alexander Jesser Jesser*
9059 | Real-Time Decentralized M2M Decision-Making via Deep Learning and Incremental Learning

11.30 *Muhammad Waqas, Tomas Maul, Iman Yi Liao, Amr Ahmed*
6966 | Post Hoc Interpretability of Deep Learning Models for Breast cancer histopathological images with Variational Autoencoders

11.45 *Changjiang Ma, Zhaoqi Kuang, Yuan Yan, Aojin Li, Chen Luo, Yun Li*
8464 | Gray-Box Identification of a Photovoltaic Power Generation System

12.00 *Vishnu S Nair, Naga Gayathri Matcha, Akash Sharma, Jayaraj Joseph, Mohanasankar Sivaprakasam*
9349 | Mechanistic Interpretability of Transformers in Non-Dictionary Setting using Toy Datasets

11.00 – 12.30 Session 1C - WORKSHOP: AI Education*
CHAIR: **Mike Watts**
LOCATION: WG308

11.00 *Zhenyu Xu, Victor S. Sheng, Kun Zhang*
1521 | Logic Error Localization in Student Programming Assignments Using Pseudocode and Graph Neural Networks

11.15 *Kirill Krinkin, Tatiana Berlenko*
7455 | Flipped University: LLM-Assisted Lifelong Learning Environment

11.00 – 12.30 Session 1D - WORKSHOP: The 17th International Workshop on Artificial Intelligence and Cybersecurity (AICS2024)*
CHAIR: **Ian Welch & Paul Pang**
LOCATION: WG126

11.00 *Kaisei Fujiwara, Akira Yamada, Seiichi Ozawa, Chanho Park*
5347 | A Study on Time-Resilient Features for Detecting TLS Encrypted Malware Traffic

11.15 *Yuan Li, Yan-Ming Zhang, Fei Yin, Lin-Lin Huang*
2656 | Unsupervised Document Image Tampering Localization via Anomaly Detection

11.30 *Faizad Ullah, Muhammad Sohaib Ayub, Ali Faheem, Mian Muhammad Awais, Asim Karim*
8623 | Towards Unveiling the Potential of Fuzzy Values as Features: A Comparative Study in Cybercrime Text Analysis

11.45 *Yiqun Ma, Wenrui Wang, Siyuan Wang, Xi Yang, Yuyao Yan*
5953 | Enhancing Semantic Segmentation in Open Compound Domain Adaptation through Mixed Image and Epistemic Uncertainty

12.00 *Chong Zhang, Mingyu Jin, Qinkai Yu, Haochen Xue, Xi Yang, Xiaobo Jin*
2286 | Accelerating Attentional Generative Adversarial Networks with Sampling Blocks

12.15 *Vicky Ngo, Sira Yongchareon, Ji Ruan, Mahsa Mohaghegh, Roopak Sinha*
0609 | Cross-Domain Evaluation of CNN-based and Generative Adversarial Networks Models' Generalisability for (D)DoS Attack Detection in CPS and IoT

11.00 – 12.30 Session 1F ONLINE - Causality & Explainable AI 1

Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

11.00 *Ying Wang, Yuchuan Luo, Zhenyu Qiu, Lin Liu, Shaojing Fu*
0200 | Defend from Scratch: A Diffusion-based Proactive Defense Method for Unauthorized Speech Synthesis

11.15 *Zijie Zhai, Junchen Shen, Ping Li, Jie Zhang, Kai Zhang*
4750 | Flexible-order Feature-interaction for Mixed Continuous and Discrete Variables with Group-level Interpretability

11.30 *Erteng Liu, Kewei Gao, Xing Zhou, Sen Lin, Jianhai Chen, Zunlei Feng, Yijun Bei*
5903 | Critical Feature Sifting and Dynamic Aggregation for Anomalous Audio Sequence Detection

11.45 *Hao Wan, Keyang Cheng, Hao Zhou*
8667 | Parallel Interpretation Network via Semantic Visual Probe and Counterfactual Verification

12.00 *Sharia Arfin Tanim, Al Rafi Aurnob, Md Rokon Islam, Md. Saef Ullah Miah, M. Mostafizur Rahman, Mufti Mahmud*
9280 | Explainable Federated Stacking Models with Encrypted Gradients for Secure Kidney Medical Imaging Diagnosis

12.15 *Mingfeng Huang, Guoheng Huang, Xiaomin Zhou, Chi-Man Pun, Xuhang Chen, Xiaochen Yuan, Guo Zhong*
0635 | MMCIE: Multi-Order Multivariate Coalition Internal-External Interaction for Image Explanation

11.00 – 12.30 Session 1G ONLINE - Computational Intelligence

Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

11.00 *Tong Zhang, Weiping Pan, Hao Li*
0260 | Efficient Automatic Arrangement Algorithm for Computing In Memory Chips Array

11.15 *Tian Wang, Chuang Wang*
0590 | Latent Neural Operator Pretraining for Solving Time-Dependent PDEs

11.30 *Zhiyuan Zhang, Caixin Guo, Qichao Zhang, Xiaoxu Wu, Guogang Liao Liao, Yongkang Wang, Xingxing Wang, Dongbin Zhao*
3639 | LLM-AC: Large Language Models Enhanced Actor-Critic for Recommendation Systems

11.45 *Songwei Zheng, Dong Zhang, Chunyan Yu, Longlong Zhu, Zhanchao Huang, Danhong Zhu, Linghui Jia, Hao Yu*
3670 | SwinDDnet: A Dual Domain Network Based on Swin Transformer for CT Metal Artifact Reduction

12.00 *Yu Zhou, Xinhai Chen, Yong Dong, Jie Liu*
7680 | MFOL: A Novel Multi-Fidelity method for Operator Learning-based Parametric PDEs Solving

12.15 *Hao Chen, Bin Zhang, Guoliang Fan*
6886 | GATE: Guided Contrastive State Space for Multi-Agent Reinforcement Learning

11.00 – 12.30 Session 1H ONLINE - Control and Decision Theory
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

11.00 *Zekeng Zeng, Youzhi Zhang, Peipei Yang, Mingyi Zhang, Junge Zhang*
3031 | Computing Approximate Nash Equilibrium in Two-Team Zero-Sum Games by NashConv Descent

11.15 *Guangchong Zhou, Zeren Zhang, Guoliang Fan*
1907 | MAMoE: Flexible and Efficient Decision-Making Framework for Multi-Agent Cooperation

11.30 *Mengwei Niu, Hui Zhao, Qingjie Wang, Aidi Liu, Mingwen Zheng, Xin Li*
2513 | The Predefined Time Stability Analysis and Synchronization Control of Fractional Order Multimodal Neural Network

11.45 *Yingjie Gong, Qinmin Yang, Wenchao Meng*
4578 | Nonlinear Adaptive Pitch Control for Floating Wind Turbines

12.00 *Chandrajit Bajaj, Minh Nguyen, Conrad Li*
4753 | Optimally Controlled Protein Side-Chain and Folding using Stochastic Pontryagin

12.15 *Xuemin Hu, Shen Li, Yingfen Xu, Yongsheng Pan, Bo Tang, Long Chen*
7794 | Contrastive Novelty for Anti-exploration in Offline Reinforcement Learning

11.00 – 12.30 Session 1I ONLINE - Machine Learning 1
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

11.00 *Xu Zou, Chang You, Runjie Zhao, Haozheng Yang, Xuelin Cheng*
0002 | ScaleMixer: A Multi-Scale MLP-Mixer Model for Long-Term Time Series Forecasting

11.15 *Haochen You, Baojing Liu*
0948 | Application of Pseudometric Functions in Clustering and a Novel Similarity Measure Based on Path Information Discrepancy

11.30 *Ruixuan Ren, Tiejun Li, Xinru Wang, Hanqing Li, Yuhan Tang, Yi Xie, Jianmin Zhang*
1143 | TaW-PeRCNN:Time-adaptive Weights Physics-encoded Recurrent Convolutional Neural Network for Solving Partial Differential Equations

11.45 *Kaiyue Wu, Changwu Huang, Xin Yao*
1480 | An Explainable Error Detection Approach for Machine Learning

12.00 *Xinxin Shi, Ye Lin, Xianhe Cheng, Peixuan Zhang, Dingkang Yang, Lihua Zhang*
1599 | T-GET3D: A Generative Model of High-Quality 3D Textured Shapes Guided by Texts

12.15 *Jiaosai Li, Zhen Liu, Zhenfeng Su, Zhiming Zhou*
2886 | RBHAR: Role-Based Heterogeneous Action Representation in Multi-Agent Reinforcement Learning

11.00 – 12.30 Session 1J ONLINE - Neural Network Models 1
Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

11.00 *Fanhu Zeng, Zhen Cheng, Fei Zhu, Xuyao Zhang*
9980 | CLIPMisD: Few-Shot Prompt Learning for Misclassification Detection with Vision Language Model

11.15 *Yuze Bai, Yingjie Sun, Chengping Zheng, Yizhou Li*
0656 | DDFGNN: Dual-dimensionality Fusion Graph Neural Network for Social Bot Detection

11.30 *Lei Zhou, Yuqi Zhang, Nancy Wang, Jian Yu, Guiling Wang, Xin Zheng*
2405 | A Motif-based Graph Convolution Network for Stock Trend Prediction

11.45 *Shuming Liang, Yu Ding, Bin Liang, Zhidong Li, Siqi Zhang, Yang Wang, Fang Chen*
2554 | VAGNN: Advancing the Generalization of Graph Neural Networks

12.00 *Vibha Bharilya, Neetesh Kumar*
4379 | TrajAngleNet: Transformer-based Trajectory Prediction through Multi-Task Learning with Angle Prediction

12.15 *Aoao Wei, Xitie Zhang, Suping Wu, Shaohua Yang, Junfeng Zhao, Kehua Ma*
5091 | Correlation Disentangling and Spatio-Temporal Cooperative Optimizing Network for Temperature Prediction Revision

11.00 – 12.30 Session 1K ONLINE - Time Series Analysis & Optimisation
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

11.00 *Yuntao Ye, Xiaoyu Bao, Jinghuang Chen*
3349 | High-Quality Sleep Vertex Sharp Wave Dataset and Automated Detection Model Constructed Using Active Learning

11.15 *Ce Zhang, Dapeng Li, Lin Lin, Xinyue Lu, Guoliang Fan*
3999 | APS: An Adaptive Policy Switching Framework to Improve the Generalization of Branching Policy

11.30 *Jingyang Zhao, Mingyu Xiao*
8861 | Improved Approximation Algorithms for the Cumulative Vehicle Routing Problem

11.45 *Yuelin Qu, Wei Li, Huarong Wu*
4115 | An elite solution generation algorithm for constrained multiobjective optimization

12.00 *Hailong Liu, Bo Ding, Lianghao Li, Haibo Mi*
2950 | M3ixTS: Mixing of Multi-patch and Multi-view For Time Series Forecasting

12.15 *Gang Li, Mingchao Ge, Mingle Zhou, Jin Wan, Delong Han*
7160 | Time Series Anomaly Detection via Temporal Dependencies and Multivariate Correlations Integrating

11.00 – 12.30 Session 1L ONLINE - Affective Computing & Brain Computer Interfaces
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

11.00 *Yuan Zhang, Xiaomei Tao, Hanxu Ai, Tao Chen, Yanling Gan*
1488 | Multimodal Emotion Recognition by Fusing Video Semantics in Video Learning Scenarios

11.15 *Yang Li, Yuan Zong, Cheng Lu, Jincen Wang, Wenming Zheng*
1537 | Global-Local Distribution Alignment for Unsupervised Cross-Dataset EEG-Based Major Depressive Disorder Detection

11.30 *Min Jiang, Xinhui Yang, Jun Kong*
4843 | Situation-Speaker Interactive Network with Joint Contrastive Learning for Few-Shot Emotion Recognition in Conversation

11.45 *Hesam Akbari, Wael Korani, Reza Rostami, Reza Kazemi, Junhua Ding*
7596 | UNT-AT: A Robust Software to Predict the Outcome of Depression Therapies Using EEG Signals

12.00 *Jialong Liang, Weifan Long, Zhe Wang, Peng Zhai, Lihua Zhang*
1502 | STGCN-DHD: Spatio-Temporal Graph Convolutional Network for EEG-Based Driving Hazard Detection

12.15 *Pan Yang, Dan Wang, Baiwen Zhang, Jiaming Chen, Meng Xu, Yuanfang Chen*
2969 | Research Progress on Attention Mechanisms in Brain-Computer Interface Decoding

11.00 – 12.30 Session 1M ONLINE - Bioinformatics
Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

11.00 *Yuchen Wang, Xingjian Chen, Zetian Zheng, Weidun Xie, Fuzhou Wang, Lei Huang, Ka Chun Wong*
0009 | scR2P_Efficient: Parameter-Efficient Fine-Tuning Enhanced Single-cell LLM for RNA to Proteome Translation

11.15 *Kun Hu, Mingjun Xiao, Xin Chen, Qian Cao, Binlan Wu*
2501 | CRAFT: Consistent Representational Fusion of Three Molecular Modalities

11.30 *Wentao Cui, Chuan Hu, Chen Fang, Qingqing Long, Jiahao Zhang, Xuezhi Wang, Yuanchun Zhou*
2592 | AMPCL: Adaptive Meta-Path Selection and Contrastive Learning for miRNA-Disease Prediction

11.45 *Muhammad Toseef, Olutomilayo Olayemi Petinrin, Xiangtao Li, Ka-Chun Wong*
1369 | Malignant cell annotations via domain generalization for brain cancer spatial transcriptomics

12.00 *Sarwan Ali, Prakash Chourasia, Murray Patterson*
3588 | DeepPWM-BindingNet: Unleashing Binding Prediction with Combined Sequence and PWM Features

12.15 *Ge Kong, Jianing Wang, Huaqing Zhu, Yuanhao Fan*
4331 | Messenger RNA Subcellular Localization via Hybrid Feature Extraction and Ensemble Learning

11.00 – 12.30 Session 1N ONLINE - Biomedical Informatics 1

Zoom Meeting ID: https://us06web.zoom.us/j/82564004590

11.00 *Taslim Murad, Prakash Chourasia, Sarwan Ali, Murray Patterson*
7636 | Advancing Protein-DNA Binding Site Prediction: Integrating Sequence Models and Machine Learning Classifiers

11.15 *Yongwei Jiang, Xiaoqing Chen, Xiuding Cai, Dong Miao, Qing Xu, Xin Wang, Yuanling Tang*
0305 | DFSegmentation: Multi-modal medical image segmentation based on feature decomposition of frequency domain correlation

11.30 *Minh Nguyen, Phuong Le*
0527 | Generalized knowledge-enhanced framework for biomedical entity and relation extraction

11.45 *Xilin Yan, Fuyan Zhang, Yuqi Li, Qiu Zhen, Boyuan Zhao, Jiarui Li, Hansheng Zeng, Yihao Chen, Chuanguang Yang*
1397 | CPG: Channel Pruning with DFS Guided Grouping for Efficient Medical Image Segmentation

12.00 *Jia Deng, Dapeng Cheng, Yanyan Mao, Jialong Kang, Liunian Bian, Feng Zhao*
1928 | Attention based multi-scale feature conservation network for medical image segmentation

12.15

Session 2

13.30 – 15.00 Session 2A - Machine Learning 2

CHAIR: **David Brown**
LOCATION: WG701

13.30 *M. Sajid, A. Quadir, M. Tanveer*
3218 | Wave-RVFL: A Randomized Neural Network Based on Wave Loss Function

13.45 *Wenjie Lei Lei, Chi Sing Leung, Kwok-Wa Leung*
3384 | Robust Noise Tolerant Algorithm for Randomized Neural Network

14.00 *Solarica Palit, Chandra Sekhar Chellu*
5956 | MetaFix: Semi-Supervised Model Agnostic Meta-Learning using Consistency Regularization

14.15 *Sota Yoshida, Takahiro Iinuma, Sou Nobukawa, Eiji Watanabe, Teijiro Isokawa*
8497 | Multi-Timescale Processing with Heterogeneous Assembly Echo State Networks

14.30 *Koki Kinugasa, Koichiro Yamauchi*
9239 | Pruning neural network parameters using recurrent neural networks

13.30 – 15.00 Session 2B - Natural Language Processing 1

CHAIR: **Zhibing Liu**
LOCATION: WG802

13.30 *Chunzhen Jin, Peng Cao, Osmar Zaïane*
4508 | Role-playing based on Large Language Models via Style Extraction

13.45 *Michał Zwierzyński, Adrian Horzyk*
6162 | Advanced Stock Market Forecasting Using Synergic of Sentiment Analysis and Association Rule Mining

14.00 *Dengya Zhu, Sirui Li, Nik Thompson, Kok Wai Wong*
9775 | Open-Source Large Language Models Excel in Named Entity Recognition

14.15 *Lucas Maisonnave, Cyril Moineau, Olivier Bichler, Fabrice Rastello*
9791 | Precision Where It Matters: A Novel Spike Aware Mixed-Precision Quantization Strategy for LLaMA-based Language Models

14.30 *Mridula Verma, Shimil Babu*
3423 | Silent Intruders: Dissecting Textual Backdoor Attacks in Federated Dialog Systems

14.45 *Yuxiang Li, Shmuel Tyszberowicz, Zhiming Liu, Bo Liu*
7440 | A Hybrid Prompt Method for Few-shot Named Entity Recognition

13.30 – 15.00 Session 2F ONLINE - Causality & Explainable AI 2
Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

13.30 *Yonghe Zhao, Yuezhu Wang, Shuai Fu, Yun Peng, Huiyan Sun*
1431 | VLUCI: Variational Learning of Unobserved Confounders for Counterfactual Inference

13.45 *Ruixuan Ning, Lei Chai*
1561 | Revisiting the Trade-Off between the Performance of Adversarial and Normal Examples on NLP Few-shot Tasks

14.00 *Zhaofeng Niu, Xingfu Cheng, Chuanguo Shen, Bowen Wang, Guangshun Li, Liangzhi Li*
6088 | WSSS-DM+: Advancing Improvements in Weakly Supervised Semantic Segmentation Using Diffusion Models

14.15 *Zepeng Sun, Yong Guan, Jie Zhang, Zhiping Shi, Zhenzhou Shao*
9294 | Causal Policy Learning from Self-Play for Effective Non-Prehensile Planar Manipulation

14.30 *Dawei Dai, Hao Zhu, Shuyin Xia, Guoyin Wang*
1704 | Granular-ball Representation Learning for Deep CNN on Learning with Label Noise

14.45 *Bo-Ying Lai, Chun-Hua Chen, Xin-Xin Xu, Yi Jiang, Zhi-Hui Zhan*
8917 | A Novel Elitism-Based Genetic Algorithm with Gradient-based Local Search for Non-cooperative Game

13.30 – 15.00 Session 2G ONLINE - Healthcare 1
Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

13.30 *Xinyi Fang, Yuqi Luo, Marco Simões, Yapeng Wang, Xu Yang*
9956 | THTL: An Effective Two-Step Heterogeneous Transfer Learning Framework for Early Laryngeal Cancer Identification

13.45 *Yaxin Zhang, Shuting Chang, Yijian Wen, Peng Du, Xiaodong Ju, Zhongke Wu, Xingce Wang*
1795 | Video-Driven Comprehensive 3D Hip Joint Motion Model for FAI Auxiliary Diagnosis

14.00 *Mejbah Ahammad, Md. Ashraful Babu, Md. Mortuza Ahmmed, M. Mostafizur Rahman, Mufti Mahmud*
2482 | LungCANet: A Novel Deep Co-Attention Convolutional Neural Network Architecture for High-Precision Lung Cancer Morphological Analysis and Classification

14.15 *Yang Liu, Quanqiang Wang, Shuo Zhang, Wanjun Zhang*
3428 | ATFN: An Efficient Multi-Modal Depression Assistance Diagnostic Model Based on Multi-Channel Attention Mechanism

14.30 *Zhipeng Zhang, Wenting Ma, Xiaohang Yuan, Ningwei Xie, Yuxin Xie, Xiaolin Wang, Meng Guo, Xinggang Chai, Zhenjie Yao*
3870 | Domain Knowledge Based Temporal-spatial Graph Convolution Network for ECG Recognition

14.45 *Ling Hu, Tongqing Zhou, Zhihuang Liu, Fang Liu, Zhiping Cai*
8058 | Split Learning on Multi-source Cross-streams

13.30 – 15.00 Session 2H ONLINE - Human Activity Recognition 1
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

13.30 *Hongbin Liang, Hezhe Qiao, Wei Huang, Qizhou Wang, Mingsheng Shang, Lin Chen*
5110 | Temporal-contextual Event Learning for Pedestrian Crossing Intent Prediction

13.45 *Ziyu Yao, Yuexian Zou*
6386 | Towards Generalizable Repetitive Action Counting with Salient Poses

14.00 *Jinrui Geng, Yong Lu, Ruishi Liang, Jianlin Li, Hannan Shen*
6574 | Spatio-Temporal Graph Convolutional Networks for Pedestrian Trajectory Prediction

14.15 *Yiran Huang, Yexu Zhou, Haibin Zhao, Till Riedel, Michael Beigl*
9846 | Unsupervised Personalized Deep Learning for Wearable Human Activity Recognition

14.30 *Lijuan Zhou, Zhihuan Liu*
1962 | Enhancing Zero-Shot Skeleton-Based Action Recognition with Multi-Semantic Action Descriptions

14.45 *Jiang Fang, Zhicheng Zhang, Haohah He, Jiyan Sun, Yinlong Liu, Wei Ma*
6641 | Bootstrap Wi-Fi's Own Latent: Towards Cross-Environment 3D Human Pose Estimation Using Wi-Fi

13.30 – 15.00 Session 2I ONLINE - Machine Learning 2
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

13.30 *Chao Wang, Shuai Gao, Xinming Sun, Shiji Liu, Wanli Lv*
3231 | Dual Cross Fusion Deep-unfolding Transformer for Hyperspectral Image Reconstruction

13.45 *Douglas Almeida Vidal, Rodrigo Gabriel Ferreira Soares, Glauco Gonçalves, Aline Priscila de Souza Costa Feitosa, Kauan Tavares, Marcos César da Rocha Seruffo*
3351 | A weight averaging neural network for semi-supervised data stream learning

14.00 *Xiangyu Pang, Dongping Liao, Xitong Gao, Juanjuan Zhao, Kejiang Ye*
3729 | Tackling Periodic Data Shifts in Federated Learning with Historical Multi-branch Distillation

14.15 *Yanqi Cui, Hongyun Huang, Yonglong Ni, Zuohua Ding*
3758 | Multi-Scale Attention Convolutional Network and Reinforcement Learning for Flexible Job Shop Scheduling

14.30 *Yong Wang, Mingxiao Feng, Haolin Song, Wengang Zhou, Houqiang Li*
4194 | Temporal State Prediction and Sequence Recovery for Multi-Agent Reinforcement Learning

14.45 *Samuel Stocksieker, Denys Pommeret, Arthur Charpentier*
4277 | Data Augmentation with Variational Autoencoder for Imbalanced Dataset

13.30 – 15.00 Session 2J ONLINE - Neural Network Models 2
Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

13.30 *Jiawei Yao, Junfeng Yao, Yong Yang, Chunyang Huang*
5111 | Hierarchical Adaptive Position Encoding-based Transformer for Point Cloud Analysis

13.45 *Wenzhe Zhang, Zixue Xiang, Ming Sun, Wen Yao*
5508 | In-context Learning for Temperature Field Reconstruction under Multiple Layouts

14.00 *Lei Yang, Yuhan Jiang, Kaixin Wang, Pinjie Zhao, Kangshun Li*
5657 | EL-LSTM: A Multivariate Time Series Forecasting Model Combining Spiking Neurons and Long Short-Term Memory Networks

14.15 *Yanjie Zhao, Zhongwen Xiao*
8659 | LCNet: Lightning Hierarchical Convolution for Occupancy Flow Prediction

14.30 *Binbin Zeng, Zijie Zhai, Yu Dai, Kai Zhang*
0443 | Feature Crossing Attention Network with Field-Augmented Relational Tensors for CTR Prediction

14.45 *Tao Cai, Xuewen Xia, Dejiao Niu, Lei Li, Chengyu Zhang, Yuxuan Yang*
0770 | Heterogeneous Graph-Based HTM Temporal Memory Algorithm

13.30 – 15.00 Session 2K ONLINE - Human Computer Interaction
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

13.30 *Yanliang Guo, Qing Yu, Mingshuo Wang, Yuhui Zhou*
2526 | A Global Interactive and Bottleneck Fusion Model for Multi-Intent Spoken Language Understanding

13.45 *Xin Sheng, Zheng Wang, Haoyang Zhang, Tao Zhen, Pengfei Ren, Liang Xie, Ye Yan, Erwei Yin*
2883 | GloveTyping: A Hand Gesture Recognition System for Text Input Using a Hierarchical Framework with Attention Mechanism

14.00 *Yongfeng Qi, Anye Liang*
0963 | Multi-level Feature-based Semantic Guided Neural Network for Skeleton Action Recognition

14.15 *Bin Zhang, Yong Gu*
2930 | Feature-Enhanced Lightweight Network for Accurate 2D Hand Pose Estimation

14.30 *Liang Yang, Chao Xu, Xin Wang*
3748 | Cost-Effective Medical Dialogue Summarization with Fine-Tuned Compact LLMs

14.45 *Weihua Qiang, Shizhan Chen, Xingyu Zhang, Yakun Zhang, Xusheng Wang, Changyan Zheng, Liang Xie, Ye Yan, Erwei Yin*
5312 | Advancing Lip-Reading for Unseen Speakers through Fusion and Augmentation of Spatio-temporal Landmarks and Visual Features

13.30 – 15.00 Session 2L ONLINE - Recommender Systems 1

Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

13.30 *Jiaxuan Cao, Taoran Fu, Min Yang, Ziqian Wang*
0865 | MRF: Multimodal Refine and Fusion based Multimedia Recommendation

13.45 *Yongwei Qiao, Ranhao Guo, Chunjing Xiao, Honghai Zhang, Xuecheng Wu*
7050 | Temporal Semantic Scoring Path aware Multi-Embedding Sequential Recommendation

14.00 *Shengwei Du, Zhichao Wang, Yixuan Ma*
8163 | Online Labor Market Task Recommendation via Time-weighted Diffusion Model

14.15 *Haibo Liu, Hancheng Lu, Hui Li, Liang Wang, Jinjia Peng*
8439 | Multi-Pattern Joint Denoising Sequential Recommendation with Diffusion Model

14.30 *Qichang Geng, Xueming Wang, Chuangying Zhu, Liang Chang, Yu Zeng, Yaorui Gan*
0854 | Mitigating Popularity Bias for Multi-View Group Recommendation

14.45 *Gechen Jia, Yongli Wang, Dongmei Liu*
1035 | Multimodal Recommendation Algorithm Enhanced by User Isomorphic Graph

13.30 – 15.00 Session 2M ONLINE - Big Data Analytics

Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

13.30 *Zhixiao Zheng, Lei Li, Mengxuan Zhang, Wen Hua, Ziyi Liu*
0647 | Ranking Region-based OD-Betweenness Centrality in Road Networks

13.45 *Veena Rage, Yutaka Watanobe, Deepika Saxena*
3781 | Mining Fuzzy Partial Periodic Frequent Patterns in Very Large Temporal Databases

14.00 *Abhishek Tripathi, Rajesh Dwivedi, Ashutosh Samantaray, Madhav Kadam, Aruna Tiwari, Narendra S Chaudhari, Milind Ratnaparkhe*
0394 | Scalable Distributed Laplacian Score

14.15 *Siyu Wang, Yuxiao Huang, Boyu Hou*
1579 | Enhanced Dynamic Vehicle Routing via Knowledge Transfer from Customer Representations

14.30 *Jianlou Lou, Zhaoyang Hong, Guang Huo*
4133 | Fusion of SDAE and Improved K-shape for Power User Behavior Analysis

13.30 – 15.00 Session 2N ONLINE - Biomedical Informatics 2

Zoom Meeting ID: https://us06web.zoom.us/j/82564004590

13.30 *Mengyu Sun, Pengyao Xu, Xiaoyun Xie, Yinglong Wang*
2397 | DSNet: A Decoupled Siamese Network for ECG Classification

13.45 *Zhiyu Chen, Xinhua Zeng, Kai Cheng, Yu Hong, Run Fang, Chengsheng Liao, Jerome Plain, Ying Liu*
3002 | A Lightweight Multi-Scale Efficient Model for Breast Cancer Detection and Classification in Mammograms

14.00 *Xi Xiao, Wentao Wang, Jiacheng Xie, Lijing Zhu, Gaofei Chen, Zhengji Li, Tianyang Wang, Min Xu*
3482 | HGTDP-DTA: Hybrid Graph-Transformer with Dynamic Prompt for Drug-Target Binding Affinity Prediction

14.15 *Yuping Zhong, Guogiang Han, Zhenwei Shi, Zaiyi Liu, Chu Han, Jiatai Lin*
4755 | Active Learning by Feature Perturbation for Medical Image Classification

14.30 *Xianwei Jiang, Bo Su*
5492 | A Multi-Encoder Pyramid U-Net for Multimodal Brain Tumor Segmentation

14.45 *Xiangju Kong, Shuwang Zhou, Hui Liu, Tianlei Gao, Zhe Zhu*
6581 | An Encoder-Decoder Based Approach for ECG Delineation

Session 3

15.30 – 17.00 Session 3A - Machine Learning 3

CHAIR: **Mridula Verma**
LOCATION: WG701

15.30 *Mushir Akhtar, Ritik Mishra, M Tanveer, Mohd. Arshad*
9701 | Advancing RVFL networks: Robust classification with the HawkEye loss function

15.45 *Yilin He, Emily Ding, Robert Hou*
9930 | Hide-and-Seek GANs for Generation with Limited Data

16.00 *Namjin Seo, Dongnyeong Heo, Heeyoul Choi*
0871 | Advanced VNF Scaling in Network Management with Reinforcement Learning and Graph Neural Networks

16.15 *Sourasekhar Banerjee, Ali Dadras, Alp Yurtsever, Monowar Bhuyan*
3578 | Personalized Multi-tier Federated Learning

16.30 *Yufeng Xie, Han Wang, Qingshan Li*
3954 | Return-Aware Offline Reinforcement Learning via Multi-Modal Sequence Modeling

16.45 *Meena Kumari, Kenneth Johnson*
4312 | Predicting Resource Requirements for Disaster Managers Using Machine Learning

15.30 – 17.00 Session 3B - Brain Computer Interfaces

CHAIR: **Robin Palmer**
LOCATION: WG802

15.30 *Artem Pilzak, Jean-Philippe Thivierge*
7264 | Top-Down Backpropagation in Deep Feedforward Neural Networks

15.45 *Zakia Turabee, David J. Brown, Mufti Mahmud, Andreas Oikonomou, Andrew Burton, Nicholas Shopland, Muhammad Arifur Rahman, Dawn Clarke, Fiona Gray*
7863 | A Privacy-Preserved Machine Learning Model for Engagement and Meltdown Detection in Children With Autism

16.00 *Chayut Bunterngchit, Jiaxing Wang, Jianqiang Su, Yihan Wang, Shiqi Liu, Zeng-Guang Hou*
1647 | Enhanced Cross-Subject Classification of Hybrid EEG-fNIRS Data Using the Simplified Multimodal Transformer Network

16.15 *Rabia Naseer Rao, Hiran Thabrew, Seyed Reza Shahamiri*
7763 | Investigating Diagnostic Data and Performance Implications in the Autism AI Dataset

15.30 – 17.00 Session 3C Computational Intelligence 1

CHAIR: **Malek Mouhoub**

LOCATION: WG308

15.30 *Yun Zhou, Gang Chen, Bing Xue, Mengjie Zhang, Jeremy S. Rooney, Kirill Lagutin, Andrew MacKenzie, Keith C. Gordon, Daniel P. Killeen*
0665 | Machine Learning for Raman Spectroscopy-based Cyber-Marine Fish Biochemical Composition Analysis

15.45 *Meng Yi, Vincent C.S. Lee, Yifan Zhang, Peisong Li, Peng Yang*
5291 | Computational Intelligence for Optimizing UAV Positioning and Task Scheduling in UAV-assisted MEC Systems

16.00 *Katharina Flügel, Daniel Coquelin, Marie Weiel, Charlotte Debus, Achim Streit, Markus Götz*
8214 | Feed-Forward Optimization With Delayed Feedback for Neural Network Training

16.15 *Wenzhao Liu, Congying Han, Tiande Guo, Haoran Li, Zicheng Zhang*
8821 | Fusion of Multi-level Information: Solve Large-scale Traveling Salesman Problem with an Efficient Framework

16.30 *Mingduo Lin, Bo Zhao, Derong Liu*
9498 | Massive Multi-Agent Mean-Field Game Using Online Federated Adaptive Critic-Density Learning

16.45 *Nikhil Anil Sneha, Seyed Reza Shahamiri, Nasser Giacaman*
4219 | Dynamic Sign Language Recognition through an Augmented Reality Environment

15.30 – 17.00 Session 3D Control Theory and Optimisation

CHAIR: **Siddhartha Bhattacharyya**

LOCATION: WG126

15.30 *Zaid Al-Tameemi, Tek Lie, Ramon Zamora, Frede Blaabjerg*
2026 | Mixed Time-State Dependent Distributed Event-Triggered Consensus Protocol of a DC Microgrids Cluster

15.45 *Sihao Wu, Xingyu Zhao, Xiaowei Huang*
5462 | Data Augmentation for Continual RL via Adversarial Gradient Episodic Memory

16.00 *John Sum, Andrew Chi-Sing Leung, Janet C.C. Chang*
9673 | A Leaky Wang kWTA

16.15 *Jakub Skrzyński, Adrian Horzyk*
5656 | Efficient Pruning and Compression Techniques for Convolutional Neural Networks to Preserve Knowledge and Optimize Performance

16.30 *Igor Ratajczyk, Adrian Horzyk*
6259 | Enhancing Convnets with Pruning and Symmetry-Based Filter Augmentation

15.30 – 17.00 Session 3E - Application of Computational Intelligence in Engineering

CHAIR: **Reza Enayatollahi**

LOCATION: WG404

15.30 *Zhongsheng Wang, Sijie Wang, Jia Wang, Yung-I Liang, Yuxi Zhang, Jiamou Liu*
2527 | Weak Supervision Techniques towards Enhanced ASR Models in Industry-level CRM Systems

15.45 *Wassim Nijaoui, Manar Amayri*
4301 | Behavior-Driven Data Augmentation for Non-Intrusive Load Monitoring

16.00 *Xinming Shi, Leandro L. Minku, Xin Yao*
0939 | Novel Memristive Reservoir Computing with Evolvable Topology for Time Series Prediction

16.15 *Zhibing Liu, Biyu Zhou, Weigang Zhang, Xuehai Tang, Ruixuan Li, Songlin Hu*
9357 | ProFetch: Accelerate Deep Recommendation System Training with Proactively Designed Data Layout and Dynamic Prefetching

15.30 – 17.00 Session 3F ONLINE Data Mining 1

Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

15.30 *Dapeng Li, Feiyang Pan, Jia He, Zhiwei Xu, Dandan Tu, Guoliang Fan*
2931 | Style Miner: Find Significant and Stable Factors in Time Series with Constrained Reinforcement Learning

15.45 *Chuting Lin, Yumeng Qian, Liang Song, Hanlun Wu, Liming Wang, Yongxuan Lai*
9170 | Ensemble Learning Prediction Based on Comprehensive Factors for Portfolio Optimization

16.00 *Jigui Zhao, Yurong Qian, Kui Wang, Shuxiang Hou, Jiaying Chen*
4160 | CFin-NER:Research on Chinese Financial Entity Recognition Based on Comparative Learning

16.15 *Zhen Huang, Shang Liu, Ke Zhao, Yong Xiang*
1733 | TDAT: A Real-time Two-stage DDoS Attacks Detector Based on Anomaly Transformer

16.30 *Jinchuan Zhang, Tianqi Wan, Chong Mu, Guangxi Lu, Ling Tian*
2320 | Learning Granularity Representation for Temporal Knowledge Graph Completion

16.45 *Qinkai Jiang, Chenyu Hou, Bin Cao, Tianming Zhang, Tiantian Li, Jing Fan*
3074 | MPLinear: Multiscale Patch Linear Model for Long-Term Time Series Forecasting

15.30 – 17.00 Session 3G ONLINE Healthcare 1

Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

15.30 *Jaleh Farmani, Alessandro Giuseppi, Ghazal Bargshady, Raul Fernandez Rojas*
1255 | Multimodal automatic acute pain recognition using facial expressions and physiological signals

15.45 *Haolin Pao, Qingfeng Wu*
2661 | TBED-CNN: Tripartite-Branching Encoder-Decoder CNN for Low-Dose CT Denoising

16.00 *Yanke Chen, Haigen Hu, Qianwei Zhou, Xinli Xu, Qiu Guan*
2752 | Nystagmus Recognition System for Stroke Preliminary Screening Based on Hand-held Device

16.15 *Abdul Haseeb Nizamani, Zhigang Chen, Ahsan Ahmed Nizamani, Ali. M. A. Ibrahim*
3377 | LiteNet: A Lightweight Feature Fusion Model for Brain Tumor Classification

16.30 *Yougun Wang, Peirong Zhang, Chengchuang Lin, Zhaoliang Zheng, Ziming Lin, Haiyu Zhou, Hongwei Lin, Gansen Zhao, Jinji Yang*
4745 | LungNeXt: An Attention-Based Classification Network for Non-Standard Medical Images of Lung Tumors

16.45 *Xiaolu Kang, Zhuoqi Ma, Kang Liu, Yunan Li, Qiguang Miao*
4823 | Building Trust: Multi-scale Uncertainty Modeling for Polyp Segmentation

15.30 – 17.00 Session 3H ONLINE Computer Vision 1

Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

15.30 *Zhuozhu Liu, Yiran Li, Jia Wu, Caidan Li*
0625 | Progressive EMD-based Trajectory Prediction: A Multistage Approach for Enhanced Human Trajectory Forecasting

15.45 *Bingyan Nie, Wulin Xie, Jiang Long, Xiaohuan Lu*
0709 | Dual-Level Contrastive Learning Framework

16.00 *Yuxin Wu, Xin Ruan, Wenguang Zheng*
0785 | DLAFormer: A Novel Approach to Image Super-Resolution with Comprehensive Attention Mechanisms

16.15 *Pengcheng Zhao, Yanxiang Chen, Yang Zhao, Zhao Zhang*
0800 | Audio-Infused Automatic Image Colorization by Exploiting Audio Scene Semantics

16.30 *Xinchao Wang, Hongxiang Li, Xinzhong Sun, Lihong Zhao, Liqiang Wang, Kai Zhang, Xuzhen Hu, Yong Wang, Yuexian Zou*
0977 | Multi-scale Spatial Feature Aggregation For Efficient Super Resolution

16.45 *Shouxi Zhao, Tianren Zhang, Qin Zou, Chi Chen, Zhongyuan Wang*
1224 | XFusion: Cross-Attention Transformer for Multi-Focus Image Fusion

15.30 – 17.00 Session 3I ONLINE Machine Learning 3

Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

15.30 *Ravi Kumar Jha, Nikola Kasabov, Damien Coyle, Saugat Bhattacharyya, Girijesh Prasad*
4435 | Performance Analysis of Quantum-Enhanced Kernel Classifiers Based on Feature Maps: A Case Study on EEG-BCI Data

15.45 *Ziming Zhao, Jun Yan, Huilin Yin*
4623 | Certified Patch Defense via Dual Mask-Preservation Prediction

16.00 *Qing-Xin Meng, Jian-Wei Liu*
4744 | Proximal Point Method for Online Saddle Point Problem

16.15 *Nutan Chen, Patrick van der Smagt, Botond Cseke*
5129 | Fast Preserving Local Distances and Topology in Auto-Encoders

16.30 *Zhijian Zhuo, Jinwen Ma*
5226 | Neural Collapse Inspired Regularization for Deep Graph Neural Networks

16.45 *Bowen Sun, Guo Lu, Shibao Zheng*
5308 | FreeFlow: A Unified Viewpoint on Diffusion Probabilistic Models via Optimal Transport and Fluid Mechanics

15.30 – 17.00 Session 3J ONLINE Neural Network Models 3

Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

15.30 *Chenhui Zhang, Jinguo Cheng, Jing Yang, Huachun Tan, Yuankai Wu*
1316 | Integrating Future Exogenous Information into Multi-mode Travel Demand Forecasting at Gateway Hubs

15.45 *Xiaoying Jiang, Junjiang He, Yunpeng Wang, Sirui Hao, Wenbo Fang, Tao Li*
2072 | Copyright GuardChain: Protecting Intellectual Property of Deep Neural Networks via a New Copyright Blockchain

16.00 *Min Lu, Weikang Li, Hui Zhou, Jie Zhang*
2734 | DGEC:Decomposing Goal-oriented and Exploration Contributions with Global Relations in Multi-Agent Reinforcement Learning

16.15 *Zeyu Wang, Weichen Dai, Ji Qi, Xiangyu Zhou, Yi Zhou*
3214 | Exploring The Neural Burden In Pruned Models: An Insight Inspired By Neuroscience

16.30 *Zijun Dou, Xiaosong Han, Zhelun Peng, Heng Li, Bingyi Xiang, Yanchun Liang*
3904 | DynaTGNet: Enhanced Transformer-Based Spatiotemporal Dynamic Graph Neural Network for Multivariate Time Series Classification

16.45 *Runjie Zhao, Xuelin Cheng, Xince Chen, Haozheng Yang, Xu Zou, Botao Wu*
4061 | MSMixer: A Multi-scale Mixer Architecture for Time Series Forecasting

15.30 – 17.00 Session 3K ONLINE Computer Vision 9
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

15.30 *Linzhi Shang, Juan Wang, Chen Min, Liang Xiao, Kunlong Zhao, Dawei Zhao, Yiming Nie, Bin Dai*
0710 | Vision-Language Model for Unsupervised Domain Adaptive Vehicle Re-Identification

15.45 *Peng Yang, Hong Ying, Jianxin Duan, Manman Lin, Wenli Bai*
0779 | AdaQLoRA: A Novel Paradigm in Low-Resource Visual Question Answering with Adaptive Quantization and Low-Rank Optimization

16.00 *Lingling Zi, Xiaolin Chen, Xin Cong*
0826 | DAS-GAN:A Dual Attention Single-Stage GAN for Text-to-Image Generation

16.15 *Yang Zhang, Cheng Liu, Hau-San Wong*
0859 | Exploring the Fourier Domain for Fast Multi-View Subspace Clustering

16.30 *Long Zeng, Mingwei Zhu, Kaigui Wu*
0869 | MedSparseSeg: Medical Image Segmentation Transformer With Spatial-Channel Aware Sparse Coding Decoder

16.45 *Zilan Hong, Lianglun Cheng, Guoheng Huang, Xuhang Chen, Chi-Man Pun, Xiaochen Yuan, Guo Zhong*
0965 | Advancing Comic Image Inpainting: A Novel Dual-Stream Fusion Approach with Texture Enhancements

15.30 – 17.00 Session 3L ONLINE Recommender Systems 2
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

15.30 *Jianfu Li, Kang Li*
2053 | One-Step Preference learning Model with Cross-Space Preference Transferring for Next-Basket Recommendation

15.45 *Zhu Yizhao, Zhu Yingzheng, Wu Wenya, Duan Huajuan, Liu Peiyu, Lu Ran*
6794 | Preference fusion based on attention weight normalization for sequential recommendation

16.00 *Linglong Wang, Zhen Jiang, Yong Zhu, Weibin Cai, Fanwei Zhu, Tieming Chen*
7894 | Research: Customized multi-task learning for recommendation with heterogeneous graph neural network

16.15 *Xuanhao Zhang, Fan Zhang, Qianying Cai, Shuxian Guo, Jiaqing Huang, Zhen Ye, Minli Zhai, Feiyu Zhou, Yong Zhou*
6585 | A Distributed Architecture Digital Human Service System Powered by Large Language Models

16.30 *Sunil Kumar Meena, Shashank Sheshar Singh, Yogendra Meena, Kuldeep Singh*
6141 | Quantum Simulations: A New Frontier for Influence Maximization in Social Networks

16.45 *Helen Schneider, Sebastian Nowak, Aditya Parikh, Yannik Layer, Maike Theis, Wolfgang Block, Alois Sprinkart, Ulrike Attenberger, Rafet Sifa*
8869 | Informed Deep Abstaining Classifier: Investigating noise-robust training for diagnostic decision support system

15.30 – 17.00 Session 3M ONLINE Computer Vision 17
Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

15.30 *Hao Xu, Yiding Liang, Haomiao Liu, Chuhuai Yue, Bo Ma*
7421 | TGTrack: Text Modality Autoregression and Generative Template Updating for Visual Object Tracking

15.45 *Luotao Zhang, Wenguang Zheng, Qingbo Hao, Yingyuan Xiao*
7466 | Super-pixel blocks Based Fast Fourier Convolution Model For Image Restoration

16.00 *Ailing Xia, Jiaming Lu, Yubao Chen, Yuxi Zhou, Jiahua Zhang*
7614 | Dual-stream Iterative Semantic-aware Mechanism for Sign Language Translation

16.15 *Yang Yu, Bohao Qu, Xinqi Du, Jifeng Hu, Zhejian Yang, Sinuo Zhang, Hechang Chen*
7616 | A Lightweight Data Selection Network for Image Classification via Policy Gradient

16.30 *Ping Xiang, Ning Jiang, Jialiang Tang, Haodong Liu, Xinlei Huang, Xin Cheng, Yin Long, Jinjia Zhou*
7792 | Dynamic Inter-Class Correlation Knowledge Distillation for Long-Tail Scenarios

16.45 *Mengyuan Ma*
6377 | WOODWIND: Few-shot Object Detector with Knowledge Distillation

15.30 – 17.00 Session 3N ONLINE Biomedical Informatics 3
Zoom Meeting ID: https://us06web.zoom.us/j/82564004590

15.30 *Jun Wang, Hongxi Wei, Yiming Wang*
0991 | CPDBA-Net: Channel and Pyramid Dual Branch Attention Network for Kidney Stone Segmentation

15.45 *Aimei Dong, Jingyuan Xu, Long Wang*
1713 | IUFusion: A Medical Image Fusion Network Utilizing Information Unit

16.00 *Zhongwen Yu, Qiu Guan, Jianmin Yang, Zhiqiang Yang, Qianwei Zhou, Yang Chen, Feng Chen*
2315 | LSM-YOLO: A Compact and Effective ROI Detector for Medical Detection

16.15 *Boyuan Zhao, Yuqi Li, Yihao Chen, Libo Huang*
2529 | USCycleGAN: Detail Feature Preserving GAN for Ultrasound Image Enhancement

16.30 *Yijie Pu, Juan Chen, Huaqiang Yuan, Yakang Li, Jianfang Li*
5349 | Unet-like Pure Transformer Model with Variable Shifted Windows for Low-Dose CT Denoising

16.45 *Yubin Zheng, Peng Tang, Weidong Qiu*

6776 | A Novel Federated Learning Framework for Drug-target Interaction Prediction with Molecule-specific Prompt Tuning

Wednesday, 4 December 2024

Session 4

11.00 – 12.30 Session 4A - Machine Learning 4

CHAIR: **Xiulin Wang**
LOCATION: WG701

11.00 *Rabelais Medina, Prospero Naval*
5364 | Automated Syllabus Tagging of Philippine Jurisprudence Using Multinomial Naive Bayes, Support Vector Machines & Artificial Neural Networks

11.15 *Konrad Komnata, Jakub Komnata, Adrian Horzyk, Wojciech Komnata, Mateusz Szydło*
5464 | Enhancing Predictive Capabilities with Analogy Associative Graphs for Incomplete Datasets

11.30 *Xiulin Wang, Jing Liu, Fengyu Cong*
6422 | Coupled Nonnegative CANDECOMP/PARAFAC Decomposition for Multi-Block Tensor Analysis

11.45 *Rahma Hellali, Zaineb Chelly Dagdia, Karine Zeitouni*
6734 | A Multi-Objective Multi-Agent Interactive Deep Reinforcement Learning Approach for Feature Selection

12.00 *Somrita Bakshi, Sarbani Palit, Ujjwal Bhattacharya, Saumitra Baksi*
7935 | Identification of Interstitial Lung Disease: Breaking Barriers with SB-ID Net

12.15 *Rujia Chen, Akbar Ghobakhlou, Ajit Narayanan*
8981 | Comparative Analysis of Different Spectrogram Types for Musical Instrument Classification

11.00 – 12.30 Session 4B - Neural Data Analysis

CHAIR: **Kenji Doya**
LOCATION: WG802

11.00 *Sheng Chen, Zihao Tang, Mariano Cabezas, Xinyi Wang, Arkiev D'Souza, Michael Barnett, Fernando Calamante, Weidong Cai, Chenyu Wang*
7915 | Enhancing Angular Resolution via Directionality Encoding and Geometric Constraints in Brain Diffusion Tensor Imaging

11.15 *Xinyi Wang, Mariano Cabezas, Zihao Tang, Arkiev D'Souza, Dongnan Liu, Chenyu Wang, Weidong Cai*
0045 | Estimating Uncertainty on Deep Learning-Driven Fibre Orientation Distribution Enhancement

11.30 *Yuan Yue, Dirk De Ridder, Patrick Manning, Matthew Hall, Divya Adhia, Jeremiah Deng*
0694 | Discovering Functional Connectivity-Based Neural Signatures of Obesity via Dual-Layer Incremental Wrapper-Based Feature Selection

11.45 *Motofumi Shishikura, Itsuki Machida, Ko Sakai*
5303 | Critical roles of Contours in Intermediate-Level Neural Representation: Comparative study between Primate V4 and DCNN

12.00 *Hongtao Zhang, Shinichi Yoshida*
6413 | Perceptual Parallels and Divergences: Analyzing Slant Illusion Response in Deep Neural Networks

12.15 *Mamadou Ben Hamidou Cissoko, Vincent Castelain, Nicolas Lachiche*
6157 | Predicting Patient Health Outcomes with AMITA from Irregular Time Series

11.00 – 12.30 Session 4C - Healthcare 1

CHAIR: **Mike Watts**
LOCATION: WG308

11.00 *Yuhao Zhang, Xiaoyang Li, Ningkang Peng, Yi Chen, Haohui Xia, Yanhui Gu*
1159 | CROSS: A Cross-Dimensional Representation Optimization Self-Supervised Learning Framework for Activity Cliffs Prediction

11.15 *Ding Pan, Guibo Luo, Yuesheng Zhu*
5929 | MambaFuse: Fusing Multi-Scale Mamba and CNN Features for Seizure Prediction

11.30 *Xinlong Liu, Chunping Li*
4507 | MFTrans: An Extensible Transformer-Based Medical Multimodal Data Fusion Method for Clinical Diagnosis

11.45 *Ali Algumaei, Muhammad Azam, Manar Amayri, Nizar Bouguila*
3996 | Adaptive Constrained ICABMGGMM: application to ECG blind source separation

12.00 *Tong Wu, Yanbin Liu, Sira Yongchareon*
4314 | CRA-Eformer: Cross-scale Residual Attention-based Edge-guide Transformer for Low-Dose CT Denoising

12.15 *Pervaiz Khan, Andreas Dengel, Sheraz Ahmed*
4986 | Improving Text Representation for Disease Detection From Social Media via Self-augmentation and Contrastive Learning.

11.00 – 12.30 Session 4E - Human Centred Systems

CHAIR: **El-Sayed El-Alfy**
LOCATION: WG404

11.00 *Yi Xia, Sira Yongchareon, Raymond Lutui, Quan Z. Sheng*
1528 | Dynamic Self-Attention Gated Spatial-Temporal Graph Convolutional Network for Skeleton-based Human Activity Recognition

11.15 *Mohammed Ayub, El-Sayed M. El-Alfy*
3357 | SwinHAR: Swin Transformer for Smartphone-Based Human Activity Recognition Using Gramian Angular Field

11.30 *Daisuke Takeda, Junya Kato, Ryo Natsuaki, Akira Hirose*
4730 | Geographical Multi-Reservoir Computing for Local Population Forecasting

11.45 *Mamehgol Yousefi, Ahmad Shahi, Mos Sharifi, Alvaro Romera, Simon Hoermann, Tham Piumsomboon*
6634 | Impacts of Prompt Perturbation on Reducing Bias and Hallucination of Large Language Models

12.00 *Kien T. P. Tran, Sungchul Jung, Minh Nguyen, Robert W. Lindeman*
2890 | Workspace-VR: Mitigating the Visual Isolation of VR Headsets for Office Environments

12.15 *Satwinder Singh, Zihan Zhong, Qianli Wang, Clarion Mendes, Mark Hasegawa-Johnson, Waleed Abdulla, Seyed Reza Shahamiri*
2356 | A Comprehensive Performance Evaluation of Whisper Models in Dysarthric Speech Recognition

11.00 – 12.30 Session 4F ONLINE - Data Mining 2
Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

11.00 *Genglong Bai, Xiaofeng He*
3316 | Residual Broad Learning System with Variational Autoencoder for Robust Regression

11.15 *Xing Wu, Mengkun Pi, Junfeng Yao, Quan Qian, Jun Song*
3825 | DMGCL: Denoising Multi-View Graph Contrastive Learning for Robust Recommendation

11.30 *Lijun Tan, Yanli Hu, Jianwei Cao*
4635 | Table-Based Two-Stage Relation Classification Method for Trigger-Free Document-Level Event Extraction

11.45 *Yalu Cheng, Haowen Wang, Shuo Zhang, Changchun Yang*
6927 | CDIG: Customizable Dual Interaction Graph module for News Recommendation

12.00 *Fengqi Hao, Xiyuan Zhao, Cunxiang Bian, Hoiio Kong, Xiangjun Dong, Jinqiang Bai*
8825 | VEBiLSTM: A Neural Network for Field-road Classification using Enhanced Spatiotemporal Features

12.15 *Gavin Fungtammasan, Irena Koprinska*
9431 | Seq-LSTM-Conv: Multi-sequence Aggregated Forecasting Using LSTM and Convolutional Neural Networks

11.00 – 12.30 Session 4G ONLINE - Healthcare 2
Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

11.00 *Haoyu Zhang, Long Cheng*
5061 | Robust Dynamical Systems Learning for Robot-Assisted Point-to-Point Rehabilitation Training

11.15 *Yui Lo, Yuqian Chen, Fan Zhang, Dongnan Liu, Leo Zekelman, Suheyla Cetin-Karayumak, Yogesh Rathi, Weidong Cai, Lauren J. O'Donnell*
5066 | White Matter Geometry-Guided Score-Based Diffusion Model for Tissue Microstructure Imputation in Tractography Imaging

11.30 *Long Guo, Hong Liu, Hongyu Yang, Hu Chen, Wenchao Du, Yu Liu*
5272 | Interpretable Alzheimer's Disease Detection with Minimal Data: Zero-Shot and Few-Shot Approaches Using Large Language Models

11.45 *Chuanyun Xu, Xiao Wang, Yisha Sun, Pan He, Gang Li*
6783 | CervicalFormer: An Enhanced CNN-ViT Hybrid Model for Cervical Histopathological Image Classification

12.00 *Hefei Liang, Jiaqi Liu, Zhiwen Yu, Bin Guo*
7192 | Utilizing Machine Experience: Reinforcement Learning in Automated Diagnosis

12.15 *Shahzaib Iqbal, Hasnat Ahmed, Muhammad Sharif, Madiha Hena, Tariq Mehmood Khan, Imran Razzak*
8162 | EUIS-Net: A Convolutional Neural Network for Efficient Ultrasound Image Segmentation

11.00 – 12.30 Session 4H ONLINE - Computer Vision 2
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

11.00 *Zhiyu Zhang, Zhiqiang Tian, Hao Luo, Gang Zhou*
1234 | Guided DiffusionDet: Guided Diffusion Model for Object Detection with Resample Mechanism

11.15 *Guangxiong Gao, Qilong Zheng, Chengcheng Li*
1287 | Mutual Information-based Mixed Precision Quantization

11.30 *Junwei Tian, Canlong Zhang, Zhixin Li, Zhiwen Wang, Cunrong Wei*
1343 | MLLM-Driven Semantic Enhancement and Alignment for Text-Based Person Search

11.45 *Jingyun Yang, Jingge Wang, Guoqing Zhang, Yang Li*
1466 | Selecting the Best Sequential Transfer Path for Medical Image Segmentation with Limited Labeled Data

12.00 *Mengting Li, Chuang Zhu*
1941 | Learning from Noisy Labels for Long-tailed Data via Optimal Transport

12.15 *Xinyi Gao, Yanbin Liu, Minh Nguyen, Wei Qi Yan*
1822 | VICL-CLIP: Enhancing Face Mask Detection in Context with Multimodal Foundation Models

11.00 – 12.30 Session 4I ONLINE - Machine Learning 4
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

11.00 *Deepthi Praveenlal Kuttichira, Basim Azam, Brijesh Verma, Ashfaqur Rahman, Lipo Wang*
5711 | Optimizing CNNs with Gram Schmidt Non-Iterative Learning for Image Recognition

11.15 *Ye Hong, Guanghui Song, Xitong Gao, Tianhui Meng, Juanjuan Zhao, Kejiang Ye*
5792 | Improving Multilingual Speech Recognition with Tucker-compressed Mixture of LoRAs

11.30 *Zhi Yang, Changwu Huang, Xin Yao*
6147 | Towards Private and Fair Machine Learning: Group-Specific Differentially Private Stochastic Gradient Descent with Threshold Optimization

11.45 *Dehua Chen, Zhiwei Guo, Yu Shen, Mei Wang*
6726 | LogMoE: Optimizing Mixture of Experts for Log Anomaly Detection via Knowledge Distillation

12.00 *Ziwei Xiang, Luming Chen, Kai Lei, Xu-Yao Zhang*
7182 | Cross-Domain Few-Shot Learning with Equiangular Embedding and Dynamic Adversarial Augmentation

12.15 *Yucheng Xing, Xin Wang*
7913 | ∞-Net: An Unsupervised Model for Online Graph Time-Series Denoising

11.00 – 12.30 Session 4J ONLINE - Neural Network Models 4
Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

11.00 *Haiying Wu, Shuyuan You, Zhiqiang Zhuang, Kewen Wang, Zhe Wang, Xiaowang Zhang*
4738 | Unveiling Optimal Misreports in Auctions: A Multi-Bidder Game Model for Auction Design

11.15 *Qianhao Luo, Xin Cao*
5192 | Improving Dense Semantic Segmentation with Enhanced Boundary and Structural Supervision

11.30 *Zhicheng Zhang, Yong Wang, Shaoqi Tan, Bowei Xia, Yujie Luo*
6978 | Towards Efficient X-formers with Monarch Matrix for Long Sequence Time Series Forecasting

11.45 *Chunjing Xiao, Zexuan Yu, Wei Fan, Honghai Zhang, Xuecheng Wu*
8581 | Session-based Sequence Recommendation with Calendar-Airport Graph Neural Networks for Dynamic Pricing

12.00 *Ruixuan Ren, Tiejun Li, Jingyi Chen, Yibo Han, Jianmin Zhang, Cunhao Cui, Changsong Jin*
8874 | MtS-PeRCNN:Multi-time Stepping Physics-encoded Recurrent Convolutional Neural Network for Solving Partial Differential Equations

12.15 *Kunkun Zhang, Kehao Wu, Qianwei Zhou, Jun Tao, Haigen Hu, Xiaoxin Li*
8924 | Advancing DOA Estimation with Ultra-Dense Small-Aperture Acoustic Arrays: A Spatial-Temporal Transformer Approach for Low-Frequency Reverberation Signals

11.00 – 12.30 Session 4K ONLINE - Computer Vision 10
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

11.00 *Shuyang Li, Shang Xu, Shaowu Wu, Xiaoping Wu, Xiaoguang Niu*
1093 | Sample Difficulty-aware Pre-trained Models for Class-incremental Learning

11.15 *Jia Li, Xizhan Gao, Sijie Niu, Hui Zhao, Guang Feng*
1124 | Intra-class Information Guided Discriminative Deep Dictionary Pair Learning with Applications to Image Recognition

11.30 *Siyao Li, Tao Lu, Jiaming Wang, Pan Tang, Yunxiao Hu*
1296 | DMKTrack: Dynamic Modulation and Key Augmentation for Transformer-based Visual Tracking

11.45 *Min Jiang, Weilong Wang, Jun Kong*
1418 | Multi-scale Differential Perception Network for Video Anomaly Detection

12.00 *Hu Shengchao, Wang Weijun, Huang Tianlun, Feng Wei*
1443 | DETR-SS: A Real-time Semantic Segmentation Model Based on Transformer Decoder

12.15 *Lingling Zi, Mingchao Jia, Wei Liang, Zhenhui Li, Zhang Cheng*
1560 | SABCrowd:scale aggregation and background weakening in crowd counting

11.00 – 12.30 Session 4L ONLINE - Information Retrieval
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

11.00 *Jiayi Yang, Ziyong Lin, Qinze Zhu, Xiang Li, Mingyong Li*
3630 | CMGH:Label Co-occurrence-Enhanced Contrastive Multi-Granularity Hashing Cross-Modal Retrieval

11.15 *Rihab Haddad, Lobna Hlaoua, Mohamed Nazih Omri*
4143 | Optimizing Passage Retrieval with Dual-Directional Similarity Propagation

11.30 *Yiheng Li, Riquan Zhang*
8315 | AMMCR: Adaptive Multi-view Multi-behavior Contrastive Learning Recommendation

11.45 *Iwo Naglik, Mateusz Lango*
0253 | Fine-tuning Fine-tuned Models: Towards a Practical Methodology for Sentiment Analysis with Small In-domain Supervised Dataset

12.00 *Zhaoxing Li, Zhiming Zhang, Dongqin Liu, Yesheng Chai, Jiao Dai, Bibo Tu, Jizhong Han*
4109 | EPRVR: Efficient Partially Relevant Video Retrieval with Disentangled Video Representation Learning

12.15 *Qinze Zhu, Xinsheng Shu, Jiayi Yang, Mingyong Li*
6623 | CCUH: CLIP-Based Clustering Method for Unsupervised Hashing Multi-Modal Retrieval

11.00 – 12.30 Session 4M ONLINE - Computer Vision 18
Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

11.00 *Yunce Zhao, Wei Huang, Wei Liu, Xin Yao*
7904 | Ensemble of Intermediate-Level Attacks to Boost Adversarial Transferability

11.15 *Yikun Xu, Pengwen Dai*
7933 | DNP: Deep Neural Predictor Attack for Black-box Scene Text Recognition

11.30 *Zhenhai Wang, Ying Ren, Lutao Yuan, Sen Zhang, Hongyu Tian, Xing Wang*
7958 | Anchor STARK: Query Design for Transformer-Based Target Tracking

11.45 *Tingzhang Luo, Yurong Hu, Jiacheng Li, Yirong Wang, Yilun Ai, Chengjun Li, Qinxue Meng*

8024 | A Dual Attention and Classifier Guided Network for Low-Light Image Enhancement

12.00 *Shufan Li, Fang Yang*
8031 | Improved Aggregated Contextual Transformations Based on U-Net for Image Inpainting

12.15 *Siddharth Sahu, Abdulrahman Altahhan*
8122 | Mitigating Vanishing Activations in Deep CapsNets Using Channel Pruning

Session 5

13.30 – 15.00 Session 5A - Machine Learning 5

CHAIR: **Yvonne Chan Cashmore**
LOCATION: WG701

13.30 *Yuqi Ma, Ruilizhen Hu, Ruixuan Qi, Jianfeng Mao, Wenye Li*
9185 | An Approximate Dynamic Programming Method for Directed Acyclic Graph Scheduling Problem

13.45 *A. Quadir, M. Sajid, M. Tanveer*
9344 | One Class Restricted Kernel Machines

14.00 *Arian Shajari, Houshyar Asadi, Shehab Alsanwy, Saeid Nahavandi, Chee Peng Lim*
9845 | Detecting Driver Distraction with a CNN-LSTM Model: Analyzing Physiological and Head Motion Data in Simulated Driving Scenarios

14.15 *Christian Bohn, Ido Freeman, Hasan Tercan, Tobias Meisen*
9991 | Task Weighting through Gradient Projection for Multitask Learning

14.30 *Yuan Yan, Qunfeng Liu, Ao-Jin Li, Shiqi Wang, Changjiang Ma, Yun Li*
2255 | Time-weighted method to compare the convergence performances of optimization algorithms

14.45 *Jin-Hao Zhu, Feng-Feng Wei, Qiuzhen Lin, Xiao-Min Hu, Sang-Woon Jeon, Wei-Neng Chen*
9449 | A Surrogate-Assisted Level-Based Learning Swarm Optimizer for Convolutional Neural Network Architecture Search

13.30 – 15.00 Session 5B - Data Mining 1

CHAIR: **M Tanveer**
LOCATION: WG802

13.30 *Junfeng Liao, Riquan Zhang*
3426 | STEncoder: Robust Decomposition for Time Series Forecasting

13.45 *Anupama Udayangani Gunathilaka Thennakoon Mudiyanselage, Yuefeng Li, Jinglan Zhang, Prabhashini Dhanishika Manage*
4373 | Refined Sentiment Analysis Using POS Features and LDA: Mitigating Polysemy and Sparsity with BERT Contextual Embedding

14.00 *Dat Le, Sutharshan Rajasegarar, Thanh Thi Nguyen, Wei Lou, Maia Angelova*
2543 | Australian Real Estate Market Price Prediction with Entropy Clustering and Sentiment based Deep Neural Framework

14.15 *Shanshan Xie, Zhiyuan Zhang, Mengyao Sun*
2635 | LES-ASTE: Linguistically Enhanced Span-based Architecture for Aspect Sentiment Triplet Extraction

14.30 *Anubhav Singh, Naveen Saini, Sushil Kumar Tiwari*
3480 | Unraveling COVID-19 Vaccine Hesitancy: A Multi-Label Classification Approach Using Nested LSTM

13.30 – 15.00 Session 5C - Healthcare 2

CHAIR: **Zaineb Chelly Dagdia**

LOCATION: WG308

13.30 *Yuan Shen, Mufti Mahmud, Teena Rai, Jun He, David Brown, Arifur Rahman, Jaspreet Kaur, David Baldwin, Emma O'Dowd, Richard Hubbard*
5570 | Improving Healthcare Outcomes by Identifying Populations with Higher Risk of Lung Cancer from Primary Care Data

13.45 *Ding Pan, Guibo Luo, Yuesheng Zhu*
9168 | Seizure Prediction based on Multi-scale Fusion-attention Transformer

14.00 *Md Zakir Hossain, Zi Jin, Tom Gedeon, Amrijit Biswas, Ruchira Tabassum, Fahimul Hoque Shubho, Shafin Rahman*
0857 | Aggregated Fuzzy Signature Structures for Multi-class Medical Diagnosis

14.15 *Seyed Reza Shahamiri, Skylar Wells, Wiktor Tumilowicz*
2970 | A Preliminary Investigation on Autism AI Dataset: A Hybrid Learning Paradigm

14.30 *Liangfu Lu, Shaoning Pang, Joarder Kamruzzamana*
5869 | One Cluster Determination Approach in Tensor-based K-Means Variants for Disease Diagnosis

14.45 *Surya Majumder, Akash Halder, Dmitrii Kaplun, Alexander Voznesensky, Ram Sarkar*
6796 | RAU-Net: Richard's curve based Attention-aided U-Net for Medical Image Segmentation

13.30 – 15.00 Session 5E - Computer Vision 1

CHAIR: **Yanbin Liu**

LOCATION: WG404

13.30 *Fuyuan Cheng, Yuxi Li, Xiangtao Lu, Guibo Luo, Yuesheng Zhu*
0192 | LoTraNet: Locality-guided Transformer Network for Image Manipulation Localization

13.45 *Qin Guo, Guibo Luo, Zhiqiang Bai, Yuesheng Zhu*
1367 | TFCM: Tuning-Free Facial Concept-Erasure in Text-to-Image Models through Attention and Sample Modulation

14.00 *Mengyao Li, Yanbin Liu, Ling Chen*
1491 | Knowledge Distillation with Differentiable Optimal Transport on Graph Neural Networks

14.15 *Babita D, Kadali Sri Akash, Deepak Ranjan Nayak, M. Tanveer*
3943 | CaDT-Net: A Cascaded Deformable Transformer Network for Multiclass Breast Cancer Histopathological Image Classification

14.30 *Yassin Terraf, Youssef Iraqi*
0931 | CoMISI: Multimodal Speaker Identification in Diverse Audio-Visual Conditions through Cross-Modal Interaction

13.30 – 15.00 Session 5F ONLINE - Data Mining 3

Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

13.30 *Chenhao Li, Lin Li, Zhibin Zhang, Jiafeng Guo, Xueqi Cheng*
9432 | Test-time Adaption with Angular Distance-based Prediction

13.45 *Yu Zhan, Yi Wang, Ying Wang, Zhuohan Ao, Meijuan Lei*
0387 | Sparse-Relation Knowledge Graph Completion based on Multi-Circular Graph Convolutional Networks

14.00 *Xinyan Su, Zhiheng Zhang, Jun Li*
0644 | Dynamic Group Effects Analysis for Online Influence Maximization in Hypergraphs

14.15 *Yulin Cai, Hong Xie, Xiaoying Zhang, Kewei Chen, Xiaoyu Shi, Mingsheng Shang*
0820 | Achieving Group Fairness under Erroneous Pseudo-Labels of Sensitive Attributes

14.30 *Yumeng Zhou, Mingzhe Liu, Yi Xu, Jiarui Liu, Leilei Sun*
1873 | Community-based Prompt Learning on Temporal Information Graph

14.45 *Ying Li, Bo Jiang, Feng An, Yao Yang*
2796 | A Cross-task Learning Framework for Enhanced Molecular Property Prediction

13.30 – 15.00 Session 5G ONLINE - Information Security 1

Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

13.30 *Tengfei Cao, Yiming Zhang*
0885 | FedAKD:Heterogeneous Graph Federated Learning Framework based on Data Augmentation and Knowledge Distillation

13.45 *Die Hu, Jingguo Ge, Tong Li, Hui Li, Liangxiong Li, Weitao Tang*
1717 | TSIV: A Two-Stage Approach for Identifying Encrypted Video Traffic in Unstable Network

14.00 *Rongqi Jing, Zhengwei Jiang, Qiuyun Wang, Shuwei Wang, Xiao Chen, Hao Li*
9072 | Automated Mining of Multi-Dimensional Information from APT Malware for Effective Feature Analysis and Threat Actor Attribution

14.15 *Heng Zhang, Peng Wu, Li Pan*
9314 | PaPa: Propagation Pattern Enhanced Prompt Learning for Zero-shot Rumor Detection

14.30 *Ying Wang, Jingnan Huang, Zhiyu He, Yuchuan Luo, Zhenyu Qiu, Shaojing Fu, Ming Xu*
0293 | A Privacy-Preserving Image Classification Framework with Transformer

14.45 *Tao Zhang, Yanpeng Xiang, Jiahao Liu, Xinbo Zhang, Zhifan Zhang, Yu Zhang*
0463 | Reversible Data Hiding in Dual Encrypted Images with Dual Data Embedding

13.30 – 15.00 Session 5H ONLINE - Computer Vision 3
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

13.30 *Bin Ma, Haocheng Wang, Ruihe Ma, Yongjin Xian, Chunpeng Wang*
2235 | LCRPS: Large-Capacity Residual Plane Steganography Based on Multiple Adversarial Networks

13.45 *Ruofan Zhang, Xuezhong Qian, Wei Song*
2688 | Aesthetics-Guided Multi-scale Feature Fusion for Style Transfer

14.00 *Xiaohai Li, Jieyao Zhang, Jiaming Gu, Xiaoyuan Lu, Liang Zhang*
2928 | BEVRoad: A Cross-Modal and Temporary-Recurrent 3D Object Detector for Infrastructure Perception

14.15 *Yihuan Zhu, Simiao Wang, Zhengxing Sun*
3412 | In-WSOD: Integrality Weakly Supervised Object Detection with Classification and Localization Consistency

14.30 *Guohua Lv, Wenkuo Song, Zhonghe Wei, Aimei Dong, Jinyong Cheng, Guangxiao Ma*
3675 | GLEGNet: Infrared and Visible Image Fusion Via Global-Local Feature Extraction and Edge-Gradient Preservation

14.45 *Osama Ahmad, Omer Abdul Jalil, Usman Nazir, Murtaza Taj*
3776 | Mending of Spatio-Temporal Dependencies in Block Adjacency Matrix

13.30 – 15.00 Session 5I ONLINE - Machine Learning 5
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

13.30 *Ziwei Zheng, Huizhi Liang, Vaclav Snasel, Vito Latora, Panos Pardalos, Giuseppe Nicosia, Varun Ojha*
8146 | On Learnable Parameters of Optimal and Suboptimal Deep Learning Models

13.45 *Zhipeng Wang, Jun Fan, Qian Gao, Zhiqiang Zhang*
9080 | ADERec: Adaptive Data Augmentation Sequence Recommendation Based on Dual Network Architecture

14.00 *Yuan Lei, Jian Xue, Lin Zhao, Chao Yue, Ke Lu*
9279 | MA-Mamba: Multi-Agent Reinforcement Learning with State Space Model

14.15 *Zeren Zhang, Bin Zhang, Guangchong Zhou, Dapeng Li, Zhiwei Xu, Guoliang Fan*
9562 | Decentralized Extension for Centralized Multi-Agent Reinforcement Learning via Online Distillation

14.30 *Jianan Zhang, Peng Zhang, Fuqiang Wang, Wei Zhao, Xiaoming Wu*
4444 | Cross-feature Interactive Fusion for Speech Emotion Recognition

14.45 *Liuyuan Wen*
0079 | Negative Adjustment for Contrastive Learning in Audio-visual Generalized Zero-Shot Learning

13.30 – 15.00 Session 5J ONLINE - Neural Network Models 5

Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

13.30 *Wanchang Jiang, Chunzhen Li*
8933 | Intrusion recognition method based on AsymConv-DenseNet for ϕ-OTDR events in perimeter security

13.45 *Zhenyu Liu, Haoran Duan, Huizhi Liang, Yang Long, Vaclav Snasel, Giuseppe Nicosia, Rajiv Ranjan, Varun Ojha*
9353 | Dynamic Label Adversarial Training for Deep Learning Robustness Against Adversarial Attacks

14.00 *Yunqi Cai, Hao Xu, Zhiheng Yang, Xiu Cao*
9425 | MDMIN: Multi-granularity Dependency Modeling and Interaction Network for Long-term Series Forecasting

14.15 *HongYan Mao, NingKang Jiang, Kai Chen*
9477 | A Patch-based Multiscale Graph-enhanced Transformer for Multivariate Time Series Forecasting

14.30 *Xuan Zhao, Qiongxia Shen, Bo Li, Chenxu Liu*
5664 | MmFormer: A Novel Multi-Scale and Multi-Period Transformer Model for Irregular periodic Network Traffic Prediction

14.45 *Han Zhang, Xiao Li, Yaonai Wei, Chenjie Jia, Qitai Sun, Xiaowei He, Yudan Ren, Tuo Zhang*
4749 | Semantic Mapping and Reconstruction from Brain Activation to Natural Images Using LDM and LLM

13.30 – 15.00 Session 5K ONLINE - Computer Vision 11

Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

13.30 *Xirui Kang*
1638 | LiteSOD-DINO: Leveraging Large Kernel Convolutions and Attention for Enhanced Small Object Detection in Infrared Imagery under Resource Constraints

13.45 *Songhang Ye, Zhoule Feng, Guoheng Huang, Jinghong Ke, Xuhang Chen, Chi Man Pun, Guo Zhong, Xiaochen Yuan*
1677 | RST-UNet: Medical Image Segmentation Transformer Effectively Combining Superpixel

14.00 *Junyan Liu, Peng Qiao, Yong Dou*
1865 | Surgical Action Triplet Recognition Assisted by Foundation Models-based Instrument Localization

14.15 *Nitin Tyagi, Gangu Sarveshwar Reddy, Tejavath Sai Kumar, Balasubramanian Raman, Neerja Garg*
2250 | Nondestructive Bulk Wheat Classification through Near-Infrared Hyperspectral Imaging and Deep Convolutional Neural Networks

14.30 *Ruiying Wang, Yong Jiang*
2313 | AD-BAN: Asymmetric Mask and Detail Supplement Blind-Area Network for Self-Supervised Real-World Large-Scale Image Denoising

14.45 *Fangli Ying, Ziyue Luo, Aniwat Phaphuangwittayakul*
2553 | Enhancing Multimodal Video Summarization via Temporal and Semantic Alignment

13.30 – 15.00 Session 5L ONLINE - Language Processing and Models 1
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

13.30 *Jun Cao, Jiyi Li, Ziwei Yang, Renjie Zhou*
6090 | Enhanced Multimodal Aspect-Based Sentiment Analysis by LLM-Generated Rationales

13.45 *Xuesong Liu, Yuhang Zhang, Xinming Zhang, Xiao Xiao, Lanfang Dong, Mao Meng, Guoming Li, Linxiang Tan*
2596 | Integrating Hierarchical Fine-Grained and Global Information for Multimodal Sentiment Analysis

14.00 *Diandian Guo, Cong Cao, Fangfang Yuan, Dakui Wang, Ma Wei, Liu Yanbing, Jianhui Fu*
6250 | Can Multimodal Large Language Model Think Analogically?

14.15 *Xiaoshuang Ji, Zhendong Zhao, Xiaojun Chen, Xin Zhao, Zeyao Liu*
0023 | Progtuning: Progressive Fine-tuning Framework for Transformer-based Language Models

14.30 *Xingjin Wang, Jiahao Zhao, Jiahui Shi, Linjing Li, Dajun Zeng*
0514 | A Novel Visual-Enhanced Dual Stream Long-Term Decision Framework for Large Language Model Agents

14.45 *Feng Jiang, Lingyi Yang, Yu Lu, Haizhou Li*
0786 | Tailored Domain-specific Summaries: A Two-Stage Method Combining Extractive and Abstractive Summarization Models

13.30 – 15.00 Session 5M ONLINE - Computer Vision 19
Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

13.30 *Huiyan Jia, Shuai Xu, Wende Yang, Jintao Zhu, Changheng Chen, Yixuan Ma*
8164 | MOSSE-YOLOv8: A Two-Stage Approach for Small-Target Arc Detection in High-Speed Railways

13.45 *Wu Chenyu, Zhang Ting, Zhixian Li*
8306 | SAM-FL:Enhanced Generalizable Medical Image Segmentation via Sharpness-Aware Minimization and Focal Loss

14.00 *Zhaohui Yang, Danying Wang, Zhenan He, Lei Chen, Junjie Hu*
8338 | CP2PNet: A General End-to-End Framework for Plant Organs Counting and Phenological Stage Prediction

14.15 *Shangyu Chen, Zizheng Pan, Jianfei Cai, Pengfei Fang, Mehrtash Harandi, Dinh Phung*
8449 | Hierarchical Prompt-Enhanced Image Generation Using Hyperbolic Space

14.30 *Rui Zhao, Minghui Wei, Sheng Shen, Xianzhi Wang, Mukesh Prasad, Huan Huo*
8570 | Efficient Conditional Diffusion Model for Accurate Pedestrian Trajectory Prediction

14.45 *Qiang Gao, Gang Peng, Zeyuan Chen, Bingchuan Yang*
8600 | MonoViM: Enhancing Self-supervised Monocular Depth Estimation via Mamba

Session 6

15.30 – 17.00 Session 6A - Information Retrieval

CHAIR: **Sugam Budhraja**
LOCATION: WG701

15.30 *Fares Alkhawaja, Manar Amayri, Nizar Bouguila*
9983 | A simultaneous hierarchical count data clustering and feature selection based on Multinomial Nested Dirichlet Mixture using the Minorization-Maximization framework

15.45 *Hanlin Li, Jiaqiyu Zhan, Yuesheng Zhu, Guibo Luo*
1893 | Fine-Grained Transformer Encoder of Image-Text Retrieval for Streaming Data in Cross-Modal Continual Learning

16.00 *Amanda Horzyk, Tianhe Lu, Rui Guo*
3126 | Generative AuDio Watermarking Technique (ADWT): robust identification for meaningful regulatory intervention

16.15 *Zijian Pang, Sandhya Samarasinghe, Samantha Kumarapathirana*
0333 | End-to-end Knowledge Graph Construction System Powered by Large Language Models

16.30 *Tobias Rettenmeier, Alexander Jesser*
4478 | Graph-Based Data Augmentation and Label Noise Identification for Entity Resolution

15.30 – 17.00 Session 6B - Data Mining 2

CHAIR: **Sara Zandi**
LOCATION: WG802

15.30 *Tiantian Liang, Zhe Yang*
3628 | SPGL: Enhancing Session-based Recommendation with Single Positive Graph Learning

15.45 *Chandan Verma, Naveen Saini, Saurabh Shukla*
5727 | Harmonizing Data: Multilingual, Multistep Deep Learning Approach for Classifying Audio Content into Songs, Podcasts (Talk), and Advertisement

16.00 *Mengjiao Zhang, Xiaofeng Qu, Tianhao Han, Guang Feng, Sijie Niu*
6434 | Multi-view Subspace Clustering via Complementary-enhanced Anchor Graphs

16.15 *Zhuohang Zhu, Haodong Chen, Qiang Qu, Xiaoming Chen, Vera Chung*
3362 | Tokenizing Stock Prices for Enhanced Multi-Step Forecast and Prediction

15.30 – 17.00 Session 6C - Information Security

CHAIR: **Thien Phuc Doan**

LOCATION: WG308

15.30 *Jiawen Yan, Baohua Zhang, Wenyao Cui, Huaping Zhang*
2573 | Who is the Writer?Identifying the Generative Model by Writing Style

15.45 *Fan Xing, Xiaoyi Zhou, Hongli Peng, Zhuo Tian, Xuefeng Fan, Yan Zhao*
2637 | RAEDiff: Diffusion Models Enable Self-Generation and Self-Recovery of Reversible Adversarial Examples

16.00 *Dongxu Yue, Guibo Luo, Yuesheng Zhu*
7804 | OKey: Towards More Controllable, Secure and Robust Diffusion Model Image Steganography Using Optimized Key

16.15 *Haokun Dong, Shuangzhe Liu, Dat Tran*
1919 | Enhanced Autoencoder Model for Robust Anomaly Detection in Financial Fraud with Imbalanced Data

16.30 *Payel Sadhukhan, Labani Halder, Sarbani Palit*
6238 | A Hilbert-Curve based Encoding scheme for Privacy-preserving Nearest-Neighbor Classification

16.45 *Hung Dinh-Xuan, Thien-Phuc Doan, Sungkyu Han, Kihun Hong, Souhwan Jung*
7988 | Towards Real-Time Audio Deepfake Detection in Resource-Limited Environtments

15.30 – 17.00 Session 6D - SS: Computationally Intelligent Techniques for Biological Data Analysis

CHAIR: **David Brown**

LOCATION: WG126

15.30 *Matthew Harris, Daniel Fryer, Mufti Mahmud, Muhammad Arifur Rahman, Pratik Vyas, Nicholas Shopland, Bonnie Connor, James Lewis, David Brown*
6392 | Towards a machine learning model to predict cognitive ability using EEG data and virtual spatial navigation task scores in intellectually disabled adults

15.45 *Eranga N. Fernando, Jeremiah D. Deng*
9877 | Adaptive Population-Based Incremental Learning for Feature Selection in Leukemia Gene Expression Data.

16.00 *Chen Qian, Yan Zhao, Jiyun Li, Yingzhe Liu, Ying Liu*
7344 | HyPeFL: Tackling Data Heterogeneity via Hypernetwork in Personalized Federated Learning

16.15 *Xiaoyi Liang, Xiaowen Wang, Hongming Zhu, Qin Liu*
9450 | MTDS: Meta-Path Context Enhanced Drug Combination Synergy Prediction

16.30 *Jie Lin, Wei Zhao, Zhenyang Zhang, Zhe Zhang, Chao Wu*
9708 | A Federated Learning Approach for Genomic Selection in Pigs

16.45 *Shafiq Alam, Muhammad Sohaib Ayub, Rohan Sathasivam, Muhammad Asad Khan*
9162 | Enhanced Facial Emotion Detection Models Utilizing Geometry-Based Features for Superior Human-Computer Interaction

15.30 – 17.00 Session 6E - Computer Vision 2

CHAIR: **M Tanveer**

LOCATION: WG404

15.30 *Tamotsu Kurioka, Teppei Suzuki, Rei Kawakami, Ikuro Sato*
4131 | Transferring Teacher's Invariance to Student Through Data Augmentation Optimization

15.45 *Shuishui Cheng, Qingxuan Shi, Nick Jin Sean Lim, Albert Bifet*
6521 | AA-RPN: Adaptive Anchor-based Region Proposal Network for Remote Sensing Object Detection

16.00 *Jia Cheng Hu, Roberto Cavicchioli, Alessandro Capotondi*
6947 | Shifted Window Fourier Transform And Retention For Image Captioning

16.15 *Mingzhi Hao, Yun-Hao Yuan, Jipeng Qiang, Yi Zhu, Yun Li, Runmei Zhang*
7154 | Face Super-Resolution Using Covariation-Guided Orthonormalized Partial Least Squares

16.30 *Safaa Abdullahi Moallim Mohamud, Ho-Young Jung*
0411 | Actions and Objects Pathways for Domain Adaptation in Video Question Answering

16.45 *Leyi Zhu, Weihuang Liu, Xinyi Chen, Zimeng Li, Xuhang Chen, Zhen Wang, Chi-Man Pun*
1496 | Test-Time Intensity Consistency Adaptation for Shadow Detection

15.30 – 17.00 Session 6F ONLINE - Data Mining 4

Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

15.30 *Shijie Luan*
3638 | Efficient Privacy-Preserving Federated Learning with Oblivious Random Grouping and Top-K sparsification

15.45 *Enbo He, Yitong Hao, Yue Zhang, Guisheng Yin*
4177 | Advancing Anomaly Detection on Attributed Networks via Integrating Topological Identity Information

16.00 *Calvin Greenewald, Bradley Ashmore, Chien-Sing Poon, Lingwei Chen*
5225 | DRILL: Dual-Reasoning Large Language Models for Phishing Email Detection with Limited Data

16.15 *Jichao Kan, Zhidong Li, Jianlong Zhou, Evan Webster, Ashley Rootsey, Peter McHannigan, Lelin Zhang, Fang Chen*
6058 | Multi-Task Deep Learning for Prediction of Kiwifruit Yield in New Zealand with Uncertainty Quantification

16.30 *Yuhua Liao, Zetian Wang, Peng Wei, Qiangqiang Nie, Zhenhua Zhang*
6235 | TripCast: Pre-training of Masked 2D Transformers for Trip Time Series Forecasting

16.45 *Bo Cui, Shikun Liu*
6863 | Hybrid of Spans and Dual-encoder for Aspect Sentiment Triplet Extraction

15.30 – 17.00 Session 6G ONLINE - Information Security 2

Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

15.30 *Jiayu Zhang, Youpeng Jin, Xiaobo Hu, Bohan Kong, Yu Zhang*
1229 | A Dual-Layer Reversible Data Hiding Scheme Based on Optimal Neighbor Mean Interpolation (ONMI) and Histogram Shifting

15.45 *Zhengxian Wu, Juan Wen, Yiming Xue, Ziwei Zhang, Yinghan Zhou*
1886 | GTSD: Generative Text Steganography Based on Diffusion Model

16.00 *Fuqi Qi, Haichang Gao, Guoqin Chang, Boling Li*
3042 | Membership Inference Attacks in Text Classification Tasks

16.15 *Qing Qian, Yilin Kuang, Yong Long, Hong Wang, Yi Yue, Mingsen Deng, Huan Wang, Yunhe Cui*
3746 | PURVEY-CE: A Complex texture adaptive image steganography based on channel attention

16.30 *Yahe Chen, Jiang Fang, Haonan He, Rong Shi, Yinlong Liu, Jiyan Sun, Liru Geng*
3747 | Air-Sniffing Analytics Enhancing Wi-Fi Device Identification with Robust and Accurate Techniques

16.45 *Yu Pan, Jiahao Chen, Lin Wang, Bingrong Dai*
5743 | Control ControlNet: Multidimensional Backdoor Attack based on ControlNet

15.30 – 17.00 Session 6H ONLINE - Computer Vision 4

Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

15.30 *Yongtong Gu, Jinlai Zhang, Kefu Yi, Du Xu*
4073 | DIFA: Deformable Implicit Feature Alignment for Roadside Cooperative Perception

15.45 *Haoning Wu, Kaiyan Zhao, Shaowu Wu, Xiaoguang Niu, Xiaoping Wu*
4246 | AARR-Net: An Attention Assistance Feature Fusion and Model Recursive Recovery Network for Category-level 6D Object Pose Estimation

16.00 *Jinyu Shi, Chenyang Zhao, Ruofei Zheng*
4389 | BRS-YOLO: A Balanced Optical Remote Sensing Object Detection Method

16.15 *Yuxuan He, Haibin Xie, Junheng Liu, Wei Jiang, Xinglong Zhang, Xin Xu*
4434 | HDKI: A Hierarchical Deep Koopman Framework for Spatio-Temporal Prediction with Image Observations

16.30 *Yiming Kan, Wentao Chao, Junli Zhao, Liang Wang, Fuqing Duan*
4589 | Generalized Multi-Scale Separable EPI Information for Light Field Image Super-Resolution.

16.45 *Haomiao Liu, Hao Xu, Chuhuai Yue, Bo Ma*
5709 | UOA-RCNN : detect anything with Unknown Object Aware RCNN

15.30 – 17.00 Session 6I ONLINE - Machine Learning 6
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

15.30 *Jie Wang, Chaochao Sun*
0201 | Rapid Federated Learning Powered by Bat Algorithm

15.45 *Jiaxi Lu, Yuanyuan Shang, Zhuhong Shao, Tie Liu, Hui Ding, Jingyi Liu, Xue Wang*
0212 | A Graph Attention Representation for Facial Expression Recognition

16.00 *Andong Jia, Hong Liu, Hongyu Yang, Wei Yang, Hu Chen, Xiaohui Yi*
1149 | A Deep Reinforcement Learning Algorithm For Solving Airport Gate Allocation Problem

16.15 *Joseph Emmanuel Dayo, Michel Onasis Ogbinar, Prospero Naval*
1357 | Reinforcement Learning Environment with LLM-Controlled Adversary in D&D 5th Edition Combat

16.30 *Wuwei Ma, Yushi Li, Qiufeng Wang, Xiaowei Huang, Kaizhu Huang*
1448 | 3D Point Cloud Completion with Component Guidance

16.45 *Honghao Huang, Ya Pan, Yong Fan*
1556 | MCEF: Multi-curriculum Enhancement Framework for Social Image–Text Sentiment Classification

15.30 – 17.00 Session 6J ONLINE - Multimedia Information Processing 1
Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

15.30 *Yao Wang, Minghua Nuo, Yuan Zhang, Xiaoyu Jia*
2117 | LGCMNet: Multimodal Sentiment Analysis Network Based on Language-Guided Cross-Modal Interaction

15.45 *Tianxing Lan, Qingmeng Zhu, Yanan He, Zhipeng Yu, Hao He*
3303 | Multi-modal Knowledge Graph Link Prediction via Neural Optimal Transport

16.00 *Ning Qin, Hongyan Mao, Kai Chen*
3847 | Cross modal Memory Attention Network with Multi-view for Multi-modal Rumor Detection

16.15 *Qing Qian, Yi Yue, Yilin Kuang, Huan Wang, Yunhe Cui, Bingxiang Wu, Longwen Ran, Hong Wang*
6403 | MT-EPTNet: Multi-Task Acoustic Scene Classification with Efficient Parameter Tuning

16.30 *Anjie Wang, Xujun Wei, Mingxuan Chen, Xiaoyan Jiang, Yongbin Gao, Zhijun Fang, Siwei Ma*
6699 | Multi-modal Scene Global Fusion Framework for Enhanced Depth Estimation

16.45 *Miaomiao Lyu, Junjie Chen, Meishan Zhang*
9458 | Asymmetric Language-Aware Feature Learning for Low-Resource Cross-lingual Image Caption

15.30 – 17.00 Session 6K ONLINE - Computer Vision 12
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

15.30 *Kunfang Zhang, Yirui Chen, Zhenhuan Liu, Jie Yang, Wei Liu*
2612 | Hardware-Friendly Positional Encoding Quantization for Fast and Memory-efficient NeRF

15.45 *Longwen Yin, Yueyang Li, Haichi Luo*
2630 | Dynamic Video Prompting Network for thyroid nodule detection in Ultrasound videos

16.00 *Jie Zhi, Hanyan Li, Fang Yang*
2879 | Open-Set Object Detection Based on Prototype Convergence and Separation

16.15 *Yingying Zhu, Daocheng Wang, Zhuangzhuang Zhou, Qiang Huang*
3067 | RepPoints++: Improved RepPoints for Indoor Smoke Detection

16.30 *Wenyu Li, Ziteng Zhang, Zongxin Ye, Sidun Liu, Qiao Peng, Yong Dou*
3268 | Regularizing Sparse Input 3D Gaussian Splatting with Geometry Priors

16.45 *Xiaofei Qin, Anluo Yi, Hui Wang, Chengcheng Xu, Huixia Zhao*
6099 | Multi-temperature progressive self-distillation algorithm for continuous sign language recognition

15.30 – 17.00 Session 6L ONLINE - Language Processing and Models 2
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

15.30 *Runzi Cui*
2571 | Integrating Narrow-Deep Local and Wide-Shallow Global Convolutional Model for Cloud Workload Prediction

15.45 *Rui Chen, Tailai Peng, Xinran Xie, Dekun Lin, Zhe Cui, Zheng Chen*
3339 | Boosting Self-Efficacy and Performance of Large Language Models via Verbal Efficacy Stimulations

16.00 *Hoang-Quoc Nguyen-Son, Seira Hidano, Kazuhide Fukushima, Shinsaku Kiyomoto, Isao Echizen*
3811 | OneWORD: Adversarial Text Detection and Prediction Restoration Using One-Word Perturbation

16.15 *Chang Sun*
4025 | BNF: Bayesian Network Fusion for Multimodal Sentiment Analysis

16.30 *Tongyao Xu, Lixin Du*
4643 | Nested Relation Extraction Using Direct or Indirect Relations Between Entities

16.45 *Luyao Yu, Shufeng Hao, An Lao, Chongyang Shi, Zheng Yang*
1036 | Related Work Generation with Variational Sequential Planning

15.30 – 17.00 Session 6M ONLINE - Computer Vision 20

Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

15.30 *Dali Zhu, Wenli Zhang, Hualin Zeng, Long Yang, Long Yang, Jiaqi Zheng*
8708 | An End-to-End rPPG-Based Face Anti-Spoofing Network with Deception Enhancement Module

15.45 *Yan-Lin Zhu, Peipei Yang*
8744 | Region-Aware Instruction-Guided Image Editing with Attention-Weighted Feature Fusion

16.00 *Ruiyang Jing, Jiaxuan Liu, Jingyi Wu, Liang Song*
8774 | Multi-view Self-supervised 3D Human Pose and Shape Estimation on SMPL

16.15 *Zhifan Zhang, Renjie Huang, Bohan Kong, Yujue Wang, Yue Zhang, Tao Zhang*
8831 | WT-based Feature Enhancement Network for Camouflaged Object Detection

16.30 *Defu Zhang, Yongru Qiu, Yukang Liu, Tianzheng Li, Md Suzauddola*
9022 | Research and Implementation of Fine-Grained Bird Image Classification

16.45 *Guangxi Li, Yinsheng Song, Mingkai Zheng*
9082 | SAU: A Dual-Branch Network to Enhance Long-Tailed Recognition via Generative Models

Thursday, 5 December 2024

Session 7

11.00 – 12.30 Session 7A - SS: Computer Vision and Sensor Signal Processing for Enhancing Life Quality and Safety

CHAIR: **Boris Bačić**
LOCATION: WG701

11.00 *Joarder Kamruzzamana, Shaoning Pang, Liangfu Lu, Jianwei Liu*
7802 | Tensor Mutual Information: A Similarity Measurement for High-Dimensional Data

11.15 *Tatsuhito Hasegawa*
0270 | Human activity recognition model capable of handling various input waveforms

11.30 *Chengwei Feng, Boris Bacic, Weihua Li*
2216 | SCA-LSTM: A Deep Learning Approach to Golf Swing Analysis and Performance Enhancement

11.45 *Mamoun Alghaslan, Khaled Almutairy, El-Sayed M. El-Alfy, Abdul Jabbar Siddiqui*
5676 | RetailEye: Supervised Contrastive Learning with Compliance Matching for Retail Shelf Monitoring

12.00 *Changyu Zeng, Zimu Wang, Jimin Xiao, Anh Nguyen, Kaizhu Huang, Wei Wang, Yutao Yue*
6880 | MonoTCM: Semantic-Depth Fusion Transformer for Monocular 3D Object Detection with Token Clustering and Merging

12.15 *Chamroeun Se, Thanapong Champahom, Vatanavongs Ratanavaraha, Sajjakaj Jomnonkwao*
3771 | XGBoost-based Prediction Model for Train Passenger Numbers: Evaluating the Effect of the COVID-19 Pandemic

11.00 – 12.30 Session 7B - Natural Language Processing 2

CHAIR: **Sajib Mistry**
LOCATION: WG802

11.00 *Wenju Yang, Yong Hao, Peng Cao, Osmar R. Zaiane, Leyang Li*
0122 | Optimizing Learnable Frequency-domain Filterbanks for Depression Detection via Speech Representation Disentanglement

11.15 *Muhammad Zain Ali, Tony Smith, Bernhard Pfahringer*
1238 | Enhanced Stance Detection using Cascaded Siamese Networks with Attention Mechanism

11.30 *Wen Liang, Youzhi Liang*
1737 | BPDec: Unveiling the Potential of Masked Language Modeling Decoder in BERT Model Pretraining

11.45 *Dominik Lewy, Jacek Mańdziuk*
2143 | AttentionMix: A guided text data augmentation method relying on attention

12.00 *Kuan Guo, Xingyuan Chen, Yicui Peng, Bing Wang, Weishan Feng, Chunhao Wang, Peng Jin*
5513 | STD: Using Self-attention Discriminators to Improve Speech Synthesis

11.00 – 12.30 Session 7D - Computer Vision 3

CHAIR: **Kien Tran**
LOCATION: WG126

11.00 *Lingzhi Gao, Zhenyuan Zhang, Chao Wu*
0412 | FedDTG:Federated Data-Free Knowledge Distillation via Three-Player Generative Adversarial Networks

11.15 *Yuito Narisawa, Motonobu Hattori*
0491 | Diffusion-Based Immediate Adversarial Purification

11.30 *Muhammad Irfan Khan, Elina Kontio, Suleiman A. Khan, Mojtaba Jafaritadi*
0570 | Federated Brain Tumor Segmentation Using Bayesian Similarity-Weighted Aggregation

11.45 *Andrea Matteazzi, Pascal Colling, Michael Arnold, Dietmar Tutsch*
1627 | A Preprocessing and Postprocessing Method for LiDAR Semantic Segmentation in Long Distance

12.00 *Jingtai He, Gehao Zhang, Tingting Liu, Songlin Du*
1672 | RADA: Robust and Accurate Feature Learning with Domain Adaptation

12.15 *Ruijie Wu, Wei Guo, Hui Ren, Yi Liu*
1820 | MEViT : Multiscale Edge-supervised Vision Transformer for Image Manipulation Localization

11.00 – 12.30 Session 7E - Computational Intelligence 2

CHAIR: **Zohreh Doborjeh**
LOCATION: WG404

11.00 *Davide Corsi, Raz Yerushalmi, Guy Amir, Alessandro Farinelli, David Harel, Guy Katz*
8348 | Enforcing Specific Behaviours via Constrained DRL and Scenario-Based Programming

11.15 *Shunsuke Takagaki, Ryunosuke Fukuzaki, Koki Tateishi, Toshikazu Noda, Hiroyasu Ando*
1084 | Robust Design of Echo State Networks for Soft Sensor Applications Based on Risk-Aware Optimization and Stability Testing

11.30 *Guangshuo Wang, Yuesheng Zhu, Guibo Luo, Jie Ling, Long Xie*
5212 | A Federated Domain Generalization Method by Enhancing Knowledge Distillation With Stylistic Feature Dispatcher

11.45 *Nikita Malik, Nimesh Agrawal, Sandeep Kumar*
6667 | PPDA: A Privacy Preserving Framework for Distributed Graph Learning

12.00 *Md Habibur Rahman, Nabilah Hossain Sarker, Md Musfique Anwar, Mufti Mahmud, David Brown, Muhammad Arifur Rahman*
7303 | A Gaussian Process Framework for Prognostication and Visualization in Dermatological Oncology

11.00 – 12.30 Session 7F ONLINE - Data Mining 5
Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

11.00 *Zeyao Liu, Zhendong Zhao, Xiaojun Chen, Xin Zhao, Yuexin Xuan, Bisheng Tang, Xiaoshuang Ji*
7491 | Client Relevance-Aware Adaptive Aggregation for Personalized Federated Learning

11.15 *Rupam Deb, Ranju Mandal*
9124 | Real-Time Road Crash Severity Prediction for Optimized Resource Allocation

11.30 *Yilin Li, Yuxin Ding*
9619 | MADM: Microservice Anomaly Detection Based on Multi-source Data

11.45 *Hongbin Zhang, Weiguang Zhang, Qiufeng Wang*
5602 | ScaleDoc: A Two-Stage Approach for Scale-Aware Document Dewarping

12.00 *Chi Hong, Jiyue Huang, Lydia Chen, Robert Birke*
7336 | Adversarial Knowledge Extraction via Steering Diffusion Models

12.15 *Yuchen Sun, Jianyi Liu, Ru Zhang*
1631 | Threat Intelligence Entity Recognition Based On Large Language Model With Contrastive Learning

11.00 – 12.30 Session 7G ONLINE - Information Security 3
Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

11.00 *Qing Qian, Yi Yue, Hong Wang, Yilin Kuang, Huan Wang, Yunhe Cui*
5999 | CPANet: Convolutional Parameter Adapter Network for Image Copy-Move Forgery Detection and Localization

11.15 *Shuhan Liu, Jianbin Ye, Xiaoyuan Liu, Bo Liu*
6012 | AO-UAP: An Adaptive Universal Adversarial Perturbation Generation for Speech Recognition Models

11.30 *Chuang Zhang, Yang Wang, Jingjing Li, Min Zhang*
7368 | Solving the Thinnest Path Problem with Hypergraph Learning

11.45 *Hu Lan, Liu Jianyi, Zhang Ru*
7508 | AISSGR: Attack Investigation Based on Self-Supervised Graph Representation Learning

12.00 *Jiachuan Fan, Wanli Dong, Hanyang Chen, Xiaoming Gao, Anjie Peng*
7629 | Two-stage optimized adversarial patch for attacking infrared vehicle detectors in the physical world

12.15 *Daojing He, Shanshan Zhu, Qilin Na, Yanchang Cai, Sammy Chan, Mohsen Guizani*
7675 | Deep Learning-Based Detection of Code Execution Vulnerabilities in Binary Programs

11.00 – 12.30 Session 7H ONLINE - Computer Vision 5
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

11.00 *Jumabek Alikhanov, Dilshod Obidov, Hakil Kim*
6390 | LITE: A Paradigm Shift in Multi-Object Tracking with Efficient ReID Feature Integration

11.15 *Bowen Zhang, Cheng Yang, Xuanhui Liu*
6397 | LSReGen: Large-Scale Regional Generator via Backward Guidance Framework

11.30 *Haoze Fan, Guobin Zhang, Zhaojing Wang, Li Li*
6402 | AAFE-Net:Agent-Based Adaptive Feature Enhanced Network for Leather Defect Detection

11.45 *Cheng Lu, Chao Yang, Jianmei Su, Yi He, Yong Jiang*
6743 | Asterisk sparse convolutional networks for 3D object detection

12.00 *Yang Huang, Guoheng Huang, Lianglun Cheng, Yejing Huo, Xuhang Chen, Xiaochen Yuan, Guo Zhong, Chi-Man Pun*
6949 | FOPS-V: Feature-Aware Optimization and Parallel Scale Fusion for 3D Human Reconstruction in Video

12.15 *Xuesen Ma, Xiuxuan Yu, Xinghao Peng*
6971 | PEBTrack: A Performance-Efficiency Balance Tracker for Aerial Scenario

11.00 – 12.30 Session 7I ONLINE - Machine Learning 7
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

11.00 *Peng Zihan, Wu Zhendong, Peng Lilan*
2203 | PCA Information Supplementation for Graph Contrastive Learning Recommendation

11.15 *Hehai Lin, Wei Liu, Mengting Li, Kangyu Yuan, Zhao Liu, Huaijie Zhu, Jianxing Yu, Jian Yin*
2781 | SAFE : A Spatial-aware Framework for Arable Land Quality Evaluation

11.30 *Yangyang Guo, Quan Liu*
2968 | Efficient Offline Reinforcement Learning Via Planning In Latent Space

11.45 *Xinxiang Zhang, Jie Zhou, Can Gao*
3720 | Adaptive convex spherical structure detection for semi-supervised feature extraction

12.00 *Rodrigo Gabriel Ferreira Soares, Aline Priscila de Souza Costa Feitosa, Glauco Gonçalves, Douglas Almeida Vidal*
3827 | Self-evolving optimization for data stream learning

12.15 *Lulu Pang, Xianrong Wang, Hua Li, Wangyu Wu*
4480 | Research on Mental Health of Sensor Behavior Based on Multi-task Learning

11.00 – 12.30 Session 7J ONLINE - Multimedia Information Processing 2

Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

11.00 *Chuanpeng Deng, Xujian Zhao, Peiquan Jin, Bo Li, Yin Long, Chunming Yang, Xiuzhu Wang, Hui Zhang*
3902 | Elemental Discourse Unit Guidance Based Model for Multimodal Sentence Summarisation

11.15 *Qingmeng Zhu, Zhipeng Yu, Jian Liang, Ziyin Chen, Chen Li, Hao He*
5383 | DeemCLIP: Multimodal Emotion Information Enhanced Human Action Recognition

11.30 *Fengyu Li, Xinning Zhu, Zheng Hu*
7007 | Multi-Granularity Multimodal Information Interaction for Knowledge Graph Completion

11.45 *Lianji Wang, Bai Yu, Fang Cai, Xiang Liu, Na Ye, Xinyuan Ye, Guiping Zhang*
9027 | A Simple Interactive Attention for Multimodal Named Entity Recognition

12.00 *Jiajia Tang, Ziwei Yang, Feiwei Zhou, Kenji Ozawa, Teruki Toya, Wanzeng Kong*
9123 | Multimodal Polarity-semantic Coupling Network for Sarcasm Analysis

12.15 *Rongyang Zeng, Suping Wu, Kehua Ma, Xitie Zhang, Liyuan Shi, Juanyang Zhang*
9455 | {A Two-Stage Multi-Domain Collaborative Optimization Network for 3D Human Mesh Recovery

11.00 – 12.30 Session 7K ONLINE - Computer Vision 13

Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

11.00 *Yang Liu, Kun Mei, Huaxu He, Kun Cai*
3668 | Classification of hyperspectral images using lightweight and low-latency spiking neural networks based on knowledge distillation

11.15 *Jianhua Li, Liying Zheng*
3778 | Improved YOLOv7 with Bi-Level Routing Attention for Detecting Underwater Objects

11.30 *Xin Cheng, Jinjia Zhou*
4015 | Adaptive Multi-Teacher Knowledge Distillation with Class Attention Transfer

11.45 *Yan Liu, Jie Liu, Qingyang Zhang, Liang Deng, Xinhai Chen, Chuanfu Xu, Qinglin Wang*
4071 | SwinPINet: A Novel Neural Network for Flow Field Prediction Combining Physical Information and Attention Mechanisms

12.00 *Zhili Lin, Biao Leng*
4237 | Spatial-Frequency Interaction for Visible-Infrared Image Fusion Network

12.15 *Yong Wang, Zilu Zheng, Chunyu Lu, Youguang Chen, Peng Pu*
4503 | CycleTsGAN：Unsupervised Algorithm for Segmentation of Ancient Textual Rubbings

11.00 – 12.30 Session 7L ONLINE - Language Processing and Models 3
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

11.00 *Maodong Li, Fang Kong*
5108 | SABE: Structure-Aware Boundary-Enhanced Network for Elementary Topic Unit Extraction in Dialogue

11.15 *Xiayang Shi, Yishuai Song, Jingjing Liu, Yinlin Li, Yanna Sun*
5147 | Enhancing Prompt Tuning with Multitask Embedding Reparameterization

11.30 *Sijia Shen, Peiyan Wang, Hui Qian, Zhongwu Li*
6560 | Adaptive Nearest Neighbor Sememe Tree Generation Model

11.45 *Tianfang Xie, Tianjing Li, Wei Zhu, Wei Han*
7655 | PEDRO: Parameter-Efficient Fine-tuning with Prompt DEpenDent Representation MOdification

12.00 *Lei Jiang, Yan Tan, Jiaqian Ren, Kun Peng, Haimei Qin, Chaodong Tong, Jiayang Gao*
7834 | SAP-BERT: BERT Inference Acceleration through Skip-layer and Adaptive Patient Early Exiting

12.15 *Qirun Ye, Peifeng Li, Zhongqing Wang*
8489 | MEIG: An Interactive Attention-Based Generative Model for Multimodal Event Extraction

11.00 – 12.30 Session 7M ONLINE - Computer Vision 21
Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

11.00 *Wei Du, Zhaohui Meng*
9212 | Semi-Supervised Domain Adaptation for All Weather Point Cloud Semantic Segmentation

11.15 *Yihang Wu, Xiao Cao, Kaixin Li, Zitan Chen, Haonan Wang, Lei Meng, Zhiyong Huang*
9483 | Towards Better Text-to-Image Generation Alignment via Attention Modulation

11.30 *Yingying Wang, Tong Cui*
9910 | AMSA-UNet: An Asymmetric Multiple Scales U-net Based on Self-attention for Deblurring

11.45 *Dapeng Cheng, Jialong Kang, Jiale Gai*
9953 | MT-Net: A Dual-Encoder Multiscale Medical Segmentation Model

12.00 *Qian Zeng, Anjie Peng, Hui Zeng, Wenxin Yu*
9975 | Enhancing Adversarial Robustness of Diffusion Denoised Smoothing via Image Super-Resolution

12.15 *Kangyu Tang, Penglei Liu, Jun Cheng*
3080 | Dilated Pyramid Attention in Hierarchical Vision Transformer for Texture Recognition

11.00 – 12.30 Session 7N ONLINE – Computational Intelligence 1

Zoom Meeting ID: https://us06web.zoom.us/j/82564004590

11.00 *Guanwen Xie, Jingzehua Xu, Yimian Ding, Xinqi Wang, Dongfang Ma, Jingjing Wang, Yong Ren*
1550 | FISHER: An Efficient Sim2sim Training Framework Dedicated in Multi-AUV Target Tracking via Learning from Demonstrations

11.15 *Jingzehua Xu, Yongming Zeng, Jintao Zhang, Xuanchen Li, Lingru Meng, Haocai Huang, Jingjing Wang, Yong Ren*
4811 | AUV Efficient Navigation Relying on Adaptive Proximal Policy Optimization

11.30 *Sayan Ghosh, Talakanti Sravan Kumar Reddy, V Srinivasa Chakravarthy*
2176 | Visualizing Visual Thought using Deep Oscillatory Neural Network

11.45 *Mehshan Ahmed Khan, Houshyar Asadi, Mohammad Reza Chalak Qazani, Adetokunbo Arogbonlo, Saeid Nahavandi, Chee Peng Lim*
3086 | Predicting cognitive load in immersive driving scenarios with a hybrid CNN-RNN model

12.00 *Mohammad Reza Moradi Zade, Parisa Jourabchi Amirkhizi, Siamak Pedrammehr, Sajjad Pakzad, Ghazal Rahimzadeh, Saeid Nahavandi, Houshyar Asadi*
8698 | The Role of AI in Optimizing Human-centered Complex Systems

12.15 *Cuiyu Li, Yu Su*
4012 | Distribution Matching for Drug-Drug Interaction Prediction

Session 8

13.30 – 15.00 Session 8A - Neural Network Models 1

CHAIR: **Mahsa Mohaghegh**
LOCATION: WG701

13.30 *Saul Garnell, Mehmet Turkcan, Maryam Doborjeh, Brian Smith, Paul Szyszka*
5571 | Loosely coupled oscillators as a correlate of behavioral control circuits within the central complex of the fruit fly

13.45 *Ruoyu Wang, Lina Yao*
6875 | Independence Constrained Disentangled Representation Learning from Epistemological Perspective

14.00 *Bungo Konishi, Akira Hirose, Ryo Natsuaki*
8012 | Utilizing Small and Large Spectral Radii for Appropriate Reservoir Computing Design

14.15 *Shunsuke Sakai, Shunsuke Tsuge, Tatsuhito Hasegawa*
8605 | Noisy Deep Ensemble: Accelerating Deep Ensemble Learning via Noise Injection

14.30 *Pavodi Maniamfu, U. A. Md. Ehsan Ali, Ko Sakai, Keisuke Kameyama*
9128 | Physics-informed antisymmetric recurrent neural networks for solving nonlinear partial differential equations

13.30 – 15.00 Session 8B - Natural Language Processing 3

CHAIR: **Faizad Ullah**
LOCATION: WG802

13.30 *Vithya Yogarajan, Paul Rayson, Gillian Dobbie, Aaron Keesing, Te Taka Keegan, Diana Benavides-Prado, Michael Witbrock*
9810 | Annotator Disagreement-based Analysis for Developing Bias Benchmark Datasets in Resource-Restricted Settings

13.45 *Haoxiang Deng, Yi Zhu, Ye Wang, Jipeng Qiang, Yunhao Yuan, Yun Li, Runmei Zhang*
0530 | Prompt-tuning for Clickbait Detection via Text Summarization

14.00 *Lai-Man Po, Yuyang Liu, Haoxuan Wu, Tianqi Zhang, Wing-Yin Yu, Zhuohan Wang, Zeyu Jiang, Kun Li*
3918 | SBoRA: Low-Rank Adaptation with Regional Weight Updates

13.30 – 15.00 Session 8D - Computer Vision 4

CHAIR: **Boris Bačić**
LOCATION: WG126

13.30 *Yaping Zhao, Rongzhou Chen, Chutian Wang, Edmund Lam*
2413 | eSport Broadcast with Event Cameras

13.45 *Yupeng Zhong, Sang Hun Lee*
3505 | Cross-attention Network for Robust Appearance-based Gaze Estimation under Extreme Head Poses

14.00 *Obaidullah Zaland, Yakup Onur, Monowar Bhuyan*
4049 | Mitigating Data Heterogeneity with Multi-tier Federated GAN

14.15 *Haoran Tang, Yue Zhou, Pengju Xu*
4954 | Selective Contrastive Learning for Continual Semantic Segmentation

13.30 – 15.00 Session 8E - SS: AI in Environmental, Conservation and Geospatial Applications 1

CHAIR: **Akbar Ghobakhlou**
LOCATION: WG404

13.30 *Aarav Nigam, Rakesh Sanodiya, Subhangi Subhangi*
5082 | Optimizing Training Speed with Novel Adaptive Exploration Technique in Simulation and Real-World Robotics for Visual Path Following

13.45 *Ruoyu Wang, Yao Liu, Yuanjiang Cao, Lina Yao*
9780 | Causality-Aware Transformer Networks for Robotic Navigation

14.00 *Chenyang Ma, Yanpeng Ye, Akbar Ghobakhlou*
1641 | Enhanced ResNet with Attention Mechanisms for High-Accuracy Wildlife Monitoring: A Case Study on Penguins and Turtles

14.15 *Samuel Harrison Cerrudo, Daniel De Castro, Prospero Jr. Naval*
5826 | Automated Landslide Detection: A Comparative Study of Change Detection and Semantic Segmentation Techniques

14.30 *Achmad Pahlevi, Akbar Ghobakhlou, Jacqueline Whalley*
0474 | Utilizing Deep Learning to address Temporal and Spatial Dependencies in Weather Forecasting

14.45 *Sara Zandi, Aldridge Nyasha Mazhindu, Akbar Ghobakhlou*
1146 | ANN-Based Pollution Forecasting Through Short-Term Spatio-Temporal Analysis: A North Island, New Zealand Case Study

13.30 – 15.00 Session 8F ONLINE - Language Processing and Models 4

Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

13.30 *Biao Ma, Jun Jun Kang, Fang Kong*
6321 | Exploit the Emotional Dynamics for Better Conversational Emotion Recognition

13.45 *Dongxu Guo, Bo Xu*
6785 | Knowledge Enhanced Sentence-Level Fine-grained Relation Extraction via Multi-Agent Collaborative Generation

14.00 *Zhu Ji, Guangjin Wang, Fuyong Xu, Peiyu Liu*
7173 | Multi-view Adaptive Fusion Model for Multimodal Fake News Detection

14.15 *Jizhao Zhu, Akang Shi, Hao Liu, Xinlong Pan, Xiang Li*
7779 | GDBT : A Joint Model for Overlapping Relational Triple Extraction Based Global Detection and Bidirectional Tagging

14.30 *Ding Yuxin, Cao Jing, Huang Ninxin*
8252 | Retrieval-Enhanced Method Using Siamese Networks and Graph Kernel Functions for Code Summarization

14.45 *Mengyang Yuan, Bo Lang*
8266 | Enhancing Prompt Tuning for Smaller Pretrained Models via Knowledge Distillation

13.30 – 15.00 Session 8G ONLINE - Robotics and Control
Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

13.30 *Wanyong Xing, Li Wang, Hui Xie, Kang Song, Chunyang Meng*
3122 | Multi-Sensor Fusion for Localization and Mapping in Complex Environments

13.45 *Huang Yi, Houde Liu*
7883 | Diffusion-MPPI: Diffusion Informed Model Predictive Path Integral Method

14.00 *Han Li, Linlin You, Jieming Xie, Yun Ye, Xiaojun Tan*
1872 | SmartPL: An Integrated Approach for Platoons Driving on Mixed-Traffic Freeways

14.15 *Hongqi Li, Yitong Chen*
8847 | Modeling and Adaptive Sliding Mode Control of Autonomous Underwater Vehicles

14.30 *Mingda Qian, Feifei Dai, Xiaoyan Gu, Haihui Fan, Dong Liu, Feng Tian, Bo Li*
6236 | Identifying Misaligned Features for Cross-Domain Cold-start Recommendation

14.45 *Zekai Zhang, Xiangjin Li, Ziyu Chen, Kangxin Hu, Miao Peng, Jingjing Wang, Yong Ren*
0829 | MMOTS: A Multi-UAV Pursuit-Evasion Game Training Strategy Relying on Offline Reinforcement Learning

13.30 – 15.00 Session 8H ONLINE - Computer Vision 6
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

13.30 *Yiming Li, Ruixuan Cong, Sizhe Wang, Jiahao Shen, Hao Sheng*
7041 | Multi-Scale Spatial-Angular Information Aggregation Network for Image Semantic Segmentation

13.45 *Xiaolin Huang, Bingzhi Chen, Jiacheng Chen, Jingchun Lin, Jun Liang, Ruihua Nie*
7146 | Enhancing Semi-Supervised Medical Image Segmentation with Asymmetric and Adversarial Cooperative Training

14.00 *Zhuoer Zhang, Kezhen Qiu, Yijie Wang, Mingjian Hong, Li You, Sheng Huang*
7649 | Contrastive Diffusion Generative Adversarial Network for Generalized Zero-Shot Learning

14.15 *Tao Gong, Zihao Jian, Honghao Wu, Yongxuan Lai, Liang Song*
8500 | MASR: Efficient Multi-Attention Network For Single Image Super-Resolution

14.30 *Bowen Liu, Dongjie Chen, Xiao Qi*

8604 | YOLO-pdd: A Novel Multi-scale PCB Defect Detection Method Using Deep Representations with Sequential Images

14.45 *Wei Hu, Xizhan Gao, Sijie Niu, Hui Zhao, Guang Feng*
8619 | Correlation-Guided Image-to-Video Transfer Learning for Video Recognition

13.30 – 15.00 Session 8I ONLINE - Machine Learning 8
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

13.30 *Huanyi Cai, Wangyu Wu, Bosong Chai, Yafeng Zhang*
4853 | Relation-Fused Attention in Knowledge Graphs For Recommendation

13.45 *Xin Ruan, Wenguang Zheng, Wenke Xv, Jin Yang*
5045 | MMSP-Net:Phase-dependent multimodal speech repair modeling

14.00 *Shenghui Zhang, Xuekai Wei, Rongqin Chen, Shunran Zhang, Pak Lon Ip, Zijie Zhou, Zhaoqi Lu, Leong Hou U*
5629 | MIGNN: Exploiting Metric Isomorphism for Graph Neural Networks

14.15 *Xinshen Wang, Shihong Chen, Han Ren*
6211 | A Sentence Classification Method based on Dual Contrastive Learning Integrated with Label Extended Semantic Features

14.30 *Wenxin Li, Hao Deng, Yanfang Tao*
6501 | Improved Orbit Prediction Method based on Two-Line Elements with Dynamic Loss Function

14.45 *Abdoul Fatakhou Ba, Yingchi Mao, Hamza Djigal, Abdullahi Uwaisu Muhammad, Tariq Ali Arain, Siaka Konate*
6658 | FedQR: Communication-Efficient Federated Learning via QR factorization

13.30 – 15.00 Session 8J ONLINE - SS: AI in Environmental, Conservation and Geospatial Applications
Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

13.30 *Ran Tao, Hailun Lu, Xiaohu Lu*
1490 | SMSF-Net: A Semantics-Driven Multiscale Selective Fusion Network for Object Detection in Remote Sensing Images

13.45 *Jiamin Chen, Yongli Wang, Dongmei Liu*
9054 | HierFormer: A Multi-scale Attention Model for Ship Trajectory Prediction

14.00 *Hadeel Aboueidah, Abdulrahman Altahhan*
4345 | A Comparison between baseline models and a transformer network for SOC prediction of lithium-ion batteries

14.15 *Fahim Muntasir, M. Firoz Mridha, Mufti Mahmud*
4383 | Insights into Long-term Electrical Load Forecasting: Explainable AI approach on Multivariate LSTM

14.30 *Yafeng Zhao, Chenglong Jiang, Junfeng Hu*
9240 | Using ensemble learning algorithms to integrate multisource remote sensing data for mapping regional forest canopy height

13.30 – 15.00 Session 8K ONLINE - Computer Vision 14
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

13.30 *Lijun Liu, Rui Wang, Chuan Wang, Mingli Song*
4525 | Online Knowledge Distillation via Decoupled Collaboration and Diversification

13.45 *Yulin Yang, Wanrong Gu*
4613 | SPANet: Scalable Pose Aggregation Network For Macaque Pose Estimation

14.00 *Xiaokai Zhang, Zhipeng Li, Tao Wu, Hui Liu, Yuchen Song, Liuhuiting Yu, Chang Zhang*
4844 | Stochastic Degradation and Multi-level Feature Fusion Network in Real-world Image Super Resolution

14.15 *Chen Jiaqi, Ren Ziliang, Wei Wenhong, Zhang Qieshi, Gao Xiangyang*
4980 | Incorporating Recursive and Stateful Self-Connection Learning of SNNs for Improved DVS Event Stream Processing

14.30 *Rituraj Singh, Anikeit Sethi, Hritika Gautam, Mitika Bhadada, Krishanu Saini, Aruna Tiwari, Sumeet Saurav, Sanjay Singh*
5324 | iMAppGAN: Integrated Motion Appearance Generative Adversarial Networks for Video Anomaly Detection

14.45 *Yiguo He, Junjie Zhu, Yiying Li, Qiangjuan Huang, Zhiyuan Wang, Ke Yang*
5837 | Rethinking Remote Sensing CLIP: Leveraging Multimodal Large Language Model for High-Quality Vision-Language Dataset

13.30 – 15.00 Session 8L ONLINE - Language Processing and Models 5
Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

13.30 *Tailai Peng, Rui Chen, Xinran Xie, Dekun Lin, Zhe Cui*
0248 | Supporting Event Sentence Coreference Identification with Progressive Prompt-guided Implicit knowledge Distillation

13.45 *Jiawen Liu, Xueyan Zhong, Ruoxiang Yang, Ping Li*
0250 | CRGAT: Contextualized Relational Graph Attention Network for Knowledge Graph Completion

14.00 *Yongjun Wang, Fuyong Xu, Bin Wang, Peiyu Liu*
0273 | Leveled Learning: An Interpolation-Based Data Augmentation Method on Few-Shot Text Classification

14.15 *Zhuozhu Liu, Yiran Li, Jia Wu, Caidan Li*
1530 | Optimizing BERT for Superior NLP Performance: Balancing Efficiency with Advanced Pre-Training Techniques

14.30 *Zhiqiang Huan, Xiaoxu Zhu, Peifeng Li*
1751 | EBPL: Financial Event Causality Extraction Based on Prompt Learning

14.45 *Ruobing Wang, Qingfei Zhao, Daren Zha, Xin Wang*
1984 | TCAN: Triple Context-Aware Network for Multi-Modal Conversational Emotion Recognition

13.30 – 15.00 Session 8M ONLINE - SS: Computational Cognitive Neuroscience Online
Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

13.30 *Menghan Tian, Ning Wang, Deqiang Ouyang, Tao Xiang*
0942 | Imagined Digits Recognition Based on Masked Electroencephalography Modeling

13.45 *Jian Zhou, Jian Xu, Liang Tao, Huabin Wang, Cunhang Fan, Zhao Lv, Cheng Lu*
1133 | THGCN:Temporal Hypergraph Convolutional Network for Subject Independent EEG Emotion Recognition

14.00 *Jiaguan Han, Haolong Su, Lu Wang, Lihua Zhang, Xiaoyang Kang*
3244 | An EEG-based Spatial-Temporal Hybrid Architecture for Cognitive Load Detection

14.15 *Jin Qian, Dan Wang, Jiaming Chen, Meng Xu, Yueqi Zhang, Weibo Yi*
9032 | Hybrid EEG-fNIRS decoding for fine joint motor imagery of Unilateral Upper Limb with Two-Stage Hybrid Training

14.30 *Hesam Akbari, Wael Korani, Reza Rostami, Reza Kazemi, Junhua Ding*
9758 | TOP-EEG: a robust software to predict the outcomes of therapies for depression using EEG signals in DGMD domain

14.45 *Stephen McCloskey, Bryn Jeffries, Irena Koprinska, Christopher Gordon, Ronald Grunstein*
9832 | Neural Network as Surrogate Model for Sleep EEG Trajectories and Insomnia Disorder Classification

15.30 – 17.00 Session 8N ONLINE – Computational Intelligence 2
Zoom Meeting ID: https://us06web.zoom.us/j/82564004590

15.30 *Junyuan Tan, Shuai Zhao, Zhen Xia, Bo Cheng, Jun-Liang Chen*
7200 | Balanced and Auxiliary-Enhanced Independent Encoding Framework for Multimodal Fake News Detection

15.45 *Yanbing Bai, Xinyi Wu, Lai Xu, Jihan Pei, Erick Mas, Shunichi Koshimura*
3537 | Towards Efficient Disaster Response via Cost-effective Unbiased Class Rate Estimation through Neyman Allocation Stratified Sampling Active Learning

16.00 *Minghui Zhai, Feifei Dai, Xiaoyan Gu, Chuanrong Li, Bo Li, Weiping Wang*
3683 | Fine-Grained Common Knowledge Learning for Domain Adaptive Few-shot Relation Extraction

16.15 *Xiangfu Meng, Weipeng Xie, Jiangyan Cui*
4139 | STMGFN: Spatio-Temporal Multi-Graph Fusion Network for Traffic Flow Prediction

16.30 *Zhen Zhang, Chengye Li, Zheheng Liang, Chaosheng Yao, Jinbo Zhang, Rongjie Yan, Peng Wu*
6454 | Multi-Level Critical Transformation Robustness Evaluation of Object Detection Models

16.45 *Ruizhe Zeng, Lu Zhang, Xu Yang, Zhiyong Liu*
7444 | Boosting Open-Vocabulary Object Detection by Handling Background Samples

Session 9

15.30 – 17.00 Session 9A - Neural Network Models 2

CHAIR: **Seiichi Ozawa**
LOCATION: WG701

15.30 *Yuto Inui, Takuya Konishi, Yoshinobu Kawahara*
0424 | Learning with Almost Invariant Sets in Neural Oscillatory ODEs

15.45 *Nikhil Kumar, Krishan Lal, Geeta Singh, Anuraganand Sharma*
1916 | Fijian Traffic Sign Dataset: A New Collection for Image Recognition and Benchmarking

16.00 *Xiwen Zhang, Zihao Li, Xingqi Fang, Ziliang Guo, Yu Qiao*
4936 | Symmetric Kernel Attention: Making Transformer Suitable for Object Detection

16.15 *Reshma Kunjumon, Shady Mohamed, Ahmad Abu Alqumsan*
5078 | Improved Virtual Convolution for 3D Object Detection using Multimodal Data

16.30 *Yuanpeng Qu, Hajime Nobuhara*
8811 | Intent Representation Learning for Sequential Recommendation via Latent Guided Diffusion

15.30 – 17.00 Session 9B – Neurodynamics

CHAIR: **Alexander Sumich**
LOCATION: WG802

15.30 *Wenxin Xiong, Keyuan Hu, Jiajun He, Chi Sing Leung, Hing Cheung So, John Sum*
6150 | Outlier-Robust Range-Based Method for Estimating the Location and Velocity of a Moving Source Using Lagrange Programming Neural Network

15.45 *Mikito Onuki, Toshimichi Saito*
0071 | Analysis of Direct Stable Binary Periodic Orbits in Permutation Elementary Cellular Automata

16.00 *Kazuma Matsushita, Toshimichi Saito*
4688 | Strong Stable Binary Periodic Orbits in Mixed Rule Cellular Automata

16.15 *Takumi Kuwahara, Reon Oshio, Mutsumi Kimura, Yasuhiko Nakashima*
7289 | A Directly-Trained Spiking Locally Competitive Algorithm for Ultra-Fast LASSO Solver

16.30 *Philipp Engler, Alireza Koochali, Ludger van Elst, Andreas Dengel, Sheraz Ahmed*
8228 | Moving Forward with Class-Conditional Time Series Generation

15.30 – 17.00 Session 9D - Computer Vision 5

CHAIR: **Kenneth Johnson**

LOCATION: WG126

15.30 *Rui-Yang Ju, Chun-Tse Chien, Jen-Shiun Chiang*
5750 | YOLOv8-ResCBAM: YOLOv8 Based on An Effective Attention Module for Pediatric Wrist Fracture Detection

15.45 *Bartosz Siński, Adam Żychowski, Jacek Mańdziuk*
6020 | Improving Image Geolocation with Multimodal Deep Learning

16.00 *Dalia Hareb, Jean Martinet, Benoît Miramond*
6047 | Enhanced Neuromorphic Semantic Segmentation Latency through Stream Event

16.15 *Peide Li, Ruonan Chai*
6535 | Door detection method based on optimized YOLO v8

15.30 – 17.00 Session 9E - SS: AI in Environmental, Conservation and Geospatial Applications 2

CHAIR: **Akbar Ghobakhlou**

LOCATION: WG404

15.30 *Mubin Ul Haque, Joel Janek Dabrowski, Rebecca M. Rogers, Hazel Parry*
2021 | Detection of Animal Movement from Weather Radar using Self-Supervised Learning

15.45 *Hongkun Liu, Sirui Li, Yonglin Ren, Kok Wai Wong*
3206 | Modelling the influence of temperature and rainfall on the spread of African swine fever in Australia（LNCS version）

16.00 *Michael Watts, Aslihan Tece Bayrak*
6331 | Artificial Intelligence and Climate Change: A Review of Causes and Opportunities

16.15 *Satoru Morita*
9096 | Autonomous Design of Floor Plan Based on Architectural Drawings Example without Neighbour Relation

15.30 – 17.00 Session 9F ONLINE - Language Processing and Models 6

Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

15.30 *Li Bai, Han Zhu*
8574 | AcademicMT: Boosting Performance of Large Language Models in Academic Translation

15.45 *Fuxue Li, Haoming Ma, Chuncheng Chi, Yan Hong, Beibei Liu*
8622 | Improving Neural Machine Translation by Multi-Step Teacher-Assisant Knowledge Distillation

16.00 *Ming Jiang, Tingting Huang, Biao Guo, Yao Lu, Feng Zhang*
8757 | Enhancing Robustness in Large Language Models Prompting for Mitigating the Impact of Irrelevant Information

16.15 *Junjie Qi, Xudong Luo*
9327 | A Legal Case Matching Model Using Dual LLMs, BGE, and Mamba2

16.30 *Haozhe Sun, Jianfei Zhang, Chen Li, Yuanxin Ouyang, Wenge Rong*
9484 | Fine-grained Controllable Generation of Latent Language Diffusion Models

16.45 *Sheng Xu, Fumiyo Fukumoto, Kentaro Go, Yoshimi Suzuki*
9526 | Can Dynamic Prompt Help Sentiment Style Transfer?

15.30 – 17.00 Session 9G ONLINE - SS: Computationally Intelligent Techniques for Biological Data Analysis 1

Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

15.30 *Hardik A. Jain, Chirayu Patel, Riyasatali Umatiya, Sajib Mistry, Aneesh Krishna, Amin Behesti*
5044 | MedSiML: A Multilingual Approach for Simplifying Medical Texts

15.45 *Shahriar Siddique Ayon, Muhammad Ebrahim Hossain, Md. Saef Ullah Miah, M. Mostafizur Rahman, Mufti Mahmud*
8624 | Explainable AI in Feature Selection: Improving Classification Performance on Imbalanced Datasets

16.00 *Liying Zhang, Peiliang Gong, Qianru Sun, Yueying Zhou, Qi Zhu, Daoqiang Zhang*
9835 | A Dual-Branch Riemannian Learning Network for EEG Speech Imagery Decoding

16.15 *Xiaocong Huang, Guoheng Huang, Guo Zhong, Xiaochen Yuan, Xuhang Chen, Chi-Man Pun, Jianwu Chen*
9850 | ROSAL: Semi-supervised Active Learning with Representation Aggregation and Outlier for Endoscopy Image Classification

16.30 *Aimei Dong, Xuanshuo Guo, Jian Liu, Jingyuan Xu, Long Wang*
7938 | Multimodal Multiview Graph Convolution Network for the Diagnosis of Alzheimer's Disease

16.45 *Xin Liu, Zhenxi Tian, Wenlong Tian, Zhiyong Xu*
8032 | DNA-PRIME: Advanced DNA Sequence Compression through Enhanced Feature Fusion and Weight Hashing

15.30 – 17.00 Session 9H ONLINE - Computer Vision 7

Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

15.30 *Ruoyu Guo, Maurice Pagnucco, Yang Song*
8696 | Enriching Degradation Features for Fundus Image Enhancement via Multi-colour Dynamic Filter Network

15.45 *Zhenhuan Liu, Shuai Liu, Jie Yang, Wei Liu*
9003 | T-Code: Simple Temporal Latent Code for Efficient Dynamic View Synthesis

16.00 *Zhaofeng Niu, Lihua Wang, Zhouqiang Jiang, Bowen Wang, Guangshun Li, Liangzhi Li*
9053 | A Semantic Segmentation Method for Skin Lesion Images Based on ViT

16.15 *Zhijian Duan, Suping Wu, Jie Yang, Ruijie Peng, Weibin Qiu, Tuo Xiong*
9086 | Multi-scale Feature Edge Enhancement for Multi-view Stereo

16.30 *Bin Dou, Tianyu Zhang, Zhaohui Wang, Yongjia Ma, Zejian Yuan, Nanning Zheng*
9467 | Learning Segmented 3D Gaussians via Efficient Feature Unprojection for Zero-shot Neural Scene Segmentation

16.45 *Chenyang Liang, Jianwei Gu, Xiaoqing Jiang, Haoyu Liu, Peizhi Sun, Jianbin Zhang, Kaiyun Li, Zhenxiang Chen, Peixin Sun*
9699 | BBLMixSTE:Barbell Tokenizer for Autism Spectrum Disorder Video Reconstruction

15.30 – 17.00 Session 9I ONLINE - Machine Learning 9

Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

15.30 *Yi Zhou, Haixia Pan, Ruijun Liu, Lingzhi Zhang*
6739 | Masker: Speculative Decoding for Long-Text QA with CopyHead

15.45 *Jaeyoon Kim, Junyu Xuan, Jie Liang, Farookh Hussain*
6813 | A Non-Monolithic Policy Approach of Offline-to-Online Reinforcement Learning

16.00 *Sina Sheikholeslami, Tianze Wang, Amir H. Payberah, Jim Dowling, Vladimir Vlassov*
7006 | Deep Neural Network Weight Initialization from Hyperparameter Tuning Trials

16.15 *Zain Ul Abideen, Shu Liu, Tongming Wan*
7162 | Robust Multi-Modal Face Anti-Spoofing: Techniques for Missing Modality Handling and Fusion

16.30 *Shuqing Sun, Haonan Liu, Liansheng Zhuang, Houqiang Li*
7755 | Toward a General Transformer-Based Framework for Multi-Agent Path Finding

16.45 *Tomasz Galkowski, Adam Krzyzak*
7839 | An Innovative Approach to Detection of Steep Changes in Images

15.30 – 17.00 Session 9J ONLINE - SS: Computer Vision and Sensor Signal Processing for Enhancing Life Quality and Safety

Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

15.30 *Haoran Cheng, Bo Wang, Jie Liu, Tongchun Du*
6580 | Agent Clustering and Information Sharing Underlying MADRQN for Traffic Light Cooperative Control

15.45 *Yinbao Li, Yulei Zhang, Rui Zhu, Chang Liu*
0777 | LDRadSSD: Enhance Radar Point Cloud with Diffusion

16.00 *Wei Zhou, Xiaorui Wang, Bin Zhou, Yugen Yi*
2964 | 3VNet: Topological-structure driven Triple-V Network for Retinal Vessel Segmentation

16.15 *Ruixiao Zhang, Juheon Lee, Xiaohao Cai, Adam Prugel-Bennett*
1661 | Revisiting Cross-Domain Problem for LiDAR-based 3D Object Detection

16.30 *Tehreem Fatima, Rusham Elahi, Syed Wafa Zahra, Hafiz Muhammad Abubakar, Tehreem Zafar, Zia Tahseen, Muhammad Talha Quddoos, Usman Nazir*
4636 | Data-Driven Approach to assess and identify gaps in healthcare set up in South Asia

16.45 *Mohammad Omar Faruk, Anwar Hosen, Michael Johnstone, Rasel Hossain, Faisal M Rahman*
6618 | Multiclass semantic segmentation of satellite Imagery using convolutional neural networks.

15.30 – 17.00 Session 9K ONLINE - Computer Vision 15

Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

15.30 *Jiacheng Jiang, Shuo Zhang, Yiting Zhang, Jing Liu*
5850 | Deep Vision Transformer with Association Divergence for Image Anomaly Detection and Localization

15.45 *Xinshuang Liu, Yue Zhao*
5880 | Image Matting for Image Editing with Occlusions

16.00 *Junyu Hao, Jianheng Liu, Minghao Yang, Yongjia Zhao, Jinlong Chen, Jianguo Wei*
6104 | Detect an Object At Once without Fine-tuning

16.15 *Ran Tao, Xiaohui Lu, Xin Luo, Hailun Lu*
6255 | HENet: High-level Semantic Guidance and Edge Feature Fusion Network for Prohibited Item Detection in X-ray Images

16.30 *Qing Zhang, Jing Zhang, Feilong Bao, Xiangdong Su, Guanglai Gao*
6364 | Visual-Language Pretraining-driven Zero-shot Sketch-based Image Retrieval

16.45 *Tao Li, Linjun Shou, Xuejun Liu*
6426 | Mixture of Rationale: Multi-Modal Reasoning Mixture for Visual Question Answering

15.30 – 17.00 Session 9L ONLINE - Language Processing and Models 7

Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

15.30 *Shaojie Feng, Xiaohong Li, Siwei Wang, Xiaopeng Zhou*
2089 | DDKG: Dual attention KG-to-text Generation with Dual-view Graph Attention

15.45 *Qiong Wu, Ziyang Su, Yuliang Shi, Kaiyuan Qi, Dong Wu, Zhiyong Chen, Hui Li*
2129 | MulLog: A Software Defect Prediction Approach Based on Multi-Label Contrastive Learning and Line Property Graph Learning

16.00 *Yuhan Liu, Yifei Zhang, Neng Gao, Zhe Kong*
2507 | MetaRAED: Meta Learning Prototype-based Retrieval Augmented Few-shot Event Detection

16.15 *Yu Bai, Xiang Liu, Xianlei Zhou*
2690 | Cross-lingual Sentence Representations via Focus Learning

16.30 *Xiruijie Yi*
3078 | SPSEAE: Soft Prompt with Relevant Context Aggregation for Sentence-Level Event Argument Extraction

16.45 *Santosh Kumar Mishra, Soham Chakraborty, Sriparna Saha, Pushpak Bhattacharyya*
3408 | HinglishCap: A Code Mixed Hindi-English Image Captioning Framework

15.30 – 17.00 Session 9M ONLINE - Applied AI 1

Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

15.30 *Zeyu Li*
7003 | Illumination Estimation and Fourier-Guided Component Prediction for Enhancing Low-Light Images

15.45 *Shenhao Zhu, Li Wang, Xun Cao, Ruigang Yang, Xinxin Zuo, Hao Zhu*
8953 | StreetSyn: A Full Radiance Field Solution for Street and Vehicle Free-View Synthesis

16.00 *Zbigniew Gomolka, Ewa Zeslawska, Lukasz Olbrot*
0492 | Optimisation of Fibre Selection For Tubes Production in Manufacturing of Optic Cables

16.15 *Andrew Roxburgh, Floriana Grasso, Terry Payne*
3471 | Spatio-Temporal Graph Neural Networks for Infant Language Acquisition Prediction

16.30 *Shunfang Wu, Xiang Li, Zhigang Zhao*
2222 | Self-Supervised Pretraining-Enhanced Intelligent Quality Control for Ocean Observations with Limited Historical Data

16.45 *Yan Gui, Yiru Ou, Ruojun Guo, Jianming Zhang, Zhihua Chen*
7355 | Efficient Visual Object Tracking with Temporal Context-Aware Token Learning and Scale Adaptive Token Pruning

15.30 – 17.00 Session 9N ONLINE - Computational Intelligence 3

Zoom Meeting ID: https://us06web.zoom.us/j/82564004590

11.00 *Dhillu Thambi, Praveen Paruchuri, Perusha Moodley*
4685 | Interpreting Decision Transformer: Insights from Continuous Control Tasks

11.15 *Yunfei Chen, Hongyu Lin, Jun Long, Zhan Yang*
9969 | Hyper-graph Based Cross-modal Retrieval Hashing with Correlation and Robust Similarity Guide

11.30 *Margarita Zaleshina, Alexander Zaleshin*
7837 | Topological Layering of Mouse Brain Activity in Light-Sheet Microscopy Datasets

11.45 *Shujiong Tang, Zenglin Xu, Irwin King*
0239 | DuCoMo: Dual Counters in Model-Based Offline Reinforcement Learning

12.00 *Shujiong Tang, Zenglin Xu, Irwin King*
1547 | Combining Explicit Priors and Set Attention Driven Implicit Priors for Demonstration-guided Reinforcement Learning

12.15 *Jiaming Wang, Na Liu, Xufei Zhuang, Yuting Wang, Guiping Liu, Yi Liu, Chengbo Wang, Zetong Gong, Kunjie Liu, Guangxu Yu, Xinyue Zhang*
9023 | LSC-YOLO: Small Target Defects Detection Model for Wind Turbine Blade based on YOLOv9

Friday, 6 December 2024

Session 10

11.00 – 12.30 Session 10A - Multimedia Information Processing

CHAIR: **Chu Kiong Loo**
LOCATION: WG701

11.00 *Long Nguyen-Vu, Yowon Lee, Thien-Phuc Doan, Kihun Hong, Souhwan Jung*
8586 | Detecting Audio Deepfakes through Emotional Fingerprinting

11.15 *Chang Feng, Xiaolong Wu, Yiyang Zhao, Mingxing Xu, Thomas Fang Zheng*
8883 | Constructing Multi-Detector Decision Forest for Fake Speech Detection

11.30 *Wongsapat Phuengpanyaloet, Nonpipat Boonruengkhao, Viktor Anchutin, Kitsuchart Pasupa, Chu Kiong Loo*
5787 | Highlight Detection in Podcasts: A Multimodal Deep Learning Approach

11.45 *Biyun Zhou, Chengliang Wang, Xing Wu*
8873 | AIM-MIL: Adversarial Instance Mining for Robust Multi-Instance Learning in Whole Slide Image Classification

12.00 *Xuewen Luo, Fan Ding, Yinsheng Song, Xiao Feng Zhang, Junnyong Loo*
6801 | PKRD-CoT: A unified Chain-of-thought Prompting for Multi-Modal Large Language Models in Autonomous Driving

12.15 *Youzhi Liang, Wen Liang*
7588 | ResWCAE: Biometric Pattern Image Denoising

11.00 – 12.30 Session 10B - SS: Advancements in Optimization through Artificial Intelligence

CHAIR: **Reza Enayatollahi**
LOCATION: WG802

11.00 *Pankaj Sharma, Rohit Salgotra, Sarvanakumar Raju, Szymon Lukasik, Amir H Gandomi*
3044 | Identification of Proton Exchange Membrane Fuel Cell Parameters Using a Parameterless Swarm Intelligent Algorithm

11.15 *Deepak Kanneganti, Sajib Mistry, Sumedha Rajakaruna, Aneesh Krishna, Amin Beheshti*
6771 | A Hybrid Contextual Deep Learning Model to Predict Renewable Energy Generation

11.30 *Mostafa Pasandideh, Jason Kurz, Martin Atkins, Mark Apperley*
8692 | Enhancing Industrial Energy Efficiency with Predictive Analytics and Fuzzy Logic: A Case Study of Renewable Energy Management in the Meat Processing Industry

11.45 *Jiagui Xiong, Hua Chen, Jiayu Hu, Xinyu Zhou, Wenlong Ni, Hongwei Li*
7100 | Knowledge Tracing Method Based on Enhanced Global and Local Knowledge State Representation

12.00 *Xinyu Zhou, Jingjin Yin, Hua Chen, Wenlong Ni, Mingwen Wang*
8882 | Hybrid Niching Differential Evolution with Restart Strategy for Multimodal Optimization

11.00 – 12.30 Session10C - SS: Computational Cognitive Neuroscience

CHAIR: **Zohreh Doborjeh**

LOCATION: WG308

11.00 *Balkaran Singh, Sugam Budhraja, Maryam Doborjeh, Zohreh Doborjeh, Edmund Lai, Nikola Kasabov*
1241 | Izhikevich Neurons in NeuCube for Longitudinal Data Classification

11.15 *Alexander Sumich, Zohreh Doborjeh, Nadja Heym, Aroha Scott, Kirsty Hunter, Tony Burgess, Julie French, Mustafa Sarkar, Maryam Doborjeh, Nicola Kasabov*
1785 | Calming the mind: Spiking Neural Networks Reveal How Havening Touch to Reduce Persistent Distress Attenuates Left Temporal Electroencephalographic Connectivity

11.30 *Koichiro Yamauchi, Takahiro Hirate*
6483 | What should insect brains forget?

11.45 *Haodong Xie, Rahul Singh Maharjan, Federico Tavella, Angelo Cangelosi*
2542 | From Concrete to Abstract: A Multimodal Generative Approach to Abstract Concept Learning

12.00 *Nobuhiko Wagatsuma, Mizuki Yamaguchi, Akinori Hidaka, Hiroshi Tamura*
2851 | Analysis on Artificial Representations of a Trained AlexNet Model Using the CIFAR-10 Dataset

12.15 *Leon Lange, Veeraj V. Sankar, Lawrence G. Appelbaum, Ryan C. Broderick, Yang Cai, Parv Chordiya, Tzyy-Ping Jung, Graham J. Spurzem, Ying C. Wu*
3810 | Decoding Psychological Stress during Laparoscopic Surgery Training: Insights from EEG

11.00 – 12.30 Session 10D - Computer Vision 6

CHAIR: **Dmitrii Kaplun**

LOCATION: WG126

11.00 *Md Zakir Hossain, Jieli Zheng, Md Ayshik Rahman Khan, Shafin Rahman, Tom Gedeon*
7590 | Generating Realistic Images: Leveraging Frozen Large Diffusion Models

11.15 *Vivekanand Pandey, Millie Pant*
7628 | CBAM-LDNet: Convolutional Block Attention Module based Lite DenseNet for Plant Disease Identification

11.30 *Jiarui Xie, Anxin Li, Ryosuke Mizuno, Keisuke Nakamura, Yuusuke Fukushima, Issei Nakamura*
8124 | A Novel Data Synthesis Method by Integration of Diffusion Model and GAN for Object Detection Task

11.45 *Srinjoy Dutta, Soham Bose, Debasmit Roy, Dmitrii Kaplun, Aleksandr Sinitca, Ram Sarkar*
8921 | Multi-Headed Graph-based Attention aided U-Net Model for Nuclei Segmentation

12.00 *William Doherty, Anton Lee, Heitor Murilo Gomes*
9637 | CLOFAI: A Dataset of Real And Fake Image Classification Tasks for Continual Learning

11.00 – 12.30 Session 10F ONLINE - Natural Language Processing 1
Zoom Meeting ID: https://us06web.zoom.us/j/85478866507

11.00 *Kai Chen, Yingping Deng, Qingcai Chen, Dongfeng Li*
3989 | PVEIN: A Pretrained Vertex Embedding Infer Network for Open-domain Question Answer Scoring

11.15 *Dianzhi Yu, Wentao Zhang, Zenglin Xu, Irwin King*
2332 | Video Piracy Websites Detection using Continual Learning with Elastic Weight Consolidation

11.30 *Jing An, Yanbing Bai, Jiyi Li, Lifei Wang, Yuyi Jiang, Yikui Zhang*
2525 | Cantonese Dialect Transcription in Diverse Sophisticated Scenarios via the OpenAI Whisper Speech Recognition Model

11.45 *Yue Wang, Ningyuan Yi, Wenjing Chang, Jianjun Yu*
4212 | Leveraging LLMs for Automated Compliance Risk Identification in Business Processes

12.00 *Tan Liu, Na Liu, Liu Guiping, Kunjie Liu, Min Lu, Yatu Ji, Nier Wu*
9026 | Short-term Wind Power Prediction Based on CNN-Transformer

12.15 *Yanbing Bai, Laixin Shu, Yunya Wang, Zhengyan Xiao*
9058 | A Neural Network-Augmented Case-Based Reasoning Framework for Weather Risk Modeling using Remote Sensing Data

11.00 – 12.30 Session 10G ONLINE - SS: Computationally Intelligent Techniques for Biological Data Analysis 2
Zoom Meeting ID: https://us06web.zoom.us/j/82809315448

11.00 *Baodong Wang, Shuo Wang, Junli Zhao, Tongyan Liu, Zhi Wang, Zhenkuan Pan, Mingquan Zhou*
8457 | Morphology-Guided 3D Skull Gender Identification with Point-BERT

11.15 *Yu Qiao, Xiaohui Yang, Jing Wang, Tongzhen Si, Qingbei Guo*
4540 | Driver Cognitive Distraction Detection Based on Eye Movement Behavior and Spatio-Temporal Information Fusion

11.30 *Jiahao Qin, Feng Liu*
8351 | GAF-FusionNet: Multimodal ECG Analysis via Gramian Angular Fields and Split Attention

11.45 *Tao Lu, Dongjie Li, Zhaoyi Ning, Xibo Ma*
8479 | Cuffless Blood Pressure Measurement From Photoplethysmography through High and low Frequency Information Fusion Attention Mechanism

12.00 *Zhao Li, Donghui Lian, Xuan Peng, Wenning Huang, Xianghui Zeng, Dingzhou Zhu, Guoheng Huang*
6200 | XImgCom: Fine-tuned Text-Guided X-ray Image Synthesis for Airport Logistics Based on Hypercomplex Attention

11.00 – 12.30 Session 10H ONLINE - Computer Vision 8
Zoom Meeting ID: https://us06web.zoom.us/j/87373212799

11.00 *Qi Wu, Minghao Zhang, Ju Liu, Fan Yang, Kecheng Chen, Yazhou Ren, Xiaorong Pu*
9732 | Frequency-Constraint VQ-VAE for Adaptive MRI Segmentation

11.15 *Da Chang, Yu Li*
9753 | Mixed Text Recognition with Efficient Parameter Fine-Tuning and Transformer

11.30 *Xinshuang Liu, Yue Zhao*
9896 | Open-Vocabulary Self-Interactive Semantic Segmentation

11.45 *Si Jiang, Zihao Qin, Zhibin Yu*
0503 | Underwater Self-Supervised Monocular Depth Estimation: a Real-sea Video Benchmark and Baseline

12.00 *Hongjian Xu, Qinglong Meng, Jinqiang Bai, Xiangyu Meng*
0638 | WVIQA: Multi-scale Attention Hybrid Networks for No-reference Wood Veneer Image Quality Assessment

12.15 *Yu Yao, Yangsheng Hu, Yuanchao Xue, Siming Li, Jie Huang, Haitao Wang, Jianfeng He*
0705 | UPHGAN: Generative Adversarial Network based on Unet512 and PatchGAN fusion with Huber loss function for immunohistochemical cell nucleus segmentation

11.00 – 12.30 Session 10I ONLINE - Machine Learning 10
Zoom Meeting ID: https://us06web.zoom.us/j/87018701898

11.00 *Fanchao Xu, Tomoyuki Kaneko*
7955 | Enhanced Imagination and Feature Balancing for Cooperative Multi-Agent Reinforcement Learning

11.15 *Peijie Gao, Xiaojun Chen, Yunfei Yang, Zhendong Zhao, Yuexin Xuan, Xin Zhao*
8728 | CoFD: Contribution-based Federated Knowledge Aggregation Scheme for Federated Distillation

11.30 *Zenghao Hao, Jing Zhao, Kai Lu, Lichao Ding*
9265 | CSFJRE: Convolutional Shared Feature Network for Joint Entity and Relation Extraction

11.45 *Chuan Li, Lijun Tan, Xiao Teng, Yan Ding, Guijian Tang, Long Lan*
9360 | OAKD: Objective-oriented Adaptive Knowledge Distillation via Curriculum-Guided Dynamic Weighting

12.00 *Yangyong Liu*
9494 | Staging with Feature-based Model-Stacking for Rapid SQL Injection Detection

12.15 *Kunrong Li, Xinyu Liu, Zhen Chen*
9774 | Semantic Consistency Regularization with Large Language Models for Semi-supervised Sentiment Analysis

11.00 – 12.30 Session 10J ONLINE - Computer Vision 16
Zoom Meeting ID: https://us06web.zoom.us/j/85938618146

11.00 *Anikeit Sethi, Rituraj Singh, Neha Jakhar, Kanchi Pardhi, Krishanu Saini, Aruna Tiwari, Sumeet Saurav, Sanjay Singh*
6665 | Enhancing Image Style Transfer with PAIN-GAN: A Dual-Stream Encoder Incorporating GAN

11.15 *Yicheng Qiu, Feng Sha, Li Niu*
6737 | Efficient Temporal Attention with State Space Model for Temporal Action Localization

11.30 *Senwei Fang, Tao Yang, Chuanyi Zhang*
6773 | Collaborative Learning of Sample Selection and Robust Functions for Noisy Labels

11.45 *Chenming Tian, Shuchao Pang, Anan Du*
6868 | Hierarchical Asymmetric Student-Teacher Framework for 3D Point Cloud Anomaly Detection

12.00 *Jinlai Ning, Michael Spratling, Letizia Gionfrida*
6910 | Improving the Accuracy of Tiny Object Detection by Negative Sample Copy-Paste

12.15 *Chandrajit Bajaj, Minh Nguyen, Shubham Bhardwaj*
7321 | Low-cost Robust Night-time Aerial Material Segmentation through Hyperspectral Data and Sparse Time Series Extraction

11.00 – 12.30 Session 10K ONLINE - Language Processing and Models 8
Zoom Meeting ID: https://us06web.zoom.us/j/83253599602

11.00 *Hanmeng Zhong, Peifeng Li, Qiaoming Zhu*
4231 | Improving Document-level Event Coreference Resolution with Knowledge Distillation

11.15 *Weijie Liu, Fang Kong*
4265 | Improving In-Context Learning with Inquiry Style Classification in Table Question Answering

11.30 *Baha Ihnaini, Jiayin Li, Zhirong Yu*
4641 | Evaluating Large Language Models for Depression Detection in Text: A Comparative Analysis

11.45 *Hong Yan, Beibei Liu, Fuxue Li, Manjing Li, Chuncheng Chi, Zhen Zhang*
4818 | a Self-Sampling Data Augmentation Method for Low-Resource Neural Machine Translation

12.00 *Kai Wang, Jiong Zhang, Xiang Zhang*
5729 | RLKGE: Trustworthiness Measurement for Knowledge Graph Triples based on Reinforcement Learning

12.15 *Yuanxiang Huangfu, Peifeng Li, Qiaoming Zhu*
5816 | Improving Empathetic Dialogue Generation via Response Attention Guidance

11.00 – 12.30 Session 10L ONLINE - Applied AI 2

Zoom Meeting ID: https://us06web.zoom.us/j/87559100889

11.00 *Pingzhang Shen, Shengnan Zhao, Jun Xu, Chuan Zhao, Zhenxiang Chen, Shanqing Guo*
1098 | LBRFL: Lightweight Privacy-Preserving Federated Learning with Byzantine-Robustness

11.15 *Jiarui Wu, Baowen Zhang*
2714 | A Fine-Tuned Multi-Classifier Optimization Framework towards Safety-Critical Classes

11.30 *Ziqi Cheng, Xinyu Xue, Huajin Tang, Liang Feng*
6160 | Solving Expensive Dynamic Multi-Objective Problem via Cross-Problem Knowledge Transfer

11.45 *Guanghua Hou, Shuhui Cao, Deqiang Ouyang, Ning Wang*
9589 | Label-template based Few-Shot Text Classification with Contrastive Learning

12.00 *Boxiang Hu, Yuanjie Wang, Fang Fang, Lanxue Zhang, Pengfei Yin*
9675 | Curriculum Learning with Difficulty Division for Metaphor Detection

12.15 *Zhongqiang Huang, Dongli Lu*
9848 | Hypergraph Contrastive Learning for Evidence-Aware Fake News Detection

11.00 – 12.30 Session 10M ONLINE – Computational Intelligence 4

Zoom Meeting ID: https://us06web.zoom.us/j/87004195305

11.00 *Parma Nand, Bady Gana, Alen Figueroa, Hector Allende-Cid, Juan Zamora*
5047 | Patient Mortality prediction Using Clinical Notes

11.15 *Ming Li, Dongmei Liu*
5148 | Image Style Transfer Enhancement Through Enriched Text

11.30 *Michael Ignacio, Prospero Naval*
8476 | Aero-engine Condition-Based Maintenance Planning Using Reinforcement Learning

11.45

12.00

12.15

ICONIP2025 Call For Contributions

32nd International Conference on Neural Information Processing

35th Annual Meeting of Japanese Neural Network Society

November 20-24, 2025 - Okinawa Institute of Science and Technology (OIST), Japan

The International Conference on Neural Information Processing (ICONIP) is an annual conference of the Asia Pacific Neural Network Society (APNNS).

ICONIP brings together attendees from around the world, diverse disciplines and professions including researchers, academics, and industry experts, all working collaboratively to tackle real-world challenges and to contribute to the society.

Topics

ICONIP2025 invites high quality contributions from, but not limited to the topics

Theory and Algorithms

- Machine learning
- Explainable AI
- Neural network models
- Neurodynamics

Computational Neurosciences

- Models of learning and cognition
- Neural data analysis
- Brain-machine interface
- Computational psychiatry

Applications

- Big data analysis
- Generative AI
- Natural language processing
- Robotics and control
- Healthcare
- Information security
- Neuromorphic hardware

Important Dates

Special session proposal: March 1st
Workshop proposal : March 1st
Tutorial proposal: May 1st
Paper submission deadline: May 15th
Notification of acceptance: July 15th
Camera ready submission: August 15th
Registration deadline: August 15th
Conference dates: November 20-24

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ICONIP 2024

31st International Conference on Neural Information Processing

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