EAGE

EUROPEAN ASSOCIATION OF GEOSCIENTISTS & ENGINEERS

EDUCATION DAYS
AMSTERDAM 2019

26-27 NOVEMBER 2019 | AMSTERDAM, THE NETHERLANDS

EAGE EDUCATION

www.LearningGeoscience.org

Short Course Programme

26 NOVEMBER 2019

New Applications of Machine Learning to Oil & Gas Exploration and Production
Dr Bernard Montaron

27 NOVEMBER 2019

Machine Learning for Geoscientists with Hands-on Coding
Dr Ehsan Naeini

Venue

Hotel Casa Amsterdam
Eerste Ringdijkstraat 4
1097 BC Amsterdam
The Netherlands

Sponsorship

Education Days Amsterdam 2019 offers excellent sponsorship opportunities to create high visibility. For more information, please refer to the Sponsor Guide at the event website or contact us via eage.events@eage.org.

EAGE Economic Hardship Programme

EAGE recognizes the current challenging status of the industry and, priding itself on the inclusive character of the Association, now has a special economic hardship assistance programme in place to reach out to its members.

EAGE Short Course discount

EAGE aims to assist its long-term members who are currently unemployed by providing contributions towards educational programmes. Under this element of the EAGE Economic Hardship Programme, members currently unemployed can attend public short courses at the Education Days Amsterdam for a discounted course fee equal to 75 euros for either one- or two-day course. The discounted registration fee is the same as in another supported programme – EAGE Education Tours, where everyone can benefit from a discounted fee.

For more information please visit the event website at events.eage.org.

Registration fees

All fees are in Euros (€). One Euro of your total registration fee is donated to the EAGE Green Fund.
Please note: The deadlines are following the Local Time in the Netherlands.

Single Course Registration

REGISTERED AND PAID	UNTIL 21/09/2019	22/09/2019 - 25/10/2019	FROM 26/10/2019 UNTIL ON-SITE
EAGE Green Member[1,5]	€ 530	€ 635	€ 735
EAGE Bronze/Silver/ Gold Member[1,5]	€ 480	€ 585	€ 685
EAGE Platinum Member[1,5]	€ 480	€ 480	€ 480
Non-member[3]	€ 580	€ 685	€ 785
EAGE Student Green Member[1,2,5]	€ 265	€ 315	€ 365
EAGE Student Bronze/ Silver/Gold Member[1,2,5]	€ 240	€ 290	€ 340
Student Non-member[2,3,4]	€ 290	€ 340	€ 390

Both Course Registration

REGISTERED AND PAID	UNTIL 21/09/2019	22/09/2019 - 25/10/2019	FROM 26/10/2019 UNTIL ON-SITE
EAGE Green Member[1,5]	€ 755	€ 810	€ 910
EAGE Bronze/Silver/ Gold Member[1,5]	€ 705	€ 760	€ 860
EAGE Platinum Member[1,5]	€ 705	€ 705	€ 705
Non-member[3]	€ 805	€ 860	€ 960
EAGE Student Green Member[1,2,5]	€ 405	€ 455	€ 505
EAGE Student Bronze/ Silver/Gold Member[1,2,5]	€ 355	€ 380	€ 430
Student Non-member[2,3,4]	€ 430	€ 480	€ 530

1. Members please note: To qualify for the member registration fee, your EAGE membership dues for 2019 must have been paid and confirmed. The processing time for membership applications or renewals is around 10 working days.
2. To qualify for the reduced student registration fee:
   - Students must be enrolled in a full-time study programme at a recognized university or institute.
   - The registration must be accompanied by a copy of a student ID card and/or official proof of enrolment.
3. The Non-Member fee includes EAGE membership for the remainder of 2019. This membership will be activated shortly after the conclusion of the event.
4. Student Non-Members cannot be older than 34 years of age (when registering).
5. Green membership status gives you a € 50 discount (€ 25 for students) on the Non-Member fee for each EAGE event registration; starting from Bronze status, you can benefit from an even greater reduced EAGE member registration fee.

Please note that EAGE reserves the right to cancel the short course(s) due to low participation. In this case, payment will be refunded in full.

DISCIPLINES

Geophysics · Geology · Reservoir Characterization · Near Surface · Engineering · Training and Development · Data Science

26 NOVEMBER 2019

New Applications of Machine Learning to Oil & Gas Exploration and Production

Dr Bernard Montaron (Fraimwork SAS)

CPD Points: 5

Course Description

The course introduction will attempt to answer the question: How will A.I. change the way we work in the Oil and Gas industry in the coming years? Looking at what is underway in other industries and guessing what type of projects are under development in R&D departments in our industry will help answer that question.

Oil and Gas examples will be presented corresponding to each of the terms A.I., Machine Learning, and Deep Learning, allowing participants to reach a clear understanding on how they differ.

The course will then focus on Deep Learning (DL) and address all key aspects of developing and applying the technology to Oil and Gas projects.

- What is DL and how different is it from traditional neural networks?
- A peek at the mathematics behind Deep Neural Networks (DNN)
- Typical workflow to design and develop a deep learning application in an E&P project
- Common challenges, difficulties, and pitfalls in deep learning projects
- Software tools and hardware required + Cloud computing vs in-house solutions.

This will be followed by live demonstrations of two DNN-based applications specific to Oil and Gas upstream domains.

First, we'll run software performing automatic fault identification on released seismic data from New Zealand basins to demonstrate how a DNN recognizes faults and how it differs from other algorithms such as ant tracking. Starting from default training, the DNN can gradually learn to recognize faults like the Geophysicist or Structural Geologist. The training set constantly evolves incorporating feedback from human experts.

Second, the identification of resource opportunities in very large repositories of text and image documents will be demonstrated. This will be done with a deep learning application that performs contextual search and linguistic analysis. Unlike keyword search, contextual search extracts information based on its context, just like humans do. And then linguistic analysis is run on the extracted information to identify actionable opportunities. This list of opportunities can then be further evaluated by human experts.

Finally, the course conclusion will summarize key learnings and answer any additional questions/queries from participants.

Participants' Profile

The course is designed for geoscientists, petroleum engineers, and petrophysicists from new ventures/basin, exploration, and development & production disciplines - from early career to senior, working in oil & gas companies or service companies.

27 NOVEMBER 2019

Machine Learning for Geoscientists with Hands-on Coding

Dr Ehsan Naeini (Ikon Science)

CPD Points: 5

Course Description

Machine learning has been around for decades or, depending on your view, centuries. By applying machine learning to our workflows, e.g. petrophysics, rock physics, seismic processing and reservoir characterization, we can bring speed, efficiency and consistency over traditional methods of data analysis. In addition, we can implement a range of machine learning techniques together with optimization algorithms and statistics to identify new patterns and relationships in multi-dimensional datasets. This has the potential to enhance our quantification and strengthen our interpretation of the subsurface; ultimately leading to a more accurate predictive outcome.

In this course we attempt to layout the reality of artificial intelligence, machine learning, deep learning and big data. We cover the basic principles of machine learning and some of the most widely used algorithms. We continue by explaining a workflow for implementing a typical machine learning application in practice and to quality control and interpret the outcomes. Following this we shift focus to Geoscience and show various examples in which machine learning algorithms have been implemented for well- and/or seismic-based applications. Given the hands-on coding nature of this course, trainees will code up a classification and a regression algorithm for lithology/facies and well log prediction correspondingly. Throughout these exercises the trainees will become familiar with the flexibility of coding machine learning in Python (although we do not intend to teach Python in details in this course) as well as familiarization with publicly available python libraries for machine learning and analytics. We use RokDoc (Ikon Science's proprietary software - educational licenses / laptops will be provided) to facilitate this process and to use real world geoscience examples. The course is for entry level practitioners and involves hands-on coding, hence having some Python skills is an advantage but not essential.

Participants' Profile

The course is designed for everyone in the Geoscience field who is interested in learning more about Machine Learning.