

# Gaze into Legends: Crafting Personalized Narratives through VR Eye-tracking

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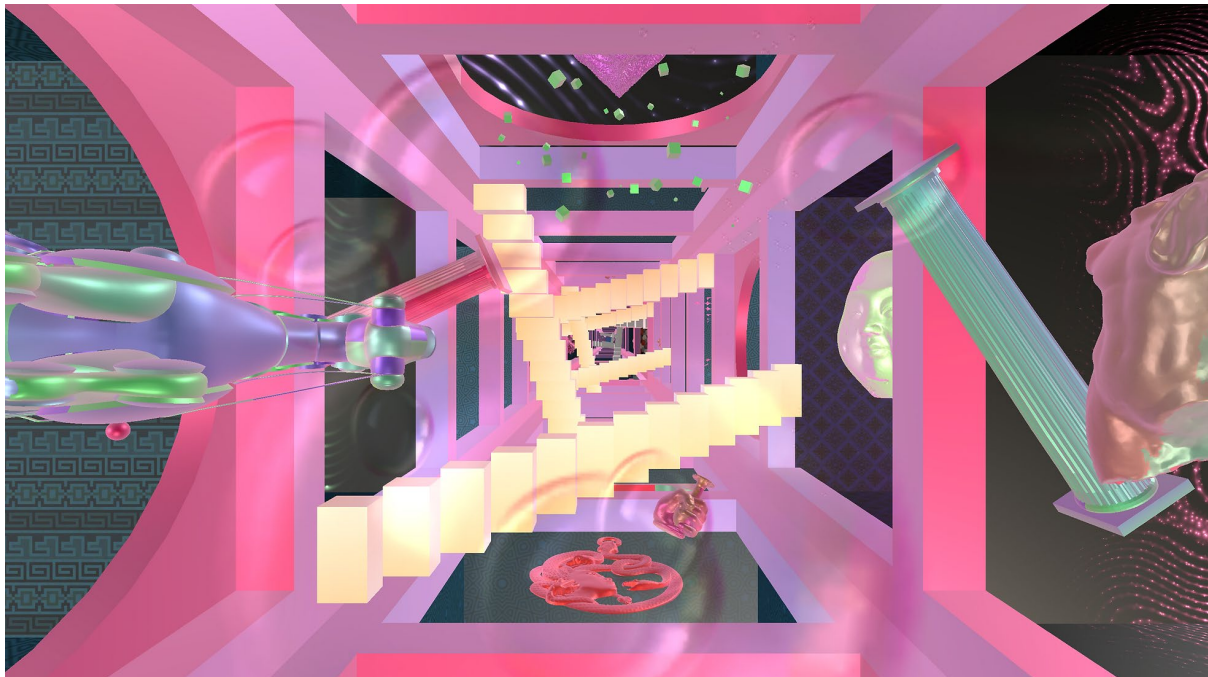


Figure 1. A tower of mythological journeys in VR gameplay

## Abstract

This project introduces an innovative paradigm for mythological storytelling within a gaze-controlled virtual reality environment. Departing from conventional mediums such as audio and text, it enables users to engage in first-person explorations of global mythologies and folktales. Leveraging intuitive eye-tracking mechanisms and interactive chatbot technology, it fosters immersive narrative experiences. Informed by user interaction patterns, the system facilitates dynamic co-creation. This adaptive storytelling not only delivers personalized experiences but also encourages diverse interpretations and deeper connections with mythological content. By transcending simplistic symbols prevalent in static storytelling, our work redefines narrative exploration, offering a multi-layered journey into mythological realms.

## Keywords

**Interactive Storytelling, Adaptive Narrative, Gaze-controlled VR**

## Introduction

The human fascination with the mystical power of vision and sight has been a recurring theme throughout world mythology, resonating in legends such as the petrifying gaze of the Gorgons or the ominous "evil eye" found in various cultures. This notion extends even to the powerful visionary ability of Kurma in Hindu mythology, capable of bearing the weight of the universe. Despite the rich landscape of sight-based magic in myths and folklore, these profound concepts often succumb to oversimplification or one-dimensional symbols, such as Medusa representing unchecked desire or the "devil eye" as negative energy. These depictions fail to capture the broader narrative context and leave the audience with a shallow perception. By delving into the intricacies and implications of these visionary abilities, a more nuanced exploration beckons, waiting to unfold and be embraced.

Our project introduces an immersive, adaptive system that utilizes Artificial Intelligence (AI) to facilitate gaze-guided interactions with mythological narratives within a Virtual Reality (VR) setting. By transcending traditional, static

methods of mythological storytelling, our system offers personalized responses based on users' interactions with narrative elements, thus promoting a dynamic understanding of mythological tales. It empowers users to create their own interpretations through active engagement in virtual scenes and encourages collaborative contributions to the narrative's development. This innovative approach markedly enhances the adaptability and depth of the storytelling experience, providing users with a unique and immersive exploration of mythology.

Our contribution lies in introducing an adaptive, co-creative storytelling framework that integrates gaze-guided interactions with AI technologies. This approach allows users to craft their own open-ended conclusions to traditional folktale stories, thereby personalizing their mythological exploration. Moreover, our system facilitates real-time, collaborative storytelling, enabling players to collectively influence the narrative trajectory. This not only enhances social engagement but also enriches the global exchange of folklore and cultural heritage. Through our work, we elevate mythological exploration to a profound, multi-dimensional experience that moves beyond basic interpretations, inviting users to uncover the intricate mosaic of global mythologies.

## Related Work

Mythology holds significant symbolic meaning for a particular culture and draws attention to the dynamic process of telling, listening, and reflection that continually shapes and reshapes people's beliefs about the unseen powers [1]. There is a vital need to reinvent methods of narrating mythological stories in a compelling and contemporary manner.

Co-created storytelling stands out as a noteworthy focus within the domain of generative stories, where narratives evolve dynamically through user interaction. The collaboration between AI and players transcends traditional linear storytelling, giving rise to multi-faceted narratives. An illustrative instance is found in *Why Are We Like This*, where players receive inspiration and propel the story forward with the assistance of AI [2]. Additionally, interactive fictions empower players to engage with virtual worlds through textual input, facilitating the procedural generation of interactive fiction environments [3]. Our platform not only facilitates co-creation between AI and players but also empowers each player to exert influence on one another's narratives.

Gaze-based interaction has been investigated across diverse virtual reality platforms. Examples of its application include the exploration of gaze-guided narratives, where audio content dynamically adjusts based on the user's focal points [4], and the engagement with artwork pictures in exhibitions through eye tracking [5]. These instances illustrate how eye tracking serves as an innovative interaction tool for comprehending and enhancing narrative experiences.

Our work aims to highlight these often-overlooked nuances in text-based narratives, emphasizing the need for a more comprehensive understanding of emotional complexity through adaptive storytelling.

## Experience

### A Tower of Legendary Journeys

In this virtual reality experience, players find themselves entering an infinite tower with the futuristic ambiance of a space station. The game comprises 40 distinct journeys or rooms, each embodying unique mythological archetypes and themes. For example, one room might be dedicated to the Greek myth of Medusa, filled with serpentine motifs and perhaps even a virtual rendition of her petrifying gaze. Another room might explore Japanese cultural heritage through lifelike dolls, each representing different folktales or deities. The player's journey through this tower is likely to be exploratory, inviting them to interact with these various mythological elements, uncover their meanings, and reflect on their understandings related to each theme.

### Mythological Gazes

There are four types of vision-based interactions provided in the experience.

- **X-ray Perception:** This superpower allows the user to see through solid objects, uncovering concealed truths and insights. It is useful for revealing the internal structure of objects, adding a layer of depth and discovery to the VR experience. Therefore, users can explore beyond the visible and delve into the hidden details within the mythological stories.
- **Petrifying Gaze:** Derived from the myth of Medusa, this ability enables users to turn objects to stone with a mere glance. This gaze serves a dual purpose: it acts as both a method for immobilization and a mechanism for defense, introducing strategic elements into user interactions. Petrifying Gaze adds a thrilling aspect of control and power over the virtual environment, echoing the mythical capabilities of ancient deities and creatures.
- **Enviro Gaze:** This vision-based ability includes manipulating or influencing the surroundings with the sight. Users can alter weather conditions, transform natural elements, and modify the physical properties of their environment. Enviro Gaze creates a dynamic and interactive VR setting that actively responds to the user's gaze, making the mythological world feel alive and subject to the users' influence.
- **Shifting Vision:** This superpower allows users to manipulate the size and scale of objects by looking at them. This power provides users with a creative toolkit for interacting with the VR landscape, enabling the resizing of objects for exploration, puzzle-solving, or combat scenarios. It encourages users to think innovatively about their surroundings, offering a playful and dynamic method to engage with the mythological narrative.

Each eye-tracking interaction is triggered once the user focuses on an object for longer than three seconds. Upon activation, the object is highlighted with a glowing outline, either gradually animating or transforming itself, based on the specific superpower associated with the scene.

### AI-generated Narratives

Upon entering a room, players engage with their surroundings by employing eye gaze interactions with

various objects. Upon successfully interacting with a few distinct objects, a sentence encapsulating these interacted items as prompts will be sent to ChatGPT through Unity API and a personalized takeaway will be returned. This dynamic process empowers multiple players to shape the unfolding narrative, with their interactions serving as guiding elements.

For instance, when a player engages with stone, snake, and mirror, the AI-generated takeaway is:

*In the mythic gaze of Medusa, reflections become serpentine truths, mirroring the paradox of petrifying reality with the beauty that turns the beholder to stone.*

Enabled by generative AI, each space presents players with a monostich, a single-lined poem, upon completion of a mythic journey. These poems enlighten the player with a new standpoint, diverging from the clichéd interpretation of the mythic stories to unravel an open thread of possibilities. Each player's customized journey, complete with interactive objects and chatbot prompts, contributes to a shared mosaic of poetic expressions, co-created by explorers following their unique paths. By integrating gaze interactions, immersive storytelling and generative AI, this experience facilitates collective reimagination and navigation of myths, opening new avenues for reconnecting us with the multifaceted and profound visual themes that have echoed across the ages.

## Conclusion

In this paper, we introduce a dynamic system designed to explore interactive mythological storytelling within VR environments. By integrating gaze-based interaction and AI-powered narrative creation, we provide an adaptive experience that not only enhances the personalization and depth of narrative engagement but also fosters a collaborative framework, enabling users to co-create stories dynamically.

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