Erdem Murat

erdemmurat.com

Computer Science Ph.D. student with expertise in research, artificial intelligence, virtual reality, and game design.

Education

• George Mason University

Ph.D. in Computer Science B.S & M.S in Computer Science

PUBLICATIONS

• GPT-Think-Alouds: Analyzing User Emotion in VR Platformer Games via LLMs

Erdem Murat, Yongqi Zhang, Liuchuan Yu, Siraj Sabah, Lap-Fai Yu

- Deployed a ChatGPT API to automate playtesting sessions for players in VR game, collecting think-aloud data.
- Bot analyzes gameplay video, user statements, and tone to quantify emotion and difficulty perception.
- Used radial basis function and dynamic time warping to conduct emotion comparison between experiences.

• Predicting Users' Difficulty Perception in a VR Platformer Game

Erdem Murat, Liuchuan Yu, Siraj Sabah, Haikun Huang, Lap-Fai Yu

- Trained a recurrent neural network to predict user-profiles and perceptions of difficulty over various game levels using limited gameplay and user data.
- Understanding Online Education in Metaverse: Systems and User Experience Perspectives Ruizhi Cheng, Erdem Murat, Lap-Fai Yu, Songging Chen, Bo Han IEEE VR 24'
 - Proposed an analytic method combining qualitative & quantitative analysis with end-to-end network measurements to understand user experience in VR education and detect bottlenecks to optimize system performance.

• Machine Learning Automation for Virtual Reality Games

• Addressed limitations in VR game design research and proposed a machine learning solution that accurately predicts user perception of difficulty in a VR game.

EXPERIENCE

• Design Computing and eXtended Reality Lab

- Researcher
 - $\circ~$ ${\bf Research:}~$ Artificial Intelligence, Virtual Reality, Game Design
 - $\circ~\mathbf{Advisor:}$ Prof. Lap-Fai (Craig) Yu

• Collimation

Unity Developer Intern

- Mixed Reality Development: Consulted on the design of a mixed-reality sports system using hand-tracking.
- Unity Development: Using on-devise and external cameras, designed part of a system for XR sports training.

• Global Co Lab

Virtual Reality Director

- Virtual Reality Development: Developed VR spaces for a non-profit to educate in environmental sciences. Won the organization \$15,000 in prizes for designs.
- Teaching: Educated youth teams in VR development for projects and competition entries.

ACADEMIC SERVICES

- Conference Local Chair: ACM MIG 2024
- Conference Paper Reviewer: IEEE VR 2023

Projects

- VR Sports Simulation System: Devised a VR system with feet tracking to be used by three Fortune 500 clients. Formulated physics and a unique interaction system with built-in data collection for research on professional athletes.
- Computer Vision Based Lane Detection for Driving Simulator: Using CUDA, YOLO, PyTorch, and TensorFlower libraries, developed a CV-based solution for real-time lane assistance in a driving simulator.
- Motion Planning for A Multi-Robot System : Used Gazebo and ROS to create a multi-robot setting with obstacles and motion-planning for autonomous movement.

August 2023 – Current August 2018 – May 2023

Under Review

Under Review

Master's Thesis

George Mason University, VA January 2022 – Present

Irvine, CA

May 2024 – Present

Arlington, VA

July 2022 – Present