

# Erdem Murat

erdemmurat.com

Email: emurat@gmu.edu

Mobile: +1-202-717-4373

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*

*August 2023 – Current*

*August 2018 – May 2023*

## PUBLICATIONS

---

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

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

Under Review

- Devised a solution that predicts momentary and overall player emotions and difficulty using think-aloud statements and analyzing statements, tone, and gameplay footage via large language models. Used dynamic time-warping to enable joint sentiment analysis and experience comparison.

- **Predicting Users' Difficulty Perception in a VR Platformer Game**

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

Under Review

- 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, Songqing 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**

Master's Thesis

- 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*

George Mason University, VA

*January 2022 – Present*

- **Research:** Artificial Intelligence, Virtual Reality, Game Design
- **Advisor:** Prof. Lap-Fai (Craig) Yu

- **Collimation**

*Unity Developer Intern*

Irvine, CA

*May 2024 – Present*

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

- **Global Co Lab**

*Virtual Reality Director*

Arlington, VA

*July 2022 – Present*

- **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 TensorFlow 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.