Olly (Ziqi) Guo

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Research Interests

- Embodiment, agency, and intimacy in educational/theatrical VR: presence design, and empirical evaluation of immersive experiences that connect performers, audiences, and spaces.
- Behavioral modeling from VR telemetry (head/hand motion, interaction sequences) for engagement/early-quit prediction and adaptive interventions.
- Multi-agent decision making under partial observability; algorithmic tooling for POMDP/POMG and RL-driven tutoring/guidance agents in immersive learning environments.

Education

B.S. in Computer Science (Certificate in Game Design) Expected Dec 2025
University of Wisconsin–Madison Madison, WI

- Relevant coursework/techniques: Python (PyTorch, Pandas, TensorFlow, SciPy); Computer Graphics; full-stack game design and development (C#, Unity); Machine Learning, Computer Vision, Clustering, Reinforcement Learning.

Publications & Submissions

1. **Olly (Ziqi) Guo** and Kevin Ponto. *Using Head Movements to Predict Performance and Early Quitting in Virtual Reality*. Manuscript submitted to *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2025.
2. Megan Reilly and **Olly (Ziqi) Guo**. *Beyond the Garden of Adrian and the Authentic Actor–Audience Connection*. Submitted to *International Journal of Performance Arts and Digital Media*, 2025.

Posters

1. *Observationally and Computationally Probing the Milky Way Galaxy Density Structure*.
   Olly (Ziqi) Guo, Rachel McClure, Elena D'Onghia, Dominic Catherino.

Research Experience

Undergraduate Researcher Jan 2024–Present
Wisconsin Institute for Discovery Madison, WI

- Built predictive models (KNN, Random Forest) over sequential VR gameplay data to identify early-quitting behavior; achieved 80% accuracy on original test data and 77% on new datasets.
- Integrated models into gameplay for real-time adaptive feedback to improve user experience and collect online data for iterative, user-centered interventions.
- Analyzed experimental results to surface factors correlated with early quitting and designed targeted intervention strategies; examined model generalization across diverse games, showing moderate transferability.

Undergraduate Researcher May 2023–Present
Department of Theatre Madison, WI

- Prototyped and iterated a one-on-one VR environment (*Beyond the Garden of Adrian*) in Unity (C#), investigated factors in design that shape player-actor interaction.
- Surveyed 30+ participants to study transformational VR gameplay and the relationships among environment, actor, and audience; the updated work was accepted to the Festival d'Avignon.

Undergraduate Researcher Oct 2022–Jul 2023
Department of Astronomy Madison, WI

- Trained a neural network to identify Red Clump stars, addressing limitations of traditional observation pipelines.
- Provided computational evidence supporting a correlation between Red Clump stars and galactic bars; used bar structures to probe Milky Way density and evaluate N-body simulations against observations.

Undergraduate Researcher Sep 2024–Present
Department of Computer Science Madison, WI

- Applied Q-learning and policy-gradient methods to compute Nash-equilibrium strategies in multi-agent settings under partial observability.
- Designed and implemented optimization routines in Java for partially observable Markov games.
- Developed and visualized an exact POMG solver (belief-state discretization; iterative elimination of dominated strategies).

Honors

- *Beyond the Garden of Adrian* (interactive VR performance): accepted at the Festival d'Avignon.
- *Dean's List*: 2022–2024

Involvement

Senior Narrative Designer & Developer Sep 2022–Present
Minerva Studio Madison, WI

- Led narrative and gameplay design for the 2D roguelike *Library of Meialia*; built interactive storytelling and dialogue systems and integrated encyclopedia interfaces (Unity, C#, Lua); released a public demo on Steam.
- Collaborated with art, audio, and engineering to align narrative with mechanics and maintain a cohesive, player-centered experience; contributed to combat, UI/UX, and core systems refinement.

Teaching & Mentorship

Peer Mentor Sep 2024–Present
Computer Sciences 540: Introduction to Artificial Intelligence University of Wisconsin–Madison

- Supported instruction for *Introduction to Artificial Intelligence.*
- Assisted students with principles of knowledge-based search, automatic deduction, predicate logic, machine learning, and probabilistic reasoning.
- Helped apply AI methods to tasks such as problem solving, game playing, natural language understanding, computer vision, and robotics.

Peer Mentor Sep 2024–Present
Computer Sciences 559: Computer Graphics University of Wisconsin–Madison

- Supported instruction for *Computer Graphics.*
- Assisted students with fundamentals of image representation, geometric transformations, modeling, rendering, and animation.
- Guided labs and projects involving curves, surfaces, visualization, and multimedia applications, building on vector mathematics and linear algebra.