

MARK ZEYU LU

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Education

Washington University in St. Louis

Ph.D. Candidate in Computer Science

Sep 2024 – Present

St. Louis, Missouri

Washington University in St. Louis

Master of Science in Computer Science, GPA: 4.0/4.0

Sep 2021 – Dec 2023

St. Louis, Missouri

Donghua University

Bachelor of Science in Computer Science, GPA: 3.85/4.0

Sep 2017 – May 2021

Shanghai, China

Publications

[Pre-Print] Dom C. P. Marticorena, **Zeyu Lu**, Chris Wissmann, Yash Agarwal, David Garrison, John M. Zempel, Dennis L. Barbour, “Immersive virtual games: winners for deep cognitive assessment,” *arXiv:2502.10290*, 2025

Research Experience

NeuroMedical Informatics Lab, Washington University in St. Louis

Oct 2023 – Present

Advised by: Prof. Dennis Barbour

St. Louis, Missouri

- Built the novel PixelDOPA platform in the virtual environment that embeds classic NIH Toolbox-like tasks, logs continuous gaze + movement data, shows strong convergent validity and reliability, and uncovers stable, individual strategy profiles without sacrificing psychometric rigor.
- Investigate cognitive performance in pediatric brain-tumor patients to clarify impairment mechanisms and identify predictors of long-term outcomes.
- Built an experimental platform and toolkit that continuously captures high-resolution behavioral data, employing LLMs to model and interpret player behavior in real time while simultaneously collecting player feedback for subsequent optimization

Applied Research Lab, Washington University in St. Louis

Feb 2023 – Dec 2023

Advised by: Prof. Patrick Crowley

St. Louis, Missouri

- Modernized a 20-year-old Remote Lab Interface into a secure full-stack platform, enabling HTTP/3 & QUIC experiments with streamlined credential management.
- Evaluated token-based web security (JWT, SSO) across 5+ frameworks and proposed XSS & CSRF mitigations.

Big Data & AI Lab, Donghua University

Apr 2020 – May 2021

Advised by: Prof. Yanting Zhang

Shanghai, China

- Modeled links between e-commerce activity and urban mobility with multilayer networks plus a novel spatial overlap metric.
- Improved 3D vehicle-pose pipeline (Mask R-CNN → CenterNet/6D-VNet) for ApolloCar3D, boosting accuracy.

Electronic Engineering Automation Lab, Tsinghua University

May 2019 – Oct 2019

Advised by: Prof. Yi Yang

Beijing, China

- Built SVM pipeline and facial-feature tracker for real-time expression recognition, outperforming CNN baselines in speed.

Vision & Geometry Perception Lab, Donghua University

Apr 2018 – Dec 2019

Advised by: Prof. Shen Cai

Shanghai, China

- Created deep-learning odometry system (MVSNet + Fusibile) for logistics package dimensioning; won \$47 K CaiNiao Global Tech 1st Prize.

Honors

- Scholarship for Academic Excellence, Donghua University 09/2020
- Scholarship for Social Work, Donghua University 09/2020
- Best Contributor Award, Student Union of Donghua University 05/2020
- Excellent Student Cadre Award, Donghua University 05/2019
- Outstanding Student Award, Donghua University 05/2018
- 1st Prize (1/30) of the Cainiao Global Technology Competition, Alibaba Group 05/2019
- 1st Prize (8/190) of the ACM/ICPC Contest, Donghua University 04/2018
- Runner-up of Shanghai College Basketball League 2019
- Rank 7th in the 6th CUBA National University Basketball (second class) League 2020 2020

Leadership and Service

Student Union

Fall 2020 – Spring 2021

President

DongHua University

- Led a team of 150 to organize over 30 student activities within two semesters.
- Facilitated communication between students and the university's administration and bureaucracy, advocating for students' rights and interests

Secretariat of Student Union

Fall 2019 – Spring 2020

Director

DongHua University

- Led a team of 20 to supervise the operations of the student union across various faculties.
- Opened channels for student feedback and ensured the implementation of university policies at the grassroots level.

Educational Aid to Xinjiang

Summer 2020

Volunteer Teacher

Anyi Central Primary School

- Taught 24 classes in basic mathematics and physical education over a month.
- Maintained and instructed on the use of a donated information system at the school.