Zeyu (Michael) Lai

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San Diego, California

EDUCATION

University of California, San Diego, Undergraduate: *2025-2029*
Major: Data Science & Electrical Engineering **Minor:** Mathematics

BASIS International School Park Lane Harbour, High School: *2022-2025*
GPA: 3.79/4.0

EXPERIENCES

- **Su Hao's AI Lab:** Embodied AI research group at UC San Diego (MAR 2026-Present)
  - Developing scalable RL pipelines for robotic manipulation using Isaac Gym and the lab's proprietary SAPIEN/ManiSkill simulators
- **MURO Lab:** Distributed Robotics and Multi-Agent Coordination at UC San Diego (OCT 2025-Present)
  - Researched distributed robotics and multi-agent coordination; Developing multi-robot map-merging infrastructure to enable autonomous navigation for robot fleet (TurtleBot4 platforms) and unified it into a global representation.
- **TRITON-AI:** Autonomous Vehicles Student Organization at UC San Diego (OCT 2025-Present)
  - Worked on LiDAR–camera sensor fusion for FTENTH and contributed to the path planning team for Triton-AI's autonomous go-kart

TECHNICAL SKILLS

- **Languages:** Python, Java, C++, JavaScript,Typescript
- **Libraries & Tools:** OpenCV, MediaPipe, ROS2, micro-ROS, TensorFlow, Scikit-Learn, Isaac gym, ManiSkill
- **Machine Learning:** Deep learning (CNNS, RNNs, Transformers), LLMs, Reinforcement learning
- **Hardware:** ESP32, Arduino, Turtlebot4, Sensor integration (LiDAR, IMU, etc.)
- **Design:** PCB Design, Fusion 360
- **Frameworks:** Jupyter notebook, Gymnasium, Google Colab, Conda, GitHub Actions

CERTIFICATIONS

- Supervised ML: Regression & Classification (Stanford University)
- Advanced Learning Algorithms (Stanford University)
- Unsupervised Learning, Recommenders, RL (Stanford University)

HONORS

- 2024 United States Computing Olympiad (USACO) Gold Division
- 2024 Invention Convention China National Finalist
- BASIS China Hackathon 1st Place (1/36 participants)
- Euclid Math Contest Distinction (top 20%)

- IMMC 2024 Greater China Region Finalist

PUBLICATIONS

- "Diving into the virtual realm: Exploring the mechanics of virtual reality" *Proc of the 2023 International Conference on Machine Learning and Automation*
  - Explores the core hardware (HMDs, motion tracking, controllers) and software (3D rendering, audio simulation) systems that enable immersive VR, with focus on real-time synchronization and haptic feedback for enhanced user experience.

PROJECTS

RL Gymnasium

2026

- Developed a clean, extensible reinforcement learning repository for training and evaluating classic Gymnasium control tasks
- Technical skills: Python, PyTorch, Reinforcement Learning, Gymnasium, algorithmic implementation

Uniq-Intelligent Browser Automation System (Google Gemini Hackathon 2026)

2026

- Engineered an autonomous browser agent using Node.js, Playwright, and Gemini 3.0 Flash for task planning and decision making
- Developed a resilient Agent Loop featuring semantic auto-scroll, graduated failure recovery, and DOM-based interactive region detection
- Technical skills: TypeScript, Node.js, Playwright, Gemini 3.0, WebSockets, SQLite, LLM integration

Hybrid Crawler-Drone Robot System

2025

- Designed and built multi-modal vehicle with detachable drone basket and retractable arms.
- Integrated ESP32-S3 with I2S microphone, SPIFFS file system, and motor drivers for ground motion.
- Offers unique flexibility for real-world navigation and reducing cost compared to separate robots

English–Chinese NMT with Transformer

2024

- Built a Transformer-based neural machine translation (NMT) model from scratch in PyTorch
- Used Hugging Face's opus-100 dataset for English–Chinese parallel sentence training
- Technical skills: PyTorch, Hugging Face Datasets, Tokenizers, Transformer architecture, model training and debugging

Gesture-Based Brightness Adjuster (Basis Hackathon, 1st Place)

2024

- Created webcam-controlled brightness tool using OpenCV & MediaPipe.
- Mapped thumb–index finger distance to screen brightness; used pinky curl as a trigger for fixed levels
- Won 1st out of 36 participants at BASIS national hackathon.
- Useful in hospitals or cleanrooms where hygiene and contactless interaction are key; low-cost alternative to hardware controls

Monte Carlo Ising Simulation (PI: Prof. Erik Luijten at Northwestern University, Cetus Research)

2024

- Simulated 2D Ising spin-lattice models using Monte Carlo methods to study phase transitions and equilibrium states
- Technical skills: Python, NumPy, Matplotlib, statistical physics, algorithm implementation

Smart Glasses for Visually Impaired (NOVA MAKER)

2023

- Inventor and developer of AR smart glasses with 90% route detection accuracy.
- Embedded text-to-audio translation(raw); field-tested with 20+ users.
- Project recognized at the Invention Convention China 2024 (National Finalist).