Lizhe Zhang

✉ liz058@ucsd.edu   🌐 lizhezhang.github.io   💼 lizhe-zhang   ⓞ FearandDreams1123   𝔾 Google Scholar

EDUCATION

University of California, San Diego, La Jolla, CA — Sep. 2024 - Present
M.S. in Computer Science — GPA: 4.00/4.00

Georgia Institute of Technology, Atlanta, GA — May. 2022 - Dec. 2023
B.S. in Computer Engineering — GPA: 3.96/4.00

Emory University, Atlanta, GA — Aug. 2019 - Dec. 2023
B.S. in Physics, Minor in Applied Mathematics — GPA: 3.90/4.00

RESEARCH EXPERIENCE

Graduate Research Assistant - (Advised by Prof. Jingbo Shang) — Jun. 2024 - Present
University of California, San Diego — La Jolla, CA

- Proposed and implemented an **automated code-rewriting pipeline** that generates semantically different but similarly difficult variants of coding problems to capture harmful memorization in LLM code generation.
- Introduced the **Memorization Risk Index (MRI)**, a metric that captures **harmful memorization** as high-similarity failures rather than treating similarity alone as memorization.
- Evaluated **15+ LLMs** on MBPP+ and BigCodeBench, finding that harmful memorization often decreases as models scale and that different post-training strategies (SFT vs. PPO) trade off accuracy and memorization differently. Work under review at ICLR 2026 (co-first author).

Graduate Research Assistant - (Advised by Prof. Xia Hu) — Sep. 2024 - May 2025
Rice University — Houston, TX

- Architected a **multi-stage, uncertainty-based routing system** that automatically decides when on-device small language models should "seek stronger" large LMs to balance latency, cost, and accuracy.
- Benchmarked **8 small LMs and 2 large LMs** on GSM8K, MMLU, and other tasks, systematically comparing 8 uncertainty quantification (UQ) methods and analyzing uncertainty–correctness alignment for routing decisions.
- Developed a **proxy routing data pipeline** that constructs a data-agnostic hold-out set, enabling routing strategies to **generalize to unseen datasets without new labeled data**, reducing deployment overhead. Work accepted to NeurIPS 2025 LLM Evaluation Workshop.

Undergraduate Research Assistant - (Advised by Prof. Thomas Ploetz) — May. 2023 - Feb. 2024
Georgia Institute of Technology — Atlanta, GA

- Implemented the **IMUGPT 2.0 virtual IMU data-generation pipeline**: used 5 LLMs to produce diverse activity descriptions, fed them into 4 text-to-motion models to synthesize 3D motion, and converted the motion into realistic IMU streams; systematically ran large-scale experiments across 5 motion datasets for HAR training.
- Assisted in **generating large-scale virtual IMU datasets** for emotion recognition by running and validating pipelines that convert 3D motion (e.g., Motion-X, Mocap) into virtual IMU sensor streams at multiple body locations.
- Prepared training data for experiments by organizing, cleaning, and formatting both **virtual and real IMU data** into consistent datasets across sensor locations and modalities, enabling **robust model training and evaluation** for "on-the-go" emotion recognition.

PUBLICATIONS

Memorize or Generalize? Evaluating LLM Code Generation with Code Rewriting — ICLR 2026 (Under review)
Lizhe Zhang*, *Wentao Chen*, Li Zhong, Letian Peng, Zilong Wang, Jingbo Shang* — *[arxiv]*

IMUGPT 2.0: Language-Based Cross Modality Transfer for Sensor-Based Human Activity Recognition — IMWUT 2024 — *[paper]*
*Zikang Leng, Amitrajit Bhattacharjee, Hrudhai Rajasekhar, **Lizhe Zhang**, Elizabeth Bruda, Hyeokhyen Kwon, Thomas Ploetz*

Emotion Recognition on the Go: Utilizing Wearable IMUs for Personalized Emotion Recognition — UbiComp/ISWC 2024 — *[paper]*
*Zikang Leng, Myeongul Jung, Sungjin Hwang, Seungwoo Oh, **Lizhe Zhang**, Thomas Plötz, Kwanguk Kim*

Confident or Seek Stronger: Exploring Uncertainty-Based On-device LLM Routing From Benchmarking to Generalization — NeurIPS 2025 Workshop — *[arxiv]*
Yu-Neng Chuang, Leisheng Yu* Guanchu Wang, **Lizhe Zhang**, Zirui Liu, Xuanting Cai, Yang Sui, Vladimir Braverman, Xia Hu*

WORK EXPERIENCE

Machine Learning Intern   May. 2023 - Aug. 2023
Horizon Robotics   Beijing, China

- Benchmarked state-of-the-art 3D semantic segmentation models on the SemanticKITTI dataset to assess performance for autonomous-driving perception.
- Identified critical flaws in the standard mIoU metric, showing how it unfairly penalizes minor but acceptable deviations in 3D predictions; collaborated with the team to design and prototype a range-based evaluation framework that more robustly reflects real-world behavior and better guides model iteration.

Software Engineering Intern   Jun. 2021 - Aug. 2021
Inspur Group   Jinan, China

- Replaced a legacy Haar-cascade license plate detector with a fine-tuned YOLOv5 model.
- Achieved >40% improvement in detection accuracy and significantly improved robustness in diverse and low-light conditions, strengthening reliability for downstream traffic analytics.

Honors & Awards

Language-based Cross-modality Transfer System for Generating Virtual Inertial   US Patent Filed
Measurement Unit Data to Enhance Human Activity Recognition

Sigma Pi Sigma National Physics Honor Society   Emory University, 2023

Faculty Honors   Georgia Institute of Technology, 2022-2023

PROJECTS

Find Your Spot   Aug. 2023 - Dec. 2023
Georgia Institute of Technology Senior Design Project   Atlanta, GA

- Engineered an end-to-end parking navigation system utilizing Bluetooth signals to guide users find available spots.
- Deployed BLE beacons throughout a parking deck to create a beacon network, leveraging RSSI values and path loss model to enable location detection and vehicle navigation.
- Designed and implemented a server to efficiently process and manage data from IoT sensors and BLE beacons, optimizing parking space allocation with location and routing algorithms.   *[poster]*

Virtual Reality Gesture Control Gloves   Aug. 2022 - Dec. 2022
Georgia Institute of Technology   Atlanta, GA

- Designed and built an Arduino-based, multi-sensor glove that captures finger motions with rotary potentiometers at each joint and reconstructs articulated hand poses in VR.
- Implemented firmware to map continuous resistance changes to 3D hand gestures and integrated a joystick controller for smooth hand translation and navigation in virtual space.
- Added an ultrasonic distance sensor and alert mechanism to warn users about nearby real-world obstacles, improving safety and immersion during VR interaction.   *[code]*

SELECTED COURSES

University of California, San Diego

- CSE 256. Statistical Natural Language Processing
- CSE 250A. Principles of Artificial Intelligence
- CSE 251A. Machine Learning: Learning Algorithms
- CSE 203B. Convex Optimization Algorithms

Georgia Institute of Technology

- CS 4476. Introduction to Computer Vision
- CS 4605. Mobile & Ubiquitous Computing
- CS 3630. Introduction to Perception & Robotics
- ECE 4122. Advanced Programming Techniques

SKILLS

- **Programming:** Python, Java, C/C++, Swift, LaTeX, UML
- **Software:** Git, Docker, VS Code, Blender
- **Soft Skills:** PyTorch, OpenAI, OpenCV, scikit-learn, NumPy, Pandas, TensorFlow

REFERENCES

Prof. Jingbo Shang   Associate Professor, Computer Science and Engineering Department, UC San Diego
Prof. Thomas Ploetz   Professor, School of Interactive Computing, Georgia Institute of Technology
Prof. Xia Hu   Professor, Department of Computer Science, Rice University