

Zizhe Zhang

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EDUCATION

Master of Science in Engineering (M.S.E.) in Robotics

University of Pennsylvania, GRASP Lab

Advisor: Prof. Nadia Figueroa

Aug 2024 – Present

Philadelphia, PA

Visiting Student

University of California San Diego, Jacobs School of Engineering

Jan 2023 – Mar 2023

San Diego, CA

Bachelor of Engineering (B.E.) in Measuring Control Technology & Instruments

Southeast University, School of Instrument Science and Engineering

Advisor: Prof. Yuan Yang

Aug 2020 – Jun 2024

Nanjing, China

PUBLICATIONS

(* and † denote equal contribution)

VLMgineer: Vision Language Models as Robotic Toolsmiths

George Jiayuan Gao*, Tianyu Li*, Junyao Shi, **Zizhe Zhang**†, Yihan Li†, Nadia Figueroa, and Dinesh Jayaraman

Under Review at Conference on Neural Information Processing Systems (NuerIPS), 2025

[[Website](#)]

Robotics: Science and Systems (RSS) Workshop on Robot Representations (**Spotlight Presentation**), 2025

Image-Based Visual Servoing for Enhanced Cooperation of Dual-Arm Manipulation

Zizhe Zhang, Yuan Yang, Wenqiang Zuo, Guangming Song, Aiguo Song, and Yang Shi

IEEE Robotics and Automation Letters (RA-L), 2025

[[arXiv](#)] [[PDF](#)] [[Website](#)]

RESEARCH AND INDUSTRY EXPERIENCE

Visiting Scholar, Duke University

Robot Dexterity Lab, advised by Prof. Xianyi Cheng

Working on developing an adaptive compliance motion representation for generalizable robotic manipulation and physical human-robot interaction (In Progress)

Durham, NC

Jun 2025 – Present

Graduate Research Assistant, University of Pennsylvania

Figueroa Robotics Lab, advised by Prof. Nadia Figueroa

Working on machine learning applications in control theory and robot manipulation. Projects include:

- Ensuring feasibility of passivity-based torque control via learned kinematic constraint mappings (*In Progress*)
- Implementing vision-based learning with force feedback for contact-rich manipulation tasks (*In Progress*)
- Utilizing Vision Language Models (VLMs) for robot policy synthesis ([RSS Workshop 2025](#))

Philadelphia, PA

Nov 2024 – Present

Technical Intern, Schneider Electric

Working in the Kylin project, including:

- IGBT thermal simulations
- Capacitor lifetime assessments
- EMC testing
- Circuit design

Shanghai, China

Jun 2023 – Aug 2023

Undergraduate Research Assistant, Southeast University

Robotic Perception and Control Lab, advised by Prof. Yuan Yang

Worked on developing visual-servoing-based robotic control architectures. Projects include:

- Designed an enhanced dual-arm collaborative control system based on image-based visual servoing ([RA-L 2025](#))
- Designed a shared teleoperation system control based on visual servoing (*Bachelor Thesis*)

Nanjing, China

Dec 2023 – Aug 2024

Automotive Safety Technology Lab, advised by Prof. Dong Wang

Mar 2022 – Jun 2023

- Applying edge detection to classify Martian topography and identify soft-ground hazards
- Designed a wheeled-leg ground-detection mechanism for rover traversal and analyzing force signals to predict mobility

Advanced Navigation Technology Lab, advised by Prof. Xuanpeng Li

Jul 2023 – Sep 2024

- Utilizing the PYTS library for signal visualization and building a CNN to extract and classify features from ADS-B radio signals

COURSE PROJECTS

News Source Classification, University of Pennsylvania

Philadelphia, PA

Team of 3, Leader

Aug 2024 – Dec 2024

- Collected and preprocessed 415,343 headlines from Fox News and NBC using sitemap scraping and BeautifulSoup, ensuring a balanced, cleaned dataset
- Built a TF-IDF + Logistic Regression baseline and fine-tuned BERT and DeBERTa models, applying k-fold cross-validation to eliminate data leakage
- DeBERTa K-fold achieved 88.66 % test accuracy, significantly surpassing the baseline (67.61 %)

Autonomous Vehicle based on GPS & DoF Camera, University of California San Diego

San Diego, CA

Team of 3

Jan 2023 – Mar 2023

- Utilized Python and VESC to control the robot, DoF camera to find and track lanes, centimetric GPS and PID method to record and follow paths
- Brought the robot to a complete stop by using PyVesc and DepthAI libraries to run stop sign detection on the camera
- Enabled the robot to respond correctly to speed limit signs by performing text detection on the camera

Design and Implementation of a Weather Query and Display Module, Southeast University.

Nanjing, China

Team of 3, Leader

Jan 2023 – Mar 2023

- Used ASM to design the function and organize each part of the MCU. Designed a Weather Query and Display Module which can choose and display weather information of several customized cities
- The whole project is based on a small device which can be used as smart home device

HONORS AND AWARDS

Outstanding Bachelor's Thesis, Southeast University

2024

Merit Student, Southeast University

2021

SERVICE

Reviewer

IEEE Transactions on Robotics (TRO)

2025

IEEE Transactions on Industrial Electronics (TIE)

2025

Volunteer

Robotics: Science and Systems (RSS)

2025

SKILLS

Programming C, C++, Python, MATLAB

Tools CMake, PyTorch, ROS, RLBench, ManiSkill, CoppeliaSim, PyBullet, Issac Gym/Sim/Lab

Robots UR3, UR3e, Franka Emika Panda, Franka Research 3