Shi Jingyuan

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Education Background

Zhejiang University, Major in Automation (Control), *Undergraduate* 2022.09 - 2026.06

- **Minor**: ACEE (Advanced Class for Engineering Education, Chu Kochen Honors College)
- **GPA**: 4.64/5.0 (Ranking: 7/121)
- **Relevant Core Courses:** Calculus (I): 100, Calculus (II): 98, Linear Algebra: 94, Probability and Statistics: 99, Mathematical Modeling: 92, Complex Variables and Integral Transforms: 91, C Programming Fundamentals: 96, Programming Topics: 93, Data Structures: 97, Frontiers in Artificial Intelligence: 90
- **Language Scores**: TOEFL: 103, CET-6: 609
- **Github** SpinyNewt **Personal Homepage** spinynewt.github.io

Project Experience

”ZJU Control Cup” Zhejiang University Aerial Robot Competition - Main Responsible Person

- Our three-person team built an autonomous navigation drone using a depth camera and radar **from scratch**. We designed and printed the drone frame, assembled and debugged the communication and power modules, and soldered the electronic control components.
- I was mainly responsible for drone simulation and trajectory planning in the project. I completed the trajectory planning based on the ego-planner package and tested it in the Gazebo simulation environment. Apart from drone selection and frame design, all other work was collaboratively completed by myself and team members.

Intelligent Control Techniques project link

- Implemented control schemes based on hierarchical control, expert control, fuzzy control, and neural network control. In the final assignment, I proposed control schemes for emergency lane change of autonomous vehicles, including fuzzy control, fuzzy PID control, neural network PID control, and neural network adaptive control, implemented using Matlab.

Few-shot Learning Based on Diffusion Classifier

- **Diffusion Classifier** for few-shot learning judges the category of an image based on the class-adapted model’s ability to reconstruct noised images. However, the method of estimating with a large number of noise samples leads to redundancy and inaccuracy.
- This work includes three contributions: (1) A method for dynamically estimating the optimal sampling timestep to reduce redundancy and optimize the sampling process; (2) A novel approach for learning graphical masks to eliminate environmental interference; (3) Combining other classification methods to identify the class. This work improved the accuracy of few-shot learning, achieving state-of-the-art performance while accelerating the existing Diffusion Classifier for few-shot learning by approximately 10 times.

Awards and Honors

- 2023-2024 Academic Year: Zhejiang University First-Class Scholarship (top 3%), Outstanding Student
- 2022-2023 Academic Year: Zhejiang University Second-Class Scholarship, Nandu Second-Class Scholarship, Excellent League Member of Lan Tian College

Competitions

- Second Prize in the 15th National College Students Mathematics Competition Final
- First Prize in the ”ZJU Control Cup” Zhejiang University Robot Competition Aerial Robot Invitational
- First Prize in the 2023 Zhejiang Province College Students Physics Competition

Professional Skills

Programming: Proficient in Python and C++; Deep Learning: Familiar with the PyTorch framework; Robotics: ROS