Yiyang Shao

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Education

2021.9–Present   **University of Science and Technology of China**

                            B.S. in Modern Mechanics, 3.79/4.3(4/143)

Selected Coursework: Mathematical Analysis B1(95), Linear Algebra B1(96), Probability Theory and Mathematical Statistics(92), Theoretical Mechanics B(99), Statistical Thermodynamics(97), Computer Vision(91), Game AI Design and Practice(1st Place)

Research Experience

Reinforcement Learning Algorithm for Imitating Cat Righting Reflex

Team Leader   *Shenzhen 01 Academy Summer School 2022*

• Developed control algorithms imitating the cat's righting reflex based on the TD3 algorithm.

SLAM and navigation of a sentry robot

Principle developer   *Robomaster 2023-2024*

• Developed a navigation system for a mobile robot, enhancing localization frequency and accuracy by integrating lidar, IMU, and encoder data with a Karman filter, and enabling the robot to navigate autonomously in uneven environments.

State Estimation and control of a bipedal robot

Principle Developer   *Robomaster 2023-2024*

• Proposed a novel slip detection and state estimation strategy based on physical first principles, significantly improving the robot's robustness. A manuscript detailing this work is currently in development.

3D Pointcloud-Based Ground Robot 6-DoF Path Planning and Motion Control

Team Leader   *College Student's Innovation and Entrepreneurship Training Program 2023-2024*

• Aiming to enable bipedal robots to autonomously navigate through uneven terrain. Developing terrain analysis for bipedal robots.

Coursework Project

Replication: 3D Photography on Your Desk

Independent project   *Computer Vision 2022 Fall*

• Replicated the classical computer vision paper *3D Photography on Your Desk* from scratch.

Neurodynamic Simulation of Demyelinating Neurological Damage Caused by SARS-COV-2

Team member   *Electromagnetism 2023 Spring*

• Investigated how SARS-COV-2 damages human brain function by neurodynamic simulation.

MOBA game AI based on Deep Reinforcement learning

Team leader   *Game AI design and practice 2023 Fall*

• Trained game AI agents for the MOBA game *Honor of Kings* based on PPO and won first place.

Skills, Languages and Hobbies

Programming and Tools	Python, C++/C, Matlab, Mathematica , ROS/ROS2
Robotics	Optimal Control, Deep RL, Path Planning, SLAM
Languages	English: TOEFL 95
Hobbies	Soccer, Bicycle, Badminton, Hiking, Swimming

Awards

JAC NIO Scholarship	Oct 2022
Grand Prize of Zhou Peiyuan Mechanics Competition at Provincial Level	Jun 2023
2nd Prize of RoboMaster 2023 The RoboMaster University Championship	Apr 2023
2nd Prize of RoboMaster 2023 RoboMaster University League	Jun 2023
1st Prize of 2023 Mitsubishi Electrical and Automation Contest Eastern Region	Jun 2023
1st Prize of 2023 SLAMTEC SLAM Autonomous Driving Challenge	Aug 2023
2nd Place of 2023 USTC Artificial Intelligence Innovation Contest	Sep 2023