

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)

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, which has the preliminary ability to navigate autonomously in uneven environments. Enhancing dynamic obstacle avoidance capabilities currently.

State Estimation and control of a bipedal robot

Principle Developer

Robomaster 2023-2024

- Proposed a novel slip detection and state estimation strategy thanks to my solid foundation in physics, significantly improving the robot's robustness. Manuscript in preparation.

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 currently.

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

Selected Course Grades

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

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