# 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, 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

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|---|---|
| **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

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| 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 |