

Zhuoyuan (Joe) YU

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Research interests: Robotics, Deep Reinforcement Learning, Multi-Agent Systems, UAVs

EDUCATION

National University of Singapore, NUS

Singapore

- Major: M.Eng. in Mechanical Engineering (By Research)
- GPA: **5.0 / 5.0**

08/2023-Present

Northwestern Polytechnical University, NPU

Xi'an China

- Major: B.Eng. in Aircraft Design and Engineering
- GPA: 84% **Scholarship:** Second Prize Scholarship

09/2019-07/2023

RESEARCH EXPERIENCE

Institute for INFOCOMM Research (Affiliated to Agency for Science, Technology and Research)

05/2024-Present

[Multi-Agent Path Finding Based on Deep Reinforcement Learning] | Supervisor: Guo Hongliang

- Improved the existing Node2Vec algorithm to handle the dynamic topological networks better.
- Utilized Graph Attention Networks to enhance the decision-making weights of dynamic edges.
- Integrated reinforcement learning for online training of the network.

Related: Python, Pytorch, ROS1, Multi-Agent Systems, Graph Attention Networks, Natural Language Processing

NUS ME Control and Mechatronics Labs (Affiliated to NUS)

08/2023-Present

[Design and Control of Manta Ray Robot] | Supervisor: Chew Chee Meng

- Designed a new type of buoyancy system and mass adjustment system for the Manta Ray robot.
- Improved original single-degree-of-freedom pectoral fin to dual-degree-of-freedom, enhancing controllability.
- Upgraded Arduino-based control system to include control of the buoyancy system and the pectoral fins.

Related: Python, Arduino, SolidWorks, Biorobotics

Shaanxi Aircraft Design and Testing Technique Engineering Laboratory (Affiliated to NPU)

07/2020-09/2021

[Quadcopter Overall Design and Trajectory Re-planning] | Supervisor: Wang Ban

- Designed and made a quadcopter unmanned aerial vehicle (UAV).
- Studied the trajectory re-planning and obstacle avoidance of UAVs.

Related: MATLAB, XFLR5, Catia, Aerodynamics

PUBLICATIONS

Multi-Robot Reliable Navigation in Uncertain Topological Environments with Graph Attention Network (Related: Multi-agent System, Graph Neural Networks, Deep Reinforcement Learning)

In Submission

CONTEST & PRIZE(Selected)

• The "Huamo Cup" National College Students Flight Simulation Championship

10/2022

[National Third Prize] | Buoyancy-lifting Multi-purpose Airship

• China International Internet+ College Students Innovation and Entrepreneurship Competition

08/2021

[Provincial Gold Award] | UAV Routing Electric Power Inspection

EXTRACURRICULAR ACTIVITIES

- NPU School of Aeronautics Student Union | **President**

04/2021-06/2022

- Photography Club | Member

10/2019-06/2023

- Three-Dimension Design Association | Member

10/2019-06/2020

SKILLS

Programming Language: Python (Proficient), MATLAB (Proficient), C++ (Intermediate), Arduino (Beginner)

Robotics Related: ROS1 (Intermediate), Gazebo (Beginner), SolidWorks (Proficient), Catia (Intermediate)

Others: Latex, Tableau, Visio, Origin, Premiere Pro, SPSS, Photography