Zhuoyuan (Joe) YU

Email: yuzhuoyuan@u.nus.edu | Website: https://yuj0e.github.io | Tel: +65 88850740

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) *08/2023-Present*
- GPA: **5.0 / 5.0**

Northwestern Polytechnical University, NPU *Xi'an China*

- Major: B.Eng. in Aircraft Design and Engineering *09/2019-07/2023*
- GPA: 84% **Scholarship**: Second Prize Scholarship

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 *(Plan to submit to IEEE Robotics and Automation Letters)* *In Submission*

Related: Multi-agent System, Graph Neural Networks, Deep Reinforcement Learning

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