Ruoyu Wang

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EDUCATION

Nanjing University of Aeronautics and Astronautics Sep 2017 - Jul 2021

Information Engineering Bachelor Nanjing, China

- GPA: 84/100
- Awards: Second Prize of Jiangsu Robotics Competition (2017)
  Third Prize of RoboMaster Robotics Competition(2018)
  First Prize of National University Student Innovation Project(2019)

PROFESSIONAL EXPERIENCE

SZ DJI Technology Co., Ltd Jan 2018 - Feb 2018

Intern Robotics Engineer Shenzhen, China

- Developed a robot with grasping box and autonomous movement functions based on STM32 and FreeRTOS. Realized CAN communication, PID control of motor, pneumatic gripping functions and designed hardware circuit.
- Proposed several innovative solutions such as adaptive gimbal and rotating moving policy, finally achieved a significant reduction in the probability of being hit and grasping efficiency reached 95%.

RESEARCH EXPERIENCE

Proficiency Aware Multi-Agent Reinforcement Learning for Mixed Robot Teaming Mar 2020 - Present

Research Assistant Kent, USA

- Proposed a novel multi-agent reinforcement learning algorithm with proficiency awareness so that the mixed UAV and UGV team can track targets and form encirclement in the dynamic environment.
- Implemented the MADDPG-based algorithm using python and applied it on the simulated UAV and UGV team in Gazebo whose goal is to track an escaping target in the environment with several obstacles.

Autonomous Aerial Robots for Fire Inspection Mar 2019 - Sep 2019

Group Leader Nanjing, China

- Developed an autonomous aerial robots based on TI TM4C, which has fire inspection and power line inspection functions. Applied ToF sensor for altitude control, optical flow sensor for position control and computer vision module for perception.
- Developed the firmware using C/C++ and designed hardware circuit of flight controller, combined flight controller with OpenMV module to complete indoor tasks without GPS, such as target tracking, collision avoidance and fire searching.

Multi-rotor UAV Swarm Algorithm Verification System Dec 2017 - Dec 2019

Group Leader Nanjing, China

- Developed a multi-rotor UAV swarm verification system for ad-hoc network, collision avoidance and formation control algorithm, which supported 8 to 16 UAV flying collaboratively and communicating at the same time.
- Developed a supporting simulation environment based on ROS and Gazebo, applied artificial potential field algorithm on this UAV swarm systems to evaluate both in the simulated and real environment.

SKILLS

- **Techniques:** Reinforcement Learning, Computer vision, Robotic Dynamics
- **Programming Language:** Python, C/C++, MATLAB
- **Libraries Frameworks:** ROS, Keil MDK, Altium Design, TensorFlow