Ruoyu Wang

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EDUCATION

Nanjing University of Aeronautics and Astronautics Sep 2017 - Jul 2021

BS in Information Engineering Nanjing, China

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

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 Multi Robot Teaming Mar 2020 - Sep 2020

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 under uncertainty.
- Implemented the MADDPG-based algorithm using TensorFlow 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.

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

Group Leader Nanjing, China

- Developed a multi-rotor UAV swarm verification system for the ad-hoc network, collision avoidance, and formation control algorithm, which supported 8 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.

Autonomous Aerial Robots for Fire Inspection Mar 2019 - Sep 2019

Group Leader Nanjing, China

- Developed an autonomous aerial robot 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 the hardware circuit of the flight controller, combined flight controller with OpenMV module to complete indoor tasks without GPS, such as target tracking, collision avoidance and fire searching.

SKILLS

- **Techniques:** Communication Networks, Reinforcement Learning, Computer Vision
- **Libraries Frameworks:** ROS, Keil MDK, Altium Design, TensorFlow
- **Programming Language:** Python, C/C++, MATLAB