Junzhuo Liu

Education experience

Northwestern Polytechnical University 2018.9 - Now
Detection, Guidance and Control Techniques GPA:84.5/100

Research interests

Control and navigation techniques of UAVs; Motion control and planning of manipulators, multi-legged robots

Skills

- C & C++ programming, mastered the basic operation of Linux system
- ROS, Qt programming frameworks
- STM32 development based on HAL library and CubeMX
- Mastered CAN, SPI, UART, I2C and other common communication protocols
- Mechanical structure design based on SOILDWORKS, assembling multi-rotor UAV
- The basic tuning of multi-rotor UAV based on Pixhawk4 and DJI N3 autopilot
- Control system simulation based on Simulink

Project Experience

The group leader of UAV projects of V5++ Group of Soccer Robot Base 2019.3 - Now

1. Design, manufacture and tune several multi-rotor UAVs

- Have been applied in many UAV competition projects of the team.
- The quadrotor platform with quick disassembly function can simply replace the battery, autopilot and upper computer through the slide rail devices, which can achieve the effect of quick maintenance.
- Can be equipped different mission devices, including releasing device, spraying device and so on.
- Tuning cascade PID of Pixhawk autopilot, and tuning communication between upper computer and autopilot.

2. 6-axis manipulator with high load and light weight

- Development of the manipulator on UAV with 2kg allowable load, for the next mission of IARC International Aerial Robotics Competition.
- Based on the FreeRTOS and STM32F427 MCU, and compatible with several different driver types including brushless motors, steering gear, etc.

3. Development of serial communication integration framework with ROS

- Development of a general communication module and protocol for upper and lower computers based on Boost.asio library.
- This module can directly connect the ROS topics with the lower computers. Users can directly publish/subscribe messages on the corresponding ROS topic only by defining ROS messages, so as to complete serial port communication with the lower computers.

Shanghai Lailo Technology Co., Ltd 2020.3 - 2021.1

1. Embedded development of disinfection robots

- Modify firmware of Slamware and add the drivers of wheel motors, ultrasonic ranging sensor and other modules in the robot.
- Development of control firmware for the disinfection equipment based on STM32F1 series MCU.
- Development of touch screen based on serial port.

Awards

2019 IARC(International Aerial Robotics Competition) Mission 8 Best Mission Planning Award
2020 China Robot Competition UAV Delivery Project National Second Prize (3rd)
2020 China Robot Competition UAV Target Identification Project National Second Prize (3rd)
2020 National Robot Championship Aerial Robot practical application competition National First Prize
2020 China Robotics Championship Aerial Robot Intelligent Operation Competition National First Prize
2019 Comprehensive test major of freshman First

Hobbies

Guitar, painting