

Karry Zhang

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EDUCATION

University of Bristol	2022.9 – 2023.9
MSc in Engineering Mathematics	
Hohai University (<i>University of 211 Project; 985 Project Innovation Platform</i>)	2018.9 – 2022.6
BSc in Robotics Engineering	
<ul style="list-style-type: none">• Grades: 86.97/100• Class President; School Scholarship (2021.5)• Main Courses: Artificial Intelligence Techniques, Robot Vision Techniques, Intelligent Manufacturing and Equipment	

PUBLICATIONS

Self-learning approach to control parameter adjustment for quadcopter landing on a moving platform (In Chinese)

ZHANG Pengpeng, WEI Changyun, ZHANG Kairui, et al. Self-learning approach to control parameter adjustment for quadcopter landing on a moving platform [J]. CAAI transactions on intelligent systems.

RESEARCH EXPERIENCE

Autonomous Landing of UAV for UAV-UGV Cooperation	2021.4 - 2022.6
<ul style="list-style-type: none">- Objective: Land a UAV on a mobile platform autonomously in weak communication environments. Supported by the National Natural Science Foundation of China (61703138); the Fundamental Research Funds for the Central Universities (B200202224).- Solution:<ul style="list-style-type: none">• Automatically collected and labeled datasets in a simulated environment in ROS based on OpenCV and traditional computer vision methods.• Boosted the training dataset with Deep Convolutional Generative Adversarial Networks (DCGAN). The detection accuracy is improved by 4.17% with the data generated.• Detected the landmark based on YOLOX and estimate depth with the size of the moving platform in the image.• Landed the drone on a UGV using DDPG, a deep reinforcement learning method.• Built a real drone, deploy the program on Raspberry Pi 4B, and successfully land the drone autonomously.- Achievement: We have a paper published in CAAI Transactions on Intelligent	

Systems, one of the top journals in China. Recently another article was submitted in Robotica journal Article.

Gesture Recognition Based UGV Navigation

2021.3 - 2021.6

- **Objective:** Build a ground vehicle, control it with hand gestures.
- **Solution:**
 - Collected the costumed dataset based on 5 gesture categories, each with 700 images.
 - Trained a model using Shuffle Net for hand gesture recognition.
 - Implemented a PID controller on STM32 to drive a Mecanum wheel vehicle.
 - Deployed the model to detect gestures in real-time on a Raspberry Pi 3B+, and then the Raspberry Pi sent the command to STM32 to drive the vehicle.

INTERNSHIP EXPERIENCE

Changzhou Guli High-End Equipment Innovation Center

2021.6 - 2021.7

The goal is to achieve path planning and obstacle avoidance for mobile robots.

- Helped to connect the Scout-mini robot controller and Jetson TX2 via CAN bus.
- Get image matrix with Intel RealSense depth camera D435i with OpenCV in C++.
- Performed the obstacle avoidance task with rplidar.

SKILLS

IT Skills:

- Programming: proficient in **Python**, experienced in C/C++, familiar with C#, MATLAB, Bash, MySQL
- Deep learning framework: proficient in **PyTorch**, experienced in TensorFlow1.14.0
- Python libraries: Matplotlib, NumPy, OpenCV-Python, pandas
- Applications: experienced in LATEX, Microsoft Office, ROS, SOLIDWORKS, Git
- Operating Systems: familiar with Linux (Ubuntu), Windows
- Chinese National Computer Rank Examination Grade II (C++) and Grade III (computer network)

Language:

Mandarin Chinese (native), English (**IELTS 6.5**)