

EDUCATION

Imperial College London

January 2021-Now

Status: Ph.D. Candidate.

Research Interests: Autonomous Navigation, Robust Learning-based Control, Reinforcement Learning.

Shanghai Jiao Tong University (SJTU, 211 and 985)

September 2017-March 2020

Degree: Master of Engineering

Major: Aeronautical and Astronautical Science and Technology---Information and Control

Comprehensive Ranking: 1/71

Core Courses: Numerical Estimation, Optimal Estimation and Information fusion, Optimal Control Principle and Application, Matrix Theory.

Research Interests: Machine Learning, Muti-Sensor Fusion.

Southeast University (SEU, 211 and 985)

September 2013-June 2017

Degree: Bachelor of Engineering

Overall GPA: 3.84/5.0

Major: Automation, School of Automation

Comprehensive Ranking: 3/144

Core Courses (Full score is 100 points): Probability Theory and Mathematical Statistics (94), Electronic Circuit Foundation (95), Computer Composition and Structure (92), Communication Principle (97).

Research Interests: Automatic Control, Machine Learning.

HONOURS AND AWARDS

- Shanghai excellent graduate honour 2019
Awarded for outstanding comprehensive evaluation including scientific research and course grade (ranking 2/71).
- National Scholarship 2018
Awarded for outstanding comprehensive evaluation for the first year of master study (ranking 1/71).
- SJTU Graduate First-class Academic Scholarship 2017
Awarded for outstanding course grade. The top 30 percent of students can get this scholarship in SJTU.
- Exam-exempted postgraduate student recommended to SJTU 2017
In China, outstanding undergraduate students can study for a master degree directly and I got this qualification (ranking 3/144).
- The last eight teams of RoboCup of World (In Leipzig, Germany) 2016
RoboCup is a professional robot competition in the world and my work is described in RESEARCH EXPERIENCES.
- The first prize of Mathematical Contest in Modeling (MCM) 2015
Awarded for theoretical model design, programming implementation and result analysis. MCM is the largest basic discipline competition in China.
- Presidential Scholarship 2015
Awarded for outstanding course grade and competition results for my postgraduate study in SEU.

RESEARCH EXPERIENCES

● Novel Trajectory Generation and Tracking Framework for Autonomous Navigation

Source: National Science Foundation (NSF) – United Kingdom

January 2021-Now

A novel systematic framework is developed for quadrotor autonomous navigation in dynamic environments.

Encountering aerodynamic effects such as strong winds, the proposed framework demonstrates safe, efficient and accurate trajectory generation and tracking respectively. The ongoing work guarantees the safety and robustness of the whole framework from both theoretic analysis and practical engineering. The accuracy of external forces estimation will

also be improved.

- **Perception-to-decision Reinforced Imitation: An Intelligent Flight Control System**

Source: Shanghai Industrial Strengthening Project

January 2017-December 2019

An Intelligent Flight Control System (IFCS) is built for autopilot. The underlying IFCS combines a Convolution Neural Network, Deep Reinforcement Learning and Imitation Learning processes. The developed approach is proved to be more efficient and robust for the complicated flight situation than the existing autopilot system.

- **Theoretical Model Design and Safety Analysis for Multi-Sensor Fusion System**

Source: National Program on Key Basic Research Project

September 2013-August 2018

A fusion model was established with a variable sampling Variational Bayesian-Interacting Multiple Model algorithm for integrated display in a cockpit simulator platform. My work was responsible for the overall implementation of the fusion system including theoretical model design, experimental simulation verification, engineering implementation and results analysis.

- **A Robot Self-Localization System Based on Computer Vision**

Source: Robot World Cup (RoboCup)

October 2014-October 2016

Robocup is a professional robot competition with a large influence, a high level of comprehensive technology and a wide range participation across the world. In this work, a vision-based self-localization system is developed using computer vision.

PUBLICATIONS

1. Yanran Wang, James O'Keeffe, Qiuchen Qian and David E. Boyle. "KinoJGM: A framework for efficient and accurate quadrotor trajectory generation and tracking in dynamic environments." International Conference on Robotics and Automation (ICRA), IEEE, 2022, accepted.
2. Xiao, Gang, **Yanran Wang**, and Fang He. "Research on safety modeling and analysis in information fusion system." Aerospace Systems 2.1 (2019): 51-60. (DOI: 10.1007/s42401-018-0011-2, recommended by an A-class International Conference in SJTU)
3. **Yanran Wang**, Gang Xiao, and Zhouyun Dai. "Integrated Display and Simulation for Automatic Dependent Surveillance-Broadcast and Traffic Collision Avoidance System Data Fusion." Sensors 17.11 (2017): 2611. (DOI: 10.3390/s17112611)

INTERNSHIP

- **Internship in Ant Financial Services Group (Alipay)**

Machine Learning Algorithm Intern

June 2019-September 2019

A Deep Neural Network and Deep Reinforcement Learning model was built for a recommender system which is used to estimate Internet user's Click-Through-Rate.

- **Intel Asia Pacific R&D Center**

Deep Learning Software Intern

March 2019-May 2019

Responsible for machine learning framework (BigDL) development and test preprocessing.

EXTRACURRICULAR ACTIVITIES

Teaching Assistant of Academic Writing, Norms and Ethics	2018
Volunteers of Minhang District Youth Activity Center, Shanghai	2018
The 4th College Student Art Exhibition won the provincial special prize	2014

SKILLS

Programming languages: C/C++, Python and Matlab

Others: Erhu (a Chinese national musical instrument)