Yujie HE

Tongji Univetsity, Cao'an Highway, #201804, Shanghai, China
he-yujie@outlook.com yujie-he.github.io (+86) 188-0023-1786

EDUCATION

Tongji University, Shanghai, China *Sep. 2015 - Jun. 2020 (expected)*

- B.E. in Mechanical Engineering. GPA: 4.54/5 (ranking top 3%)
- Awarded Tongji University Outstanding Scholarship for three consecutive years
- Main Courses: Industrial Robotics, Deep learning, An Introduction to Matlab and Its Application in Engineering, Digital Modelling and Design of Mechanical-electrical-hydraulic System
- Online Courses: Robotics: Perception (University of Pennsylvania), Writing in the Sciences (Stanford University), Neural Networks and Deep Learning (deeplearning.ai)

Quanzhou No.5 Middle School, Fujian, China *Sep. 2012 - Jun. 2015*

- Major in Sciences. Main courses: Physics, Chemistry, and Biology
- Top 5‰ student in National College Entrance Examinations (Fujian Province)

RESEARCH INTERESTS

Mobile Robots, Computer Vision, Machine Learning, Visual Tracking, Unmanned Aerial Vehicle

PUBLICATIONS

[1] Fuling Lin, Changhong Fu*, **Yujie He**, and Fan Li. "TOT: Target-oriented UAV Tracking via Multi-feature Inconsistency Mining." recently submitted to *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.*

[2] **Yujie He**, Changhong Fu*, Fuling Lin, Yiming Li, and Peng Lu. "Tri-Attention Correlation Filter for Effective UAV Object Tracking." submitted to *IEEE/RSJ International Conference on Robotics and Automation (ICRA), 2020.* [code] [video]

[3] Fuling Lin, Changhong Fu*, **Yujie He**, Fuyu Guo, and Qian Tang. "Learning Bidirectional Incongruity-Aware Correlation Filter for Efficient UAV Object Tracking." submitted to *IEEE/RSJ International Conference on Robotics and Automation (ICRA), 2020.* [code] [video]

[4] Changhong Fu*, Fuling Lin, Fan Li, and **Yujie He**. "Sample Purification-Aware Correlation Filters for UAV Tracking with Cooperative Deep Features." accepted by *IROS Workshop on Fast Neural Perception and Learning for Intelligent Vehicles and Robotics, 2019.* [code] (*Best Poster Award*)

[5] Changhong Fu*, **Yujie He**, Fuling Lin, and Weijiang Xiong. "Robust Multi-Kernelized Correlators for UAV Tracking with Adaptive Context Analysis and Dynamic Weighted Filters." submitted to *Neural Computing and Applications.* [code] [video] (*Accept with final revision*)

PROJECTS AND EXPERIENCE

Tongji University Vision4Robotics Group [Official website] *Sep. 2018 - Present*
Research Assistant, supervised by Prof. Changhong Fu

- Conducted researches on robotic vision and proposed correlation filter-based tracking algorithms for unmanned aerial vehicle (UAV) tasks. Related papers submitted to top conference and journals

- Realized and simulated fuzzy logic controllers for unmanned aerial manipulators using MATLAB and ROS, with a 20% reduction in error compared to the PID controller in complex flight scenarios

Tongji University Design & Innovation College *Sep. 2018 - Jan. 2019*
Teaching Assistant in Open Source Hardware and Programming

- Designed a series of the electromechanical modules for Industrial Design students, gave three lessons on basic mechanical analysis with Arduino hardware and programming, and delivered lectures on advanced RGBD sensors for the semester project [video]

Tongji University DIAN Racing Formula Student Electric Team [Official website] *Sep. 2016 - Dec. 2018*
Powertrain Group Leader

- Designed and optimized the overall powertrain system to ensure China's first leading four-wheel-drive Formula Student Racecar, with an 8% efficiency, 10% lightweight, and higher stability improvement
- Participated FSEC 2016 - 2018 and SFJ 2018 as a senior engineer, DIAN Racing won first place in Engineering Design and Efficiency Prize, and Best Powertrain Award for two consecutive years [video]

Hesai Technology *Jul. 2018 - Aug. 2018*
Robotics Algorithm Development Intern

- Implemented sensor fusion between Pandar40 (a 40-channel LiDAR) and gyroscope to achieve 5% accuracy improvements on top of state-of-the-art SLAM framework and drew a 3D point cloud map of Tongji University Jiading Campus below 10m
- Deployed control, decision, and communication algorithms for a self-developed skid steer wheel robot, realizing autonomous navigation and obstacle avoidance in a $300m^2$ workspace

Tongji University Super Power Robot Team *Oct. 2016 - Jun. 2018*
Project Manager & Mechanical Development Leader

- Designed two main robots to participate national mobile robot competition, RoboMaster, achieving lightweight and stability of the chassis and 3DOF pan-tilt mechanism and multi-robot interaction
- Optimized structural design to enhance operation stability and achieve lightweight, enabling the robots flexible operation and combating under complicated circumstances

SELECTED HONORS

Best Poster Award of IROS Workshop (top 3 of 13 papers) *Nov. 2019*
Outstanding Scholarship of Tongji University (top 20%, departmental) *2016 - 2018*
First Prize in Formula Student China Electric (top 10%, national) *Nov. 2017 - Nov. 2018*
Overall Runner-up of EV class in Student Formula Japan (highest level in Asia) *Sep. 2018*
Second Prize in RoboMaster National College Student Robot Contest (top 20%, national) *Jun. 2018*

SERVICE

Reviewer for IEEE International Conference on Advanced Robotics and Mechatronics (ARM), 2019

SKILLS

Hardware Arduino, Raspberry Pi
Programming MATLAB, Python, LaTeX, Simulink, ROS
Software PyTorch, OpenCV (computer vision), AutoCAD, SolidWorks (mechanical design)