

# Wei Jiang Xiong

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## EDUCATION

**Tongji University**, Shanghai, China 2015/09 - 2020/07 (Expected)  
B.E. in Mechanical Design Manufacture and Automation *with concentration on Mechatronics*  
• GPA: 4.52/5.0 (equivalent to 90.2/100); Ranking: 7/113 (**top 6%**)  
• Courses: Deep Learning, Embedded Systems, Robot Technology, C/C++ Programming, Control Engineering  
• Seized the Scholarship for Excellence in three continuous academic years

## RESEARCH INTERESTS

Mobile Robot Systems, Adaptive Robot Perception, Vision-Aided Automatic Control

## PUBLICATION

- [1] Changhong Fu, **Wei Jiang Xiong**, Fuling Lin, and Yufeng Yue. "Surrounding-Aware Correlation Filter for UAV Tracking with Selective Spatial Regularization." *Signal Processing* (2019): 107324. (**First student author**, CAS JCR **Q1**, Top Engineering Journal, 2018 IF = **4.086** [[paper](#)] [[video](#)] [[code](#)])
- [2] Changhong Fu, Yujie He, Fuling Lin, and **Wei Jiang Xiong**. "Robust Multi-Kernelized Correlators for UAV Tracking with Adaptive Context Analysis and Dynamic Weighted Filters." (Accepted by *Neural Computing and Applications* in 2020/01)

## PROJECTS

**Online Collaborative Learning for Multiple UAVs in Complex Environment** 2018/10 - Present  
*Research Assistant in Vision4Robotics Group, Supervised by Prof. Changhong Fu* [[Group Homepage](#)]

- SASR Tracker for UAV (paper published on *Signal Processing*)
  - Fused lightweight CNN-based features and hand-crafted features to provide rich representations of the object
  - Enhanced the capability of the correlation filter-based tracker by incorporating surrounding information
  - Alleviated boundary effect and redirected the focus of the filter via selective spatial regularization
  - Leveraged Alternating Direction Method of Multipliers (ADMM) for efficient optimization of the filter
- MKCT Tracker for UAV (paper accepted by *Neural Computing and Applications*)
  - Employed both adaptive contextual and historical information based on similarity analysis
  - Utilized lightweight CNN-based features and significantly promoted the robustness of the tracker

**Integrated Perception and Decision for Self-Driving Simulation** 2019/09 - 2020/01  
*Top 5 Final Project in Deep Learning Course* [[Github Repository](#)]

- Collected rich driving records in simulation and designed an end-to-end CNN architecture with Pytorch
- Implemented and simulated a real-time autonomous driving algorithm with the CNN and a PID controller

**Personal Urban Mobility Access (PUMA), PACE International Competition** 2017/09 - 2018/08  
*Core Member of Electronic Group, PACE Engineering Center, Tongji University* [[PACE Homepage](#)]

- Built the embedded driving control system for a portable bicycle with a Brushless DC motor and a STM32 MCU
- Implemented an embedded object detection program with YOLO v3 Tiny and Raspberry Pi
- Delivered a speech about the manufacturing plan in the final competition at GM Warren Tech Center

**RoboMaster Robotics Competition** 2016/09 - 2017/08  
*Core Member of Mechanical Group, Super Power Robot Team*

- Designed a modularized platform for the supply station, a supporting facility that managed to collect, store and distribute bullet balls to fellow robots throughout the RoboMaster tournament in 2017
- Promoted the allocative efficiency by improving mechanical structure and control strategy

## SELECTED AWARDS

**Honorable Mention** in Mathematical Contest in Modeling, COMAP 2019  
**Second Prize** of Tongji Scholarship for Excellence 2017 - 2018  
**Runner-Up Winner** of PUMA Project, 2018 PACE Competition 2017 - 2018  
**First Prize** of Mathematical Contest in Modeling, Tongji University (**top 5%**) 2018  
**Second Prize** in the Eastern Sector of RoboMaster Competition 2016 - 2017  
**First Prize** of Tongji Scholarship for Excellence (**top 5%**) 2015 - 2016

## SKILLS

<b>Programming</b>	Matlab, Python, C/C++	<b>Embedded System</b>	STM32, Arduino, Raspberry Pi
<b>Libraries</b>	Pytorch, Scikit-learn, OpenCV	<b>CAD Software</b>	AutoCAD, Solidworks
<b>English</b>	IELTS (7.5, 8.5L/8.5R/6.0W/6.0S) GRE (160V, 170Q, 4.5AW)	<b>Prototyping</b>	3D Printing, Laser Cutting