YIMING LI

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EDUCATION

- **Tongji University, Shanghai, China** *2015.9 - present*
  B.Eng. in Mechanical Engnieering GPA Overall: *90.0/100,* Major: *92.9/100*
  - Supervisor: Prof. Changhong Fu (Leader of Vision4Robotics Group)
  - Scholarship: Shanghai Scholarship, National Scholarship, National Endeavor Scholarship, Excellent Student Scholarship, School Practice Scholarship.
- **Tsinghua University, Beijing, China** *2019.9 - present*
  Visiting Student in Department of Automation
  - Supervisor: Prof. Geng Lu (Director of UAV Lab)

RESEARCH INTERESTS

Robot Vision, Visual Tracking, Pose Estimation, Machine Learning, Unmanned Aerial Vehicle

RESEARCH EXPERIENCES

Developing Robust and Real-Time Aerial Tracking Algorithms *2018.7 - Present*

- Explored the information contained in response maps of tracking-learning-detection framework. (accepted by ICCV 2019)
- Incorporated memory augmentation into correlation filters to address filter corruption problems. (submitted to ICRA 2020)
- Exploited the part-based method to deal with partial appearance variation. (under revision)
- Fused multiple features (gray scale, HOG, color name, and saliency) to promote the tracking robustness efficiently. (published in *Remote Sensing.)*

Investigating Deep Learning-based Visual Tracking for UAV *2019.3 - Present*

- Exploited the keyframe technique and proposed a keyfilter-aware tracker for mitigating filter corruptions and lowering the redundancy of context learning; Utilized lightweight convolution features to efficiently and effectively raise the tracking robustness. (submitted to ICRA 2020)
- Explored the multi-frame strategy and developed the multi-frame consensus verification for achieving long-term tracking; Fused features form different layers of CNN including both spatial and semantic information to achieve accurate tracking. (accepted by IROS 2019)
- Designed a collaborative multi-recommender voting framework to unlock the potential of CNN. (under revision)

Localization by Tracking: A Monocular Pose Estimation System *2019.7 - Present*

- Developed fast trackers on C++ platform to track the markers observed by an onboard camera.
- Developed a monocular pose estimation system with high flexibility and generality.
- Tested the monocular localization system in ROS Gazebo and validated it on quanser platform.

PAST PROJECTS

UAV-loaded Serpentine Manipulator for Search and Rescue *2018.5 - 2018.7*

- Designed the overall structure of separable UAV-loaded Serpentine Manipulator.
- Finished writing the specification and submitted the National Patent for Invention application.

Structure Design for Drone's Wireless Charging *2018.5 – 2018.7*

- Conducted the overall structure design of a 3-DOF wireless charging facility for drones.
- Enhanced the efficiency of the particular charging process, when the drone approached the ground with imprecise poses.
- Wrote the entire specification and submitted the National Patent for Invention application.

ZEAL Eco-power Racing Vehicle Team *2016.10 - 2019.10*
Leader of Electrical Control Group

- Committed to designing and manufacturing Eco-power car, specifically the control system on vehicle.
- Designed velocity sensor, SD data logger and automatic throttle controller by programming on ARM Cortex-M.
- Won National Championship in 11th Honda Racing Vehicle Competition of China.

Design of a Hiking Assistance Device *2016.7 - 2017.7*
Students Innovation Training Program, Tongji University

- Completed the overall structure design of the light-weight hiking assistance foldable drone.
- Applied the finite element analysis (FEA) methods to check the strength of all stressed parts.
- Analyzed the flight position control process with heavy loads.

PUBLICATIONS

Journals:

- Changhong Fu, Fuling Lin, **Yiming Li**, Guang Chen. *Correlation Filter-Based Visual Tracking for UAV with Online Multi-Feature Learning*, *Remote Sensing* 11.5 (2019): 549.
- **Yiming Li**, Changhong Fu, Ziyuan Huang, Yinqiang Zhang, Jia Pan. *Intermittent Contextual Learning for Keyfilter-Aware UAV Object Tracking Using Deep Convolutional Feature*, submitted to *IEEE Transactions on Multimedia*, 2019 (Under review).

Conferences:

- Changhong Fu, Ziyuan Huang, **Yiming Li**, Ran Duan, Peng Lu. *Boundary Effect-Aware Visual Tracking for UAV with Online Enhanced Background Learning and Multi-Frame Consensus Verification*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2019.
- Ziyuan Huang, Changhong Fu, **Yiming Li**, Fulin Lin, Peng Lu. *Learning Aberrance Repressed Correlation Filters for Real-Time UAV Tracking*, IEEE International Conference on Computer Vision (ICCV), 2019.

- **Yiming Li**, Changhong Fu, Fangqiang Ding, Ziyuan Huang, Jia Pan. *Augmented Memory for Correlation Filters in Real-time UAV Tracking*, IEEE International Conference on Robotics and Automation (ICRA), 2020 (Under review).
- **Yiming Li**, Changhong Fu, Ziyuan Huang, Yinqiang Zhang, Jia Pan. *Keyfilter-Aware Real-Time UAV Object Tracking*, IEEE International Conference on Robotics and Automation (ICRA), 2020 (Under review).
- Yujie He, Changhong Fu, Fuling Lin, **Yiming Li**, Peng Lu. *Tri-Attention Correlation Filter for Effective UAV Object Tracking*, IEEE International Conference on Robotics and Automation (ICRA), 2020 (Under review).
- Fan Li, Changhong Fu, Fuling Lin, **Yiming Li**, Peng Lu. *Training-set Distillation for Real-Time UAV Object Tracking*, IEEE International Conference on Robotics and Automation (ICRA), 2020 (Under review).

AWARDS

Model of Outstanding Students in Tongji university (0.15 %)	*2019.1*
Second Prize of the National College Student Innovation and Entrepreneurship Competition	*2018.11*
First Prize of the 3rd Shanghai Mechanics Competition	*2018.6*
First Prize of the 8th Shanghai Innovation Design Competition	*2018.5*
Meritorious Winner in 2018 Mathematics Contest in Modeling	*2018.3*
Champion of 2017 Honda Eco Mileage Challenge (GS Group)	*2017.10*

SERVICE

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

KEY SKILLS

Languages: English: TOEFL 105(R29,L27,S24,W25), GRE(156+168+4) , German(B1), Mandarin.
Programming: C/C++, Python, Matlab.
Tools: Robot Operating System (ROS), Latex.