

Junjie Ye

☎ (+86) 133 5017 8948 ✉ ye.jun.jie@tongji.edu.cn 🏠 [jayye99.github.io](https://github.com/jayye99)

Tongji University, No.4800 Caoan Road, Shanghai 201804, China

EDUCATION

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- | | |
|--|-------------------|
| Tongji University , Shanghai, China
<i>MSc in Mechanical Engineering</i> <ul style="list-style-type: none">Major in UAV tracking in Complex Environment | 2020/09 - Present |
| Tongji University , Shanghai, China
<i>BEng in Mechanical Engineering</i> <ul style="list-style-type: none">Seized the National Scholarship (top 0.8%)Granted the honor of Excellent Graduate Student in Shanghai (top 2%) | 2016/09 - 2020/07 |

PROJECTS

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| UAV Tracking in Dynamic Environments
<i>Research student at Vision4Robotics Group, Tongji University</i>
<i>Supervisor: Prof. Changhong Fu</i> <ul style="list-style-type: none">Correlation Filter (CF)-Based UAV Tracking<ul style="list-style-type: none">Proposed the response deviation-aware and the channel reliability-aware regularization on CF-based framework. Beyond achieving satisfying tracking robustness, an original visual tracking-based UAV self-localization system is constructed (accepted by <i>IEEE T-IE</i> as first author).Introduced the historical interval response inconsistency and the disruptor-aware mechanism based on response bucketing into the CF framework, realizing competitive performance on several UAV tracking benchmarks (accepted by <i>IEEE T-GRS</i> as first student author).Constructed a novel CF-based tracker to enhance the sensitivity and resistance to mutations with an adaptive hybrid label. Considerable experiments on widely used UAV tracking benchmarks demonstrate its effectiveness (accepted by <i>ICRA 2021</i>).Siamese Network-Based UAV Tracking<ul style="list-style-type: none">Proposed the anchor proposal network (APN) for adaptive anchor proposing. Alleviated the hyper parameters in anchor-based approaches and redundant anchors in anchor-free approaches simultaneously (accepted by <i>ICRA 2021</i> and extended version in <i>IEEE T-GRS</i>).Integrated self-attention and cross-attention into SiamAPN, enhanced the perception ability for various scale objects of the proposed SiamAPN++. Evaluation on UAV tracking datasets and real-world onboard test demonstrate its effectiveness (submitted to <i>IROS 2021</i>).UAV Tracking in Low-Light Conditions<ul style="list-style-type: none">Designed a Retinex-inspired plug-and-play deep low-light enhancer, dubbed DarkLighter, to light up the darkness for UAV tracking. Experiments on a dark tracking benchmark verify its effectiveness in several trackers and superiority against other SOTA general low-light enhancement algorithms, with sufficient real-time speed on an embedded system (submitted to <i>IROS 2021</i> as first author).Latency-Aware Tracking Benchmark<ul style="list-style-type: none">Existing visual tracking benchmarks commonly run trackers offline and ignore the latency of onboard processing time. We raise a more realistic problem of latency-aware tracking. SOTA trackers are evaluated with new metrics jointly assessing the tracking accuracy and efficiency. A baseline is developed to compensate for the latency stemming from the onboard computation (submitted to <i>IROS 2021</i>). | 2019/06 - Present |
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CONFERENCE PAPERS

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- [c6] **Junjie Ye**, Changhong Fu*, Guangze Zheng, Ziang Cao, and Bowen Li. "DarkLighter: Light up the Darkness for UAV Tracking" submitted to *IEEE International Conference on Intelligent Robots and Systems (IROS)*, Prague, Czech Republic, 2021. [[code&demo](#)]
- [c5] Bowen Li, Yiming Li, **Junjie Ye**, Changhong Fu*, and Hang Zhao. "Predictive Visual Tracking: A New Benchmark and Baseline Approach" submitted to *IEEE International Conference on Intelligent Robots and Systems (IROS)*, Prague, Czech Republic, 2021. [[paper](#)] [[code](#)] [[demo](#)][[project](#)]
- [c4] Ziang Cao, Changhong Fu*, **Junjie Ye**, Bowen Li, and Yiming Li. "SiamAPN++: Siamese Attentional Aggregation Network for Real-Time UAV Tracking" submitted to *IEEE International Conference on Intelligent Robots and Systems (IROS)*, Prague, Czech Republic, 2021. [[code](#)] [[demo](#)]

[c3] Guangze Zheng, Changhong Fu*, **Junjie Ye**, Fuling Lin, and Fangqiang Ding. "Mutation Sensitive Correlation Filter for Real-Time UAV Tracking with Adaptive Hybrid Label" accepted by *IEEE International Conference on Robotics and Automation (ICRA)*, Xi'an, China, 2021. [[code](#)] [[demo](#)]

[c2] Changhong Fu*, Ziang Cao, Yiming Li, **Junjie Ye**, and Chen Feng. "Siamese Anchor Proposal Network for High-Speed Aerial Tracking" accepted by *IEEE International Conference on Robotics and Automation (ICRA)*, Xi'an, China, 2021. [[paper](#)] [[code](#)] [[demo](#)]

[c1] Bowen Li, Changhong Fu*, Fangqiang Ding, **Junjie Ye**, and Fuling Lin. "ADTrack: Target-Aware Dual Filter Learning for Real-Time Anti-Dark UAV Tracking" accepted by *IEEE International Conference on Robotics and Automation (ICRA)*, Xi'an, China, 2021. [[code](#)] [[demo](#)]

JOURNAL PAPERS

[j3] Changhong Fu*, Ziang Cao, Yiming Li, **Junjie Ye**, and Chen Feng. "Onboard Real-Time Aerial Tracking with Efficient Siamese Anchor Proposal Network" accepted by *IEEE Transactions on Geoscience and Remote Sensing*. [[code](#)] [[demo](#)] (JCR Q1, IF=5.855)

[j2] **Junjie Ye**, Changhong Fu*, Fuling Lin, Fangqiang Ding, Shan An, and Geng Lu. "Multi-Regularized Correlation Filter for UAV Tracking and Self-Localization" accepted by *IEEE Transactions on Industrial Electronics*. [[code](#)] [[demo](#)] (JCR Q1, IF=7.515)

[j1] Changhong Fu*, **Junjie Ye**, Juntao Xu, Yujie He, and Fuling Lin. "Disruptor-Aware Interval-Based Response Inconsistency for Correlation Filters in Real-Time Aerial Tracking" accepted by *IEEE Transactions on Geoscience and Remote Sensing*. [[paper](#)] [[code](#)] [[demo](#)] (JCR Q1, IF=5.855)

SELECTED HONORS

Excellent Graduates of Shanghai (top 2% students from all majors, provincial)	Jun. 2020
National Scholarship (top 0.8% students from all majors, national)	Dec. 2018 - Dec. 2019
Outstanding Student of Tongji (top 5%, departmental)	Dec. 2018 - Dec. 2019
National Encouragement Scholarship (top 5%, departmental)	Dec. 2017 - Dec. 2018
First Prize of Tongji Scholarship for Excellence (top 5%, departmental)	Dec. 2017 - Dec. 2018

SERVICE

Invited reviewer for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.

SKILLS

Programming Languages	Matlab, Python	CAD	AutoCAD, Inventor, CATIA
	Chinese, English		

叶俊杰

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教育背景

同济大学机械与能源工程学院

2020/09 - 至今

机械工程, 机械电子方向, 硕士

- 保送硕士研究生
- 研究方向: 复杂环境下无人机视觉目标跟踪

同济大学机械与能源工程学院

2016/09 - 2020/07

机械设计制造及其自动化, 机械制造方向, 本科

- 获国家奖学金 (前 0.8%), 2020 届上海市优秀毕业生荣誉称号 (前 5%)

期刊论文

- 1 **Junjie Ye**, Changhong Fu, Fuling Lin, Fangqiang Ding, Shan An, Geng Lu. "Multi-Regularized Correlation Filter for UAV Tracking and Self-Localization." IEEE Transactions on Industrial Electronics (T-IE), 2021. (第一作者, SCI, 影响因子: 7.515, JCR-1 区, 中科院 Top 期刊 [视频] [代码])
- 2 Changhong Fu, **Junjie Ye**, Juntao Xu, Yujie He, Fuling Lin. "Disruptor-Aware Interval-Based Response Inconsistency for Correlation Filters in Real-Time Aerial Tracking." IEEE Transactions on Geoscience and Remote Sensing (T-GRS), 2020. (第一学生作者, SCI, 影响因子: 5.855, JCR-1 区, 中科院 Top 期刊 [论文] [视频] [代码])
- 3 Changhong Fu, Ziang Cao, Yiming Li, **Junjie Ye**, Chen Feng. "Onboard Real-Time Aerial Tracking with Efficient Siamese Anchor Proposal Network." IEEE Transactions on Geoscience and Remote Sensing (T-GRS), 2021. (SCI, 影响因子: 5.855, JCR-1 区, 中科院 Top 期刊 [视频] [代码])

会议论文

- 1 **Junjie Ye**, Changhong Fu, Guangze Zheng, Ziang Cao, Bowen Li. "DarkLighter: Light up the Darkness for UAV Tracking." IEEE International Conference on Intelligent Robots and Systems (IROS), 2021. (Under review, 第一作者, 机器人领域 Top 会议 [代码])
- 2 Guangze Zheng, Changhong Fu, **Junjie Ye**, Fuling Lin, Fangqiang Ding. "Mutation Sensitive Correlation Filter for Real-Time UAV Tracking with Adaptive Hybrid Label." IEEE International Conference on Robotics and Automation (ICRA), 2021. (机器人领域 Top 会议 [视频] [代码])
- 3 Bowen Li, Yiming Li, **Junjie Ye**, Changhong Fu, Hang Zhao. "Predictive Visual Tracking: A New Benchmark and Baseline Approach." IEEE International Conference on Intelligent Robots and Systems (IROS), 2021. (Under review, 机器人领域 Top 会议 [视频] [代码])
- 4 Ziang Cao, Changhong Fu, **Junjie Ye**, Bowen Li, Yiming Li. "SiamAPN++: Siamese Attentional Aggregation Network for Real-Time UAV Tracking." IEEE International Conference on Intelligent Robots and Systems (IROS), 2021. (Under review, 机器人领域 Top 会议 [视频] [代码])
- 5 Changhong Fu, Ziang Cao, Yiming Li, **Junjie Ye**, Chen Feng. "Siamese Anchor Proposal Network for High-Speed Aerial Tracking." IEEE International Conference on Robotics and Automation (ICRA), 2021. (机器人领域 Top 会议 [论文] [视频] [代码])
- 6 Bowen Li, Changhong Fu, Fangqiang Ding, **Junjie Ye**, Fuling Lin. "ADTrack: Target-Aware Dual Filter Learning for Real-Time Anti-Dark UAV Tracking." IEEE International Conference on Robotics and Automation (ICRA), 2021. (机器人领域 Top 会议 [视频] [代码])

项目经历

同济大学 **Vision4Robotics** 课题组

2019/06 至今

科研助理

导师: [Prof. Changhong Fu](#) (符长虹教授)

- 基于相关滤波的无人机视觉目标跟踪

- 在相关滤波跟踪框架中引入历史区间响应策略和局部噪点感知策略, 在多个无人机目标跟踪数据集上取得了一流的表现 (文章发表于 **IEEE T-GRS**, 第一作者)
- 提出响应偏差感知和通道可靠性感知正则项, 有效提升了跟踪器性能, 将其创新性地应用于无人机自定位, 为无人机自定位任务提供了新的解决办法 (文章已投稿 **IEEE T-IE**, 第一作者)
- 将自适应标签引入相关滤波框架中, 增强了跟踪器对目标的感知能力, 在多个无人机目标跟踪数据集上达到优良的性能 (文章发表于 **ICRA'21**)
- 基于孪生网络的无人机视觉目标跟踪
 - 提出了一种锚建议网络, 以实现自适应的锚生成, 在此基础上提出 **SiamAPN** 跟踪器, 在空中目标跟踪场景下表现良好 (文章发表于 **ICRA'21**, 拓展版已投稿 **IEEE T-GRS**)
 - 改进了 **SiamAPN** 的锚建议网络, 引入自注意力与互注意力模块, 在此基础上提出 **SiamAPN++** 跟踪器, 在无人机平台的实际测试证实了其高效率和鲁棒性 (文章已投稿 **IROS'21**)
- 低照度环境下的无人机目标跟踪
 - 将图像增强算法引入相关滤波框架中, 提出一种自适应的全天候无人机目标跟踪方法, 建立了第一个无人机黑夜跟踪数据集 **UAVDark135** (文章发表于 **ICRA'21**)
 - 提出面向低光照环境无人机目标跟踪的通用增强器, 广泛适用于现有目标跟踪方法, 在多个现有优异跟踪器上的实验证实了其高效性 (文章已投稿 **IROS'21**, 第一作者)
- 考虑延迟的目标跟踪评估框架
 - 现有目标跟踪评估方式为在测试集离线运行跟踪器, 忽略了算法处理时间带来的延迟, 本工作提出考虑延迟的目标跟踪评估新框架, 该评估方式更加贴近实际任务 (文章已投稿 **IROS'21**)
- 边缘智能相机 (横向课题)
 - 基于智能芯片开发工业级手势识别, 人体识别相机, 主要完成模型训练和模型移植工作

已获荣誉

2020 届上海市优秀毕业生荣誉称号 (前 5%)
 2018-2019 学年国家奖学金 (前 0.8%)
 2017-2018 学年同济大学本科生国家励志奖学金 (前 5%)
 2017-2018 学年同济大学本科优秀学生奖学金一等奖 (前 5%)
 2018-2019 学年同济大学优秀学生 (前 5%)
 2017-2018 学年同济大学优秀学生 (前 5%)
 2018-2019 学年同济大学本科生社会活动奖学金
 2017-2018 学年同济大学本科生社会活动奖学金

竞赛获奖

2018 年第十三届全国环境友好科技竞赛一等奖
 2018 年第十一届全国大学生节能减排社会实践与科技竞赛二等奖
 2019 年第十二届全国大学生节能减排社会实践与科技竞赛二等奖
 2019 年中国大学生“壳牌汽车环保马拉松”挑战赛原型车 ICE 组冠军
 2019 年壳牌汽车环保马拉松赛亚洲站原型车 ICE 组亚军
 2019 年首届全国大学生智能机电系统创新设计大赛三等奖
 2019 年第四届“汇创青春”上海大学生文化创意作品展示活动二等奖
 2018 年第七届上海市大学生机械工程创新大赛二等奖

专业技能

编程语言: Matlab, Python
 语言水平: 英语六级 (CET-6)
 绘图软件: AutoCAD, UG, CATIA, Inventor
 文本编辑: LaTeX, Microsoft Word