Fangqiang Ding

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Address: Edinburgh, United Kingdom
Date of Birth: February 26, 2000

Education

- **University of Edinburgh** — Edinburgh, United Kingdom
  Ph.D. Student - Robotics and Autonomous Systems — *September 2021 - June 2025 (Expected)*
  Scholarship: School of Informatics fully-funded CDT-RAS Scholarship
  Supervisor: Dr. Chris Xiaoxuan Lu (Assistant Professor @ School of Informatics, University of Edinburgh)
- **Tsinghua University** — Beijing, China
  Summer Visiting Student - Department of Automation — *August 2020 - September 2020*
  Supervisor: Dr. Geng Lu (Associate Professor @ Department of Automation, Tsinghua University)
- **Tongji University** — Shanghai, China
  Bachelor of Engineering - Mechanical Engineering; GPA: 4.73 (2/130) — *September 2017 - July 2021*
  Awards: China National Scholarship (Year 2017/8, 2018/9), Top 10 Academic Star (Class of 2017)
  Supervisor: Dr. Changhong Fu (Associate Professor @ School of Mechanical Engineering, Tongji University)

Research Interest

- **Past**: UAV object tracking, 3D object detection, Drone self-localization
- **Present**: 4D automotive radar, Scene flow estimation, mmWave human sensing

Research Experience

- **4D Automotive Radar Scene Flow Estimation** — University of Edinburgh
  Ph.D. Student — *October 2021 - Present*
  - **Detail**: Develop self- and cross-modal supervised learning approaches for scene flow estimation on 4D radar point clouds. Support motion segmentation and ego-motion estimation sub-tasks with our scene flow in autonomous driving.
  - **Outcome**: As the first author, one paper was accepted by CVPR'23 as a highlight (2.6% of all submissions) and one paper was published by IEEE RA-L and with IROS'22 presentation.
- **Efficient and Robust UAV Visual Object Tracking** — Tongji University
  Research Assistant — *May 2019 - June 2021*
  - **Detail**: Present novel algorithms to solve task-specific issues in UAV object tracking, such as background distractor, object shape variance, temporal continuity, adversarial attack, and darkness, without sacrificing the real-time performance on CPUs.
  - **Outcome**: As the first (student) authors, three papers were published by IROS'20 and EAAI. As co-authors, seven papers were published by CVPR'20, IROS'20, ICRA'21, ICRA'22, IEEE TMM, and IEEE GRSM.
- **Monocular UAV Indoor Self-Localization** — Tsinghua University
  Visiting Student — *August 2020 - September 2020*
  - **Detail**: Apply visual object tracker to UAV indoor self-localization under air-ground robot coordination scenarios.
  - **Outcome**: As co-author, one paper was published by IEEE TIE.

Selected Publications

- **Fangqiang Ding**, Andras Palffy, Dariu M. Gavrila, Chris Xiaoxuan Lu. *Hidden Gems: 4D Radar Scene Flow Learning Using Cross-Modal Supervision* (CVPR'23 Highlight) [pdf] [code] [video] [page]
- **Fangqiang Ding**, Zhijun Pan, Yimin Deng, Jianning Deng, Chris Xiaoxuan Lu. *Self-Supervised Scene Flow Estimation with 4-D Automotive Radar* (IEEE RA-L & IROS'22) [pdf] [code] [video] [page]
- **Fangqiang Ding**, Changhong Fu, Yiming Li, Jin Jin and Chen Feng. *Automatic Failure Recovery and Re-Initialization for Online UAV Tracking with Joint Scale and Aspect Ratio Optimization* (IROS'20) [pdf] [code] [video]
- Changhong Fu, **Fangqiang Ding**, Yiming Li, Jin Jin, Chen Feng. *Learning dynamic regression with automatic distractor repression for real-time UAV tracking* (EAAI) [pdf] [code] [video]
- Yiming Li, Changhong Fu, **Fangqiang Ding**, Ziyuan Huang and Geng Lu. *AutoTrack: Towards High-Performance Visual Tracking for UAV with Automatic Spatio-Temporal Regularization* (CVPR'20) [pdf] [code] [video]
- Bowen Li, Changhong Fu, **Fangqiang Ding**, Junjie Ye, Fuling Lin. *All-Day Object Tracking for Unmanned Aerial Vehicle* (IEEE TMC) [pdf] [code] [benchmark]

Honors and Awards

- Grand Prize of the "Challenge Cup" Competition in Shanghai - June, 2021
- Shanghai Outstanding Graduate - May, 2021
- Academic Star in Tongji Univeristy - November, 2020
- China National Scholarship - September, 2019
- China National Scholarship - September, 2018
- First Prize of Tongji Mathematics Competition - June, 2018
- First Prize of Shanghai Graphics Innovation Design Competition - May, 2018

Academic Service

- **Reviewer**: IROS, ICRA, IEEE RA-L, ACM TOSN, IEEE TII, etc.
- **Teaching Support**:
  Introduction to Vision and Robotics (2021-2022) (University of Edinburgh)
  Introduction to Mobile Robotics (2022-2023) (University of Edinburgh)
- **Co-Supervisor for Bachelor/Master**:
  Nout Cleef (BSc. 2022). *4D Radar-Based 3D Object Detection for Autonomous Vehicles.*
  Xuanyu Pan (MSc. 2022). *Camera-4D Radar Fusion for Robust 3D Object Deteciton.*
  Zhijun Pan (BSc., 2023). *Multi-Object Tracking with 4D Millimeter-Wave Radar.*
  Zhen Luo (MRes., 2023). *mmWave Scene Flow Estimation for Robust Human Sensing.*