

Fangqiang Ding

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G.17, Informatics Forum, 10 Crichton St, Edinburgh, United Kingdom

EDUCATION

University of Edinburgh

PhD Student in Robotics and Autonomous Systems

Edinburgh, UK

2021/09 - 2025/08 (Expected)

- Supervisor: [Dr. Chris Xiaoxuan Lu](#) (Associate Professor @ UCL) and [Prof. Barbara Webb](#) (Professor @ UoE)
- Scholarship: [EPSRC CDT-RAS PhD Fellowship - Overseas](#) (top 5 per year)

Tsinghua University

Visiting Student

Beijing, China

2020/08 - 2020/09

- Advisor: [Dr. Geng Lu](#) (Associate Professor @ Department of Automation)

Tongji University

BEng in Mechanical and Automation Engineering

Shanghai, China

2017/09 - 2021/07

- GPA: 4.73/5.0 (equivalent to 92.3/100, ranking: 2/130)
- Scholarship: 2 × **National Scholarship** (top 1%, Year 2017-8 & 2018-9)
- Award: **Academic Stars** in Tongji (top 10 from all undergraduates) and **Shanghai Excellent Graduate**
- Supervisor: [Dr. Changhong Fu](#) (Associate Professor @ School of Mechanical Engineering)

RESEARCH INTERESTS

My research focuses on advancing the robustness, efficiency, and privacy-awareness of perception systems for **embodied AI**. This encompasses applications in mobile robots, autonomous vehicles, AIoT and xR-integrated systems, aiming to facilitate their **widespread, long-term and non-intrusive** deployment in the wild. Currently, my works mainly involve the mmWave imaging radar and thermal camera sensors, leveraging their unique sensing resilience to cope with **adverse weather and illumination** conditions in real world.

RESEARCH EXPERIENCE

MAPS Lab, University of Edinburgh

PhD Student, Supervisor: [Dr. Chris Xiaoxuan Lu](#)

Edinburgh, UK

2021/09 - Present

- **4D Automotive Radar-enabled Mobile Autonomy**
 - Exploit multi-level 4D radar data representation, e.g., radar tensor and point cloud, to improve the perception redundancy, robustness and efficiency onboard autonomous vehicles.
 - Develop bespoke algorithms to support various 4D radar-based tasks, e.g., moving object detection and tracking, motion segmentation, 3D occupancy prediction, scene flow estimation and odometry.
- **mmWave Imaging Radar-based Human Sensing and Modelling**
 - Enhance the performance of mmWave-based human sensing tasks, e.g., activity recognition, human parsing and body part tracking by learning scene flow estimation on imaging radar point clouds.
 - Build a complete benchmark for human body mesh reconstruction by comparing the performance of different types of mmWave data representations, e.g., radar tensor and point cloud.
- **Egocentric 3D Hand Pose Estimation with Thermal Image**
 - Investigate using thermal images for first-person two-hand 3D pose estimation for VR/AR.
 - Develop a benchmark and propose a novel transformer-based network. State-of-the-art RGB image-based methods are evaluated and different spectrums are compared in different scenarios.

UAV Lab, Tsinghua University

Visiting Student, Advisor: [Dr. Geng Lu](#)

Beijing, China

2020/08 - 2020/09

- **Monocular UAV Indoor Self-Localization**

- Apply visual object trackers to UAV indoor self-localization under air-ground robot coordination.

Vision4Robotics Group, Tongji University

Research Student, Supervisor: [Dr. Changhong Fu](#)

Shanghai, China

2019/05 - 2021/06

- **Efficient and Robust UAV Visual Object Tracking**

- Present novel algorithms to solve task-specific issues in UAV visual object tracking, such as background distractor, temporal discontinuity, adversarial attack, and darkness, without sacrificing the real-time performance on CPUs by using correlation filter-based approaches.

FEATURED PAPERS (* indicates corresponding author)

- [p1] **Fangqiang Ding**, Xiangyu Wen, Yunzhou Zhu, Yiming Li, Chris Xiaoxuan Lu*. "RadarOcc: Robust 3D Occupancy Prediction with 4D Imaging Radar" in *NeurIPS*, 2024. [[paper](#)]
- [p2] **Fangqiang Ding**, Yunzhou Zhu, Xiangyu Wen, Chris Xiaoxuan Lu*. "ThermoHands: A Benchmark for 3D Hand Pose Estimation from Egocentric Thermal Images" in submission to *NeurIPS D&B*, 2024. [[paper](#)]
- [p3] **Fangqiang Ding**, Zhen Luo, Peijun Zhao, Chris Xiaoxuan Lu*. "milliFlow: Scene Flow Estimation on mmWave Radar Point Cloud for Human Motion Sensing" in *ECCV*, 2024. [[paper](#)]
- [p4] **Fangqiang Ding**, Zhijun Pan, Haotao Zhong, Chris Xiaoxuan Lu*. "RaTrack: Moving Object Detection and Tracking with 4D Radar Point Cloud" in *ICRA*, 2024. [[paper](#)] [[code](#)]
- [p5] **Fangqiang Ding**, Andras Palffy, Dariu M. Gavrilă, Chris Xiaoxuan Lu*. "Hidden Gems: 4D Radar Scene Flow Learning Using Cross-Modal Supervision" in *CVPR*, 2023 (top 10% **Highlight**). [[paper](#)] [[code](#)]
- [p6] **Fangqiang Ding**, Zhijun Pan, Yimin Deng, Jianning Deng, Chris Xiaoxuan Lu*. "Self-Supervised Scene Flow Estimation with 4-D Automotive Radar". *IEEE RA-L*, 2022. [[paper](#)] [[code](#)]
- [p7] **Fangqiang Ding**, Changhong Fu*, Yiming Li, Jin Jin, etc. "Automatic Failure Recovery and Re-Init. for Online UAV Tracking with Joint Scale and Aspect Ratio Optim." in *IROS*, 2020. [[paper](#)] [[code](#)]

SELECTED AWARDS

ESPRC CDT-RAS PhD Scholarship	<i>Sept. 2021</i>
Grand Prize of "Challenge Cup" in Shanghai	<i>June 2021</i>
Excellent Graduate of Shanghai (top 2%)	<i>May 2021</i>
Academic Stars in Tongji (top 10)	<i>Nov. 2020</i>
China National Scholarship (top 1%)	<i>Sept. 2019</i>
China National Scholarship (top 1%)	<i>Sept. 2018</i>
First Prize of Tongji Mathematics Competition	<i>June 2018</i>
First Prize of Shanghai Graphics Design Competition	<i>May 2018</i>

ACADEMIC SERVICES

- **Invited Reviewer** for ICLR, ECCV, NeurIPS, IEEE RA-L, IROS, ICRA, IEEE TII, ACM TOSN, TIV, etc.
- **Teaching Support** for *Introduction to Mobile Robotics* (2021-2024) (University of Edinburgh)
- **Advisor/Co-supervisor of Bachelor/Master thesis** for Nout Cleef (BSc. 2022, UoE), Xuanyu Pan (MSc. 2022, UoE), Zhijun Pan (BSc., 2023, UoE), Zhen Luo (MRes., 2023, UoE), Xinyuan Cui (BEng. 2024, UoE), Lawrence Zhu (BSc. 2024, UoE), Xiangyu Wen (MRes., 2024, UoE), Yunfan Shi (MSc. 2024, UCL), Ruihong Li (MSc. 2024, UCL), Yichun Xiao (BSc., 2025, UoE), Ryan Kwok (BSc., 2025, UoE).