Fengchen Wei PhD Candidate

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Education

Department of Engineering and Design, University of Sussex Brighton, UK
Ph.D. in Engineering 2021 - 2025 *(expected)*

- Supervisor: Dr. Weiji(William) Wang
- Research area: Perception and control system of autonomous driving

School of Vehicle and Mobility, Tsinghua University Beijing, China
Visiting Ph.D 2023.09 - 2024.09

- Supervisor: Dr. Zhenhua Jin
- Research area: Research on perception module in ADAS systems and hardware-in-the-loop simulation

Department of Engineering and Design, University of Sussex Brighton, UK
MSc Robotics and Autonomous Systems(with an industrial placement year) 2019 - 2021

- Merit, Rank: Top 10%.

Research Interests

Perception and control systems for embodied intelligence, with a focus on autonomous driving. Developed a large-scale dataset for detecting large animals on highways and designed a lightweight, enhanced YOLO-based detection network with integrated tracking and ranging functionalities. Proposed ENTP-YOLO, an infrared-based object detection algorithm optimized for nighttime vehicle and pedestrian perception. Introduced a cognitive framework for embodied autonomous driving systems that integrates perception, reasoning, and control. Core expertise includes object detection, multi-object tracking, semantic segmentation, and intelligent control systems.

Selected Publications

1. **Fengchen Wei**, Weiji Wang. SCCA-YOLO: A Spatial and Channel Collaborative Attention Enhanced YOLO Network for Highway Autonomous Driving Perception System. *Scientific Reports*(***JCR Q1***), 2025.
2. **Fengchen Wei**, Hanwen Liu, Weiji Wang. ENTP-YOLO: An Enhanced Night-Time Perception Yolo Network for Ground Vehicle and Pedestrian Detection Based on Infrared Images. *Scientific Reports*(***JCR Q1***), *Under review*.
3. **Fengchen Wei**, Hanwen Liu, Weiji Wang. Embodied Cognition in Autonomous Driving: A Framework for Integrated Perception and Ego-State Estimation. *2025 25th International Conference on Control, Automation and Systems (ICCAS)*, *Under review*, 2025.
4. **Fengchen Wei**, Weiji Wang. GS-YoloNet: A Lightweight Network for Detection, Tracking, and Distance Estimation on Highways. *2024 IEEE 99th Vehicular Technology Conference (VTC2024-Spring)*, 2024.
5. **Fengchen Wei**, Weiji Wang. A Method for Designing the Perception Module of Autonomous Vehicles Using Stereo Depth and Semantic Segmentation. *2024 24th International Conference on Control, Automation and Systems (ICCAS)*, 2024.
6. **Fengchen Wei**, Weiji Wang, Hanwen Liu. A Design of Longitudinal and Lateral Controllers for Autonomous Driving System in Carla Simulator. *2024 9th International Conference on Robotics and Automation Engineering(ICRAE)*, 2024.
7. **Fengchen Wei**, Weiji Wang. OFVO: A Visual Odometry Designed for Motion Trajectory Estimation of Autonomous Vehicles. *The 4th International Conference on Robotics, Automation, and Artificial Intelligence(RAAI 2024)*, 2024.
8. **Fengchen Wei**, Weiji Wang. A Real-Time Large Animal Detection Lightweight Network for Autonomous Driving on Highways. *2023 7th CAA International Conference on Vehicular Control and Intelligence (CVCI)*, 2023.

Projects

A holistic design of secure vehicular networks: communications, data caching and services (SEEDS) | Participants
H2020 - Marie Curie Research and Innovation Staff Exchange (RISE) 2021.03 - 2025.02

Teaching Assistant

Master's courses. | University of Sussex, UK 2021-2022
- Embedded Systems and Sensors

Undergraduate courses | University of Sussex, UK 2021-2024
- Control Engineering
- Applied Technology
- Engineering Maths
- Systems Analysis and Control

Research Assistant

Institute for AI Industry Research(AIR). | Tsinghua University, China 2023.11-2024.01
- The conceptualization and implementation of advanced aerial vehicles.

Academic Services

Reviewers for Journal: *IET Intelligent Transport Systems*.
Conference: *VTC2024, IWQoS2024, ICONIP2024, M2VIP2024, ICARCV2024, ICNSC2024.*

Skills

Languages: Chinese, English.
Programming: `Python`, `C++`, `MATLAB`.