

Jiayi Chen

+86 18701381075 | ✉ jiayichen5@link.cuhk.edu.cn | 📍 Shenzhen, China
Google Scholar | LinkedIn | GitHub | Homepage | ORCID

Research Interests: Embodied AI, vision-language navigation, LLM/VLM planning, autonomous driving.

Technical Skills: Python, C++, PyTorch, ROS, CARLA, Apollo, MPC, A*, Sionna RT, Taichi RT.

EDUCATION

The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen)

Sept. 2024 – Present

Ph.D. in Computer and Information Engineering, School of Science and Engineering (SSE)

Shenzhen, China

- **Research Area:** Embodied Intelligence
- **Advisor:** Prof. Guangxu Zhu; **Co-advisor:** Prof. Shuai Wang

Beijing University of Posts and Telecommunications (BUPT)

Sept. 2020 – Jun. 2024

B.Eng. in Internet of Things Engineering, Intl. School; QMUL-BUPT Joint Programme

Beijing, China

- **Weighted Average Mark:** 90.07/100; **GPA:** 3.73/4.0; ranked **6/189**
- Selected into the YePeida Institute Pilot Class, admitting approximately the top **7%** of students

SELECTED PUBLICATIONS

Jiayi Chen, et al. "Bridging Large-Model Reasoning and Real-Time Control via Agentic Fast-Slow Planning." *ICRA 2026*, accepted. [Paper] [Code]

Jiayi Chen, et al. "Opportunistic Collaborative Planning with Large Vision Model Guided Control and Joint Query-Service Optimization." *IROS 2025*, pp. 951–958. [Paper]

Jiayi Chen, et al. "Not All Uncertainty Matters: Simulation-in-the-Loop Fast-Slow Reasoning for Decision-Critical Autonomous Driving System." *IEEE TMC*, under review. [Code]

Jiayi Chen, et al. "The Universal Language of CSI: Unifying Wireless Sensing Across Devices and Environments." *IEEE Communications Magazine*, accepted. [Paper] [Code]

RESEARCH EXPERIENCE

Agentic Fast-Slow Planning for Real-Time Autonomous Driving

Jan. 2025 – Jan. 2026

First-author work; accepted by ICRA 2026; related patent granted

CUHK-Shenzhen

- Proposed **AFSP**, a VLM/LLM-to-semantic-A* framework that decouples slow reasoning from real-time MPC control; CARLA evaluation reduced route completion time by over **12%** and maximum lateral deviation by up to **45%** versus MPC and A*-MPC
- Implemented Perception2Decision, Decision2Trajectory, semantic-guided A*, and agentic planner refinement for interpretable, executable trajectories

Opportunistic Collaborative Planning for Open-World Autonomous Driving

Sept. 2024 – Oct. 2025

First-author work; published at IROS 2025, extended to TMC submission

CUHK-Shenzhen

- Proposed **OCP** with LVM-MPC, decision-value-triggered cloud queries, query timing optimization, and simulation-in-the-loop opportunity estimation
- Implemented in CARLA/ROS, reducing service calls by **50%**, improving success rate by over **6%**, and cutting dynamic-scenario time by **26.2%**

Toward Foundation Models for Wireless Sensing

Feb. 2025 – Dec. 2025

First-author work; accepted by IEEE Communications Magazine

CUHK-Shenzhen

- Developed **WiLLM**, a foundation-model framework for wireless sensing; constructed a **259,774**-sample heterogeneous CSI corpus spanning **12** datasets, devices/environments, and **6** task categories
- Learned universal signal representations with dataset-specific tokenizers and a shared GPT-style Transformer, reaching **91.06%** accuracy and robust **1%**-label few-shot adaptation

INTERNSHIP EXPERIENCE

AGIQUAD <i>Embodied Intelligence Research Intern; supervised by Qiwei Xu; Vision-and-Language Navigation (VLN)</i>	May 2026 – Present Shenzhen, China
- Developing MapFusion, a query-conditioned VLN stack that grounds open-ended language in heterogeneous maps, reachable goals, and executable actions - Validated on an AgiBot KuoTuo D2 Max through cross-floor real-robot trials; extending toward inspection-oriented embodied applications and an ICRA submission	
Shanghai AI Laboratory <i>Remote Research Intern; supervised by Xinyu Cai</i>	Jan. 2023 – Dec. 2024 Remote
- Built an LLM-based traffic-scenario generator that converts natural-language requirements into OpenSCENARIO cases with generator-judge agents; configured CARLA–Apollo communication and Waymo-to-V2X-ViT conversion - Generated and quality-checked InternVL VLM-OCR data through difficult-sample synthesis, rule-based filtering, and parameter-freezing fine-tuning	
Apple Inc. <i>Data Analyst Intern, Channel Planning and Forecast</i>	Jul. 2022 – Mar. 2023 Beijing, China
- Built a modular Python/C++ allocation engine processing 1M+ weekly iPad units in approximately 2 minutes - Eliminated observed allocation errors in the evaluated workflow and reduced AOS lookup latency from 20s to 5s; automated pricing, reporting, and launch workflows	

PROJECT EXPERIENCE

6G Network Digital Twin and Ray-Tracing Wireless Simulation Platform <i>Project participant, Guangdong Major Project on Environment-Enhanced 6G Networks</i>	Sept. 2024 – Present CUHK-Shenzhen
- Contributed to a Sionna RT/Taichi RT digital-twin pipeline, diagnosing OSM/GPS alignment, ray/path extraction, benchmarking, and visualization - Designed semantic-aware calibration with LiDAR maps, SAM segmentation, sparse RSRP fitting, antenna sampling, and phase-aware pruning	
Multi-Sensor UAV Docking and Adaptive Cruise Control System <i>Project Leader; supervised by Prof. Haiyuan Li</i>	Oct. 2021 – Jan. 2023
- Led system design and integration for multi-sensor UAV aerial docking and adaptive cruise control; implemented PnP-based visual localization for centimeter-level docking - Coordinated algorithm validation and competition delivery; won university and Internet+ municipal third prizes	

TECHNICAL SKILLS

Programming: Python, C/C++, PyTorch	Robotics: ROS, CARLA, Apollo, MPC, A*	Wireless: Sionna RT, Taichi RT, CSI, SAM
--	--	---

AWARDS AND HONORS

Chinese Invention Patent (CSI sensing-related): “CSI-Based Target Detection Method, Apparatus, Device, and Medium,” ZL 2026 1 0612628.X, granted Jul. 24, 2026.	
Chinese Invention Patent (AFSP/ICRA-related): “Method and Related Device for Autonomous-Driving Path Planning Integrating Large-Model Reasoning,” ZL 2026 1 0345449.4.	
Outstanding Undergraduate Thesis, Queen Mary-BUPT Joint Programme: WiFi CSI Action Recognition	Jun. 2024
The 8th China International “Internet+” College Student Innovation and Entrepreneurship Competition, BUPT Industrial Track Second Prize	Jul. 2022
First Prize, National College Mathematics Competition	Jul. 2021

ENGLISH PROFICIENCY

English: TOEFL iBT 103/120 (R27/L28/S23/W25), CET-6 516, CET-4 607

ACADEMIC SERVICE

Reviewer: ACL ARR 2026, ICRA 2025/2026, ICML 2026, IROS 2025, NeurIPS 2026; IEEE TMC, IEEE WCL, PIMRC 2025, GLOBECOM 2025
--