Honglin He

Ph.D. Student in Computer Science, University of California, Los Angeles
Vision and Autonomy Intelligence Lab (VAIL) • Advisor: Prof. Bolei Zhou
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Research Interests

Embodied AI for urban mobility: scalable simulation, navigation foundation models, and sim-to-real learning that let sidewalk robots navigate safely, robustly, and socially among pedestrians in real cities.

Education

Sep 2025 – Present
University of California, Los Angeles (UCLA)
Ph.D. in Computer Science
GPA 4.0/4.0
Advisor: Prof. Bolei Zhou

Sep 2021 – Jun 2024
Tsinghua University (THU)
M.S. in Control Science and Engineering
GPA 4.0/4.0, Rank 1/42
Advisors: Prof. Yi Zhang, Prof. Shuo Feng

Sep 2017 – Jun 2021
Xiamen University (XMU)
B.E. in Automation
GPA 3.7/4.0

Research Experience

Sep 2025 – Present
University of California, Los Angeles — Los Angeles, CA
Ph.D. Student Advisor: Prof. Bolei Zhou
Research collaboration with Coco Robotics on sidewalk delivery robots
- **Simulation:** Co-first author of SidewalkBench (CoRL 2026 Spotlight; 100 2 km × 2 km scenes, 1,235 scenarios, 9 models) and UrbanVerse (ICLR 2026; city-tour videos to simulation).
- **Robot learning:** Led FlowPilot (CoRL 2026; flow matching + human-preference alignment), MIMIC (ICRA 2026; multi-scale imitation + corrective behavior expansion), and S2E (ICLR 2026; RL fine-tuning of navigation foundation models in simulation).
- **Real-world robots:** Validated these policies on Coco Robotics delivery robots over 20+ km with only a monocular camera and coarse GPS, day and night: 3.4 interventions per 100 m, longest intervention-free run 1.6 km; FlowPilot cut interventions by 40.0%.

Jun 2026 – Sep 2026
Coco Robotics — Los Angeles, CA
Machine Learning Engineer Intern Mentor: Brad Squicciarini
- **(1:1) One pilot, one robot:** Improved the driving model with fleet-scale training, raising Gaussian-splatting (GS) benchmark success rate from 53.8% to 91.3%.
- **(1:N) One pilot, many robots:** Built a scenario-understanding module and human-signal interface that hold robots at crosswalks until a pilot approves, letting one pilot supervise many.

Apr 2024 – May 2025
University of California, Los Angeles — Los Angeles, CA
Visiting Research Scholar Supervisor: Prof. Bolei Zhou Collaborator: Dr. Wayne Wu
- Co-first author of URBAN-SIM (CVPR 2025 Highlight), a GPU-parallel platform running 2,600 FPS on one GPU; scaling from 1 to 1,024 training scenes raised success from 5.1% to 83.2%.
- Co-first author of MetaUrban (ICLR 2025 Spotlight), a compositional urban simulator.

Nov 2022 – May 2024
Intelligent Transportation Lab, Tsinghua University — Beijing, China
Research Student Supervisor: Prof. Shuo Feng
Naturalistic driving environment reconstruction and safety evaluation for autonomous vehicles.

Aug 2022 – Mar 2024
Shanghai AI Laboratory — Shanghai, China
Research Intern Supervisors: Bo Dai, Wayne Wu, Kwan-Yee Lin
- Led OrthoPlanes (ICCV 2023), a representation that improves the 3D-awareness of GANs.
- Contributed to DNA-Rendering (ICCV 2023), a 500-actor, 60-camera human rendering dataset and benchmark: built the annotation and refinement pipeline and trained the NeuralBody and AnimatableNeRF baselines.

Selected Publications

* denotes equal contribution. Full list on Google Scholar.

CoRL 2026 **SidewalkBench: Benchmarking Visual Navigation on Urban Sidewalks** (Spotlight)
Zhizheng Liu*, **Honglin He***, Vivek Alumootil*, . . . , Wayne Wu, Bolei Zhou Paper | Project

CoRL 2026 **From Imitation to Alignment: Human-Preference Flow Policies for Long-Horizon Sidewalk Navigation** ***(Best Paper Award at HumanRLI Workshop @ CoRL 2026)***
Honglin He, Zhizheng Liu, Yukai Ma, Bolei Zhou Paper | Project | Code

ICLR 2026 **From Seeing to Experiencing: Scaling Navigation Foundation Models with Reinforcement Learning**
Honglin He*, Yukai Ma*, Brad Squicciarini, Wayne Wu, Bolei Zhou Paper | Project | Code

ICLR 2026 **UrbanVerse: Scaling Urban Simulation by Watching City-Tour Videos**
Mingxuan Liu*, **Honglin He***, Elisa Ricci, Wayne Wu, Bolei Zhou Paper | Project | Code

ICRA 2026 **Learning Sidewalk Autopilot from Multi-Scale Imitation with Corrective Behavior Expansion**
Honglin He, Yukai Ma, Brad Squicciarini, Wayne Wu, Bolei Zhou Paper | Project | Code

CVPR 2025 **Towards Autonomous Micromobility through Scalable Urban Simulation** (Highlight)
Wayne Wu*, **Honglin He***, Chaoyuan Zhang, . . . , Quanyi Li, Bolei Zhou Paper | Project | Code

ICLR 2025 **MetaUrban: An Embodied AI Simulation Platform for Urban Micromobility** (Spotlight)
Wayne Wu*, **Honglin He***, Jack He, . . . , Quanyi Li, Bolei Zhou Paper | Project | Code

Other Publications

CoRL 2026 BridgeSim: Unveiling the OL–CL Gap in End-to-End Autonomous Driving
Seth Z. Zhao, . . . , **Honglin He**, . . . , Bolei Zhou Paper | Project

CVPR 2026 AURA: Multi-modal Shared Autonomy for Urban Navigation
Yukai Ma, **Honglin He**, Selina Song, Wayne Wu, Bolei Zhou Paper | Project

T-ITS 2024 Few-Shot Testing of Autonomous Vehicles with Scenario Similarity Learning
Shu Li, **Honglin He**, . . . , Shuo Feng Paper

IV 2024 Few-Shot Scenario Testing for Autonomous Vehicles Based on Neighborhood Coverage and Similarity
Shu Li, Jingxuan Yang, **Honglin He**, . . . , Shuo Feng Paper

CVPRW 2024 KnowMoformer: Knowledge-Conditioned Motion Transformer for Controllable Traffic Scenario Simulation
Honglin He, Shu Li, . . . , Shuo Feng Paper

T-ITS 2023 Adaptive Safety Evaluation for Connected and Automated Vehicles with Sparse Control Variates
Jingxuan Yang, Haowei Sun, **Honglin He**, . . . , Shuo Feng Paper

ICCV 2023 OrthoPlanes: A Novel Representation for Better 3D-Awareness of GANs
Honglin He*, Zhuoqian Yang*, Shikai Li, Bo Dai, Wayne Wu Paper | Project

ICCV 2023 DNA-Rendering: A Diverse Neural Actor Repository for High-Fidelity Human-centric Rendering
Wei Cheng*, . . . , **Honglin He**, . . . , Kwan-Yee Lin Paper | Project

ITSC 2022 Adaptive Testing for Connected and Automated Vehicles with Sparse Control Variates in Overtaking Scenarios
Jingxuan Yang, **Honglin He**, . . . , Henry X. Liu Paper

arXiv 2026 ChairNav: Cross-Embodiment Pre-training and Personalization for Long-Horizon Wheelchair Navigation
Junhua Huang, Zhizheng Liu, **Honglin He**, Xiang Zhang, Bolei Zhou Paper | Project

arXiv 2026 Monocular 3D Occupancy Perception for Robots on Sidewalks via Hybrid 2D–3D Learning
Yukai Ma, . . . , **Honglin He**, . . . , Bolei Zhou Paper | Project

arXiv 2026 Slow Brain, Fast Planner: Latency-Resilient VLM-Augmented Urban Navigation
Zhenghao Peng, **Honglin He**, . . . , Bolei Zhou Paper

arXiv 2025 Dreamland: Controllable World Creation with Simulator and Generative Models
Sicheng Mo, . . . , **Honglin He**, Bolei Zhou Paper | Project

Awards and Honors

2026 Best Paper Award at HumanRLI Workshop @ CoRL 2026 (FlowPilot)

2025 Amazon Trainium Fellowship

2024 Outstanding Master's Thesis, Tsinghua University

2019, 2020 First Prize Scholarship for Academic Performance, Xiamen University

Academic Service

Reviewer CVPR, ICCV, ECCV, NeurIPS, ICLR, CoRL, AAAI, ICRA, IEEE TPAMI, IEEE T-ITS