



SEMINAR

Date: 19 March, 2026 (Thursday)

Time: 2:30pm - 5:00pm (HKT)

Venue: Online Seminars

Join Zoom Meeting:

<https://hku.zoom.us/j/91325608116?pwd=pxgaZTdbdFi2SIDuomw5hc0K0Lc1Lf.1>

Meeting ID: 913 2560 8116

Password: 718345

Supervisor: Prof. F. Zhang

Name	Time	Title	abstract
Qingbo Liu	2:30PM -- 3:00 PM	PAF-GS: Propagation-and-Fusion Ground Segmentation via Voxel Plane States for Low-speed Near-field Navigation	Low-speed near-field navigation requires ground segmentation that is not only accurate instantaneously but also temporally stable for downstream planning. However, existing single-frame LiDAR methods often become incomplete under occlusions, field-of-view boundaries, sparse returns, and abrupt elevation changes, leading to holes, discontinuities, and label flickering. This letter presents PAF-GS, a robot-centric voxel-map-based ground segmentation method that maintains local ground as voxel-level plane states and updates them through a constrained propagation-and-fusion process. Confidence-aware seed

			<p>initialization, ego-centric connected ground-group selection, and temporal confidence feedback are introduced to improve robustness under partial observability and intermittent plane degeneracy. The method produces both point-wise ground labels and signed point-to-surface residuals for planner-facing geometric reasoning. The complete pipeline runs in real time on an RK3588 embedded platform. Experiments on a private benchmark with indoor and outdoor near-field sequences show that PAF-GS consistently outperforms representative baselines. These results demonstrate that dense accumulated local ground modeling improves near-field completeness and temporal stability in cluttered environments.</p>
Yingrui Jie	3:00PM -- 3:30 PM	LiDAR-Based Environmental Perception and Representation for Mobile Robot Navigation: A Brief Survey	<p>LiDAR sensors have become a fundamental modality for environmental perception in mobile robot navigation due to their robustness to illumination changes and accurate geometric measurements. A key challenge lies in how to represent the sensed environment in a form that is both computationally efficient and suitable for downstream navigation tasks. This talk presents a brief overview of several commonly used environment representations for LiDAR-based navigation systems, including occupancy grid maps, robocentric sliding maps, and boundary-based representations. We discuss the underlying modeling principles of each representation, their advantages and limitations, and how they support different perception and planning requirements. In addition, we review several downstream perception tasks built upon these representations, such as dynamic obstacle perception and ground traversability segmentation. The goal of this seminar is to provide a concise overview of the design choices behind environment representations in LiDAR-</p>

			based navigation and to highlight how these representations influence the capabilities of autonomous robotic systems.
Kaiwen Jiang	3:30PM -- 4:00 PM	End-to-End Deep Reinforcement Learning for Aggressive Micro Aerial Vehicle Navigation	Micro air vehicles (MAVs) are born to be agile. We try to leverage Reinforcement Learning (RL) paradigms to elevate drone agility in unknown and cluttered environments to its ultimate expression. To this end, we try to train an end-to-end controller to map the historical point clouds directly into collective thrust and body rate (CTBR) command. We design a novel RL pipeline to facilitate more effective MAV training. In the novel pipeline, a novel reward design philosophy is derived. Also, a two phases reward switch mechanism is applied to better achieve smooth and stable A2B flight.
Hetai Zou	4:00PM -- 4:30 PM	A Practical Hardware-in-the-loop Journey in Embodied Autonomous System	The deployment of embodied autonomous systems is fundamentally challenged by the "sim-to-real" gap, where policies trained in idealized simulations frequently degrade upon encountering the unmodeled physics and latencies of the real world. This seminar explores how Hardware-in-the-Loop (HIL) simulation provides a critical testing bridge, allowing engineers to validate physical components and control logic in real-time within high-fidelity virtual environments prior to physical deployment. Additionally, the presentation reviews state-of-the-art methodologies from the broader robotics community, highlighting how techniques such as domain randomization, continuous online adaptation, and generative world models can create highly robust agents.
Xinle Xi	4:30PM -- 5:00 PM	Edge computing platform for robotic research	This seminar presents an edge computing platform designed for mobile robotics research, addressing critical constraints of size, weight, and power. We introduce the RK3588 system-on-chip as a high-performance solution. Key evaluations include the real-time execution of a

			LiDAR-inertial odometry (LIO) algorithm and the inference performance of AI models. The discussion concludes with future research directions and potential applications for this integrated computing approach.
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ALL INTERESTED ARE WELCOME

For further information, please contact Prof. F. Zhang at 3917 7909.