香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

土木及環境工程學系
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

SEMINAR

SCALABLE AND ADAPTIVE COOPERATIVE AI: FROM NETWORKED CONTROL TO HUMAN–AI COORDINATION

Speaker

Prof. Yali Du

Associate Professor
King's College London

Abstract

As AI systems increasingly operate alongside humans and other agents, their effectiveness depends on their ability to cooperate. In networked and multi-agent systems, this requires learning from limited information, coordinating at scale, and responding to changes in the environment and in the behaviour of other agents. A central challenge is to achieve these capabilities while respecting safety constraints.

In this talk, I will discuss our work towards scalable, adaptive and trustworthy cooperative AI. Drawing on multi-agent reinforcement learning and its connections with control, I will explore how the structure of interactions can support efficient learning, how agents can generalise beyond their training conditions, and how safety can be incorporated into coordinated decision-making. These perspectives motivate a broader question: what should agents learn, what structure should we build into their design, and how can the two work together as conditions change? I will conclude with open research questions on adaptation and safety in cooperative systems deployed in the real world.

Biography

Dr Yali Du is an Associate Professor in AI at King's College London and a Turing Fellow at The Alan Turing Institute. She leads the Cooperative AI Lab, where her research focuses on cooperative, safe and human-aligned AI for complex decision-making, spanning multi-agent reinforcement learning, human–AI coordination and value alignment. Her honours include the AAAI New Faculty Highlights Award in 2023, recognition as a Rising Star in AI at KAUST, and Responsible AI UK Best Research Paper Awards in 2026. She serves as an Associate Editor for Autonomous Agents and Multi-Agent Systems and IEEE Transactions on Artificial Intelligence, and has held senior reviewing and organising roles at major international AI conferences.

22 October 2026
Thursday

4:00pm - 5:00pm

Room 3584A (Lift 27/28)
Academic Building, HKUST

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