The Hong Kong Polytechnic University 香港理工大學

Department of Computing 電子計算學系

Research Centre for Data Science & Artificial Intelligence 人工智能與數據科學研究中心 RC-DSAI

IEEE Computational Intelligence Society

Distinguished Seminar Series on Data Science & Artificial Intelligence

Active Inference for Distributed Intelligence in the Computing Continuum

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English

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Abstract

Modern distributed systems must operate under uncertainty, across environments, infrastructures, and applications that vary widely. Within the Computing Continuum (IoT–Edge–Fog–Cloud), applying neuroscience-inspired principles and mechanisms may help us build more flexible solutions that can generalize across diverse settings. Intriguing hypotheses in neuroscience propose that many brain functions in humans and animals arise from a small number of powerful principles. If these hypotheses hold, they could offer deep insight into how humans and animals cope with unpredictable events, and even support imagination. In this talk, we explore how Active Inference, alongside established design principles for modern distributed systems, such as elasticity, predictive equilibrium, and antifragility, can enable Distributed Intelligence across the Computing Continuum.

About the Speaker

Prof. Schahram Dustdar is a Full Professor of Computer Science at TU Wien, where he leads the Distributed Systems Group (https://dustdar.prof). He is co-founder and chief-Scientist at Coovally.ai in Barcelona. He is widely known for pushing the frontier of elastic, dependable cloud-to-edge systems and the Computing Continuum, turning cutting-edge research into practical foundations for modern distributed intelligence. An IEEE Fellow, ACM Distinguished Scientist/Speaker, and member of Academia Europaea, he is a sought-after keynote speaker recognized for shaping how large-scale systems adapt, scale, and stay resilient in the real world.