

From AI Coding to Software Evolution: Towards Trustworthy Evolutionary Agent Systems



Invited Speaker

Ran Cheng

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Venue: LAU-6-209, CityU

Biography

Ran Cheng is Associate Head and Associate Professor in the Department of Data Science and Artificial Intelligence at The Hong Kong Polytechnic University. His research focuses on evolvable artificial intelligence systems, with the goal of developing intelligent systems capable of autonomous learning and continuous evolution. He is the founder of the open-source project EvoX, a distributed GPU computing infrastructure for large-scale evolutionary computation, providing efficient and scalable computational support for challenging problems in complex optimization, intelligent design, and scientific computing. He has published more than 150 research papers and received over 20,000 citations on Google Scholar. He is the recipient of the 2025 IEEE Computational Intelligence Society Outstanding Early Career Award and has been consecutively named a Clarivate Highly Cited Researcher. He also founded the IEEE Computational Intelligence Society Shenzhen Chapter and served as its inaugural Chair.

Abstract

Large language models have greatly advanced AI-assisted coding, yet autonomous construction of complex software remains challenging. In this talk, I will argue that the key bottleneck is not only model capability, but the lack of a system-level closed loop for execution, evaluation, memory, collaboration, and evolution. I will introduce our efforts toward trustworthy evolutionary agent systems and present case studies on autonomous complex software construction. Finally, I will discuss a broader shift from static model training to continuously evolving intelligent systems.