



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

PHD STUDENT SEMINAR

**Self-Evolving Large Language Models for
Mathematical Reasoning under Weak Supervision**

By

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Abstract

Mathematical reasoning often unfolds through latent multi-step structures, while training data usually provides only final answers. As a result, outcome-level supervision offers sparse learning signals and may encourage models to imitate plausible solutions rather than develop reliable intermediate reasoning. Recent work has addressed this issue through process supervision, external verifiers, and self-generated reasoning trajectories. Although these methods improve performance, they also introduce challenges such as annotation cost, distributional mismatch, and reward hacking. In this talk, I review these directions and highlight a more fundamental question: which intermediate goals are worth learning under weak supervision? I then discuss how this perspective motivates self-evolving large language models for mathematical reasoning.

Date : 6 May 2026 (Wednesday)

Time : 3:00pm

Zoom Meeting : <https://hkust.zoom.us/j/9644504237> (Passcode: 123456)

All are Welcome!