



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

## **IEDA/MATH JOINT SEMINAR**

**Disintermediation of Financial Services: Promises and Risks**

By

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### **Abstract**

Blockchain is a distributed ledger technology built around the principles of transparency and decentralization. Initially conceived as the backbone technology for cryptocurrency payments, blockchain has expanded to support a large class of business applications. We begin by discussing automated Market Makers (AMMs), the most prominent class of smart contracts which implement pricing schedules for decentralized exchanges (DEXs). (DeXs) employ a loss mutualization mechanism where arbitrageurs offering higher gas fees capture sniping opportunities. We show that this leads to a "tragedy of the commons" scenario, discouraging liquidity providers from updating outdated quotes due to high transaction costs. We then discuss allocative inefficiencies and unfairness of existing blockchains. We demonstrate why the pre-trade visibility of order flows exposes users to the risk of being frontrun by malicious actors. We show that existing solutions based on private communication channels between users and validators cannot reduce miner extractable value, and do not yield allocative efficiency.

(joint work with Ruizhe Jia and Ye Wang)

### **Biography**

*Prof. Agostino Capponi is an Associate Professor of Industrial Engineering and Operations Research at Columbia University, where he is also the director of the Center for Digital Finance and Technologies, and a member of the Data Science Institute.*

*Agostino's research interests are in systemic risk and economic networks, financial technology, tokenomics, and market microstructure. Agostino's research has been published in major journals of his field, including Management Science, Operations Research, Journal of Political Economy, Journal of Monetary Economics, Review of Asset Pricing Studies, Journal of Financial and Quantitative Analysis, and Mathematical Finance.*

**Date : 3 August 2023 (Thursday)**

**Time : 10:30am**

**Venue : Room 2465 (Lifts 25/26)**

*All are Welcome!*