

Becoming a Mathematics Researcher: My Journey Through Finance, AI, and Networks

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Mathematics is capable of transforming curiosity into discovery and ideas into real-world impact. In this talk, I will share my journey into mathematical research, reflecting on the experiences, challenges, and opportunities that are shaping my career. As a Black mathematician working in financial mathematics, I will discuss the barriers I encountered, the importance of mentorship and representation, and how these experiences directly impacted my research path.

Alongside this personal narrative, I will provide an overview of my research journey, which has evolved from numerical methods for pricing financial derivatives to the application of artificial intelligence and network science in financial markets. I will highlight my key contributions in option pricing, credit risk modelling, and machine learning, before focusing on my recent work that uses graph neural networks and dynamic financial networks to understand market interconnectedness and forecast financial market volatility.

The talk highlights how mathematics continues to evolve through interdisciplinary collaboration and emerging technologies. I will conclude by discussing the importance of representation, resilience, and lifelong learning, and offer encouragement to students and aspiring researchers considering a career in the mathematical sciences.

Keywords: Mathematical Finance, Artificial Intelligence, Graph Neural Networks, Financial Networks, Volatility Forecasting, Research Journey, Diversity in Mathematics.