

Shuangyan Deng

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Ph.D. Student in Statistics

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Research Profile

Ph.D. student in Statistics at the University of Auckland. My research develops benchmarks, methods, and evaluation frameworks for financial reasoning with multimodal artificial intelligence systems. I am particularly interested in how language, numerical data, market information, and multimodal evidence can support reliable reasoning and decision-making in financial applications.

Research Interests

Multimodal financial reasoning, financial artificial intelligence, multi-agent systems, stock price prediction

Education

University of Auckland , Auckland, New Zealand Ph.D. in Statistics Supervisor: Associate Professor Ciprian Doru Giurcaneanu	2024–Present
University of Leeds , Leeds, United Kingdom M.Sc. in Financial Mathematics	2018–2019
Anhui University , Hefei, China B.Sc. in Finance	2013–2017

Work Experience

CIB FinTech Services (Shanghai) Co., Ltd. Data Centre	Jan. 2022–Jun. 2023 Data Developer
Shanghai Weixun Education Technology Co., Ltd. Research Institute	May 2020–Dec. 2021 Strategy Analyst

Research Experience

Visiting Ph.D. Student College of Computing and Data Science	Oct. 2025–Jun. 2026 Nanyang Technological University, Singapore
Ph.D. Researcher Department of Statistics	2024–Present University of Auckland, New Zealand

Research Areas

- Multimodal Financial Reasoning.** Designing benchmarks and methods for advanced financial reasoning across textual, numerical, tabular, visual, and multimodal evidence.
- AI for Finance.** Developing and evaluating artificial intelligence methods for financial reasoning, forecasting, decision support, and other complex financial applications.
- Stock Price Prediction.** Applying machine learning and multimodal information to financial forecasting, stock movement prediction, and market understanding.

Awards

- ★ **Best Paper Award, ACM ICAIF 2025.** Awarded for the paper “FinMR: A Knowledge-Intensive Multimodal Benchmark for Advanced Financial Reasoning.”

Project Experience

Oct. 2022–Jun. 2023

Industrial Bank Co., Ltd

Data Developer & Project Manager

★ **Project: Online Wealth Management Product Sales Analytics Platform.**

Developed a unified data architecture for Industrial Bank's wealth management systems, enabling real-time data collection, processing, querying, and monitoring of online and offline product sales

Designed a microservice-based architecture integrating online and offline sales channels, addressing the lack of centralized real-time monitoring across regional branches.

Integrated Spring Boot with ClickHouse and Redis to support low-latency queries across 24 XML-based application programming interfaces.

Implemented real-time operational visualizations for more than ten product lines, improving marketing responsiveness and enabling automated cross-departmental report generation.

Jan. 2022–Oct. 2022

Industrial Bank Co., Ltd

Data Developer

★ **Project: Marketing Campaign Live Operations Dashboard.**

Developed a dashboard for monitoring daily marketing campaigns, including TikTok promotional activities, with real-time tracking of livestream duration, campaign status, audience size, and related operational indicators.

Led back-end development of the real-time monitoring dashboard and presented key performance indicators for TikTok marketing campaigns.

Built real-time data ingestion modules using Kafka, designed data cleansing workflows, and stored processed data in ClickHouse.

Improved the visualization and responsiveness of back-end indicators through a low-latency messaging mechanism.

May 2020–Dec. 2021

Vision International Education

Strategy Analyst

- ★ **Project: International Student Market Research.** Conducted comprehensive business analysis of international student recruitment trends across overseas education markets. Performed policy-risk analysis, demand forecasting, and competitive landscape assessment using qualitative and quantitative methods. Collaborated with information technology, finance, and education teams to design market-entry strategies and provide evidence for the company's expansion decisions.

Journal Publications

- [1] **Shuangyan Deng**, Zihan Huang, Kai Du, Rui Mao, Jiamou Liu, Ciprian Doru Giurcaneanu, and Erik Cambria. "Multi-Agent SEA: Step-wise Evidence Acquisition for Multimodal Financial Reasoning." *Information Fusion*, Article 104550, 2026.
- [2] Weijie Zhao, Rui Mao, **Shuangyan Deng**, and Erik Cambria. "Personalized Diabetes Care: Discovering Diabetes Mindset Disparities from Metaphorical Cognition." *IEEE Transactions on Affective Computing*, 2026.

Conference Publications

- [1] **Shuangyan Deng**, Zihan Wang, Rui Mao, Ciprian Doru Giurcaneanu, and Jiamou Liu. "CLER: Improving Multimodal Financial Reasoning by Cross-MLLM Error Reflection." In *Proceedings of the AAAI Conference on Artificial Intelligence*, 2026.
- [2] Hao Li, Meng Zhang, Ming Li, Jiacheng Li, Zihan Zhang, Jiawei Yang, **Shuangyan Deng**, and Jiamou Liu. "Multi-source Multi-level Multi-token Ethereum Dataset and Benchmark Platform." In *Proceedings of the ACM Web Conference*, pp. 8517–8520, 2026.
- [3] **Shuangyan Deng**, Haizhou Peng, Jiacheng Xu, Rui Mao, Ciprian Doru Giurcaneanu, and Jiamou Liu. "FinMR: A Knowledge-Intensive Multimodal Benchmark for Advanced Financial Reasoning." In *Proceedings of the 6th ACM International Conference on AI in Finance (ICAIF)*, pp. 168–176, 2025. **Best Paper Award.**
- [4] Weijie Zhao, Rui Mao, **Shuangyan Deng**, and Erik Cambria. "Bridging Cognitive Divide: Uncovering Cognitive Disparities among Diabetic Patients via Metaphor." In *Proceedings of the IEEE International Conference on Bioinformatics and Biomedicine*, 2025.