Agostino Capponi

CONTACT INFORMATION

Professor
Department of Industrial Engineering and Operations Research
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AREAS OF SPECIALIZATION

My research interests are in Financial Engineering, with a focus on systemic risk and economic networks, financial technology, market microstructure, decentralized finance, machine learning, data science, and portfolio choice.

EDUCATION

California Institute of Technology, Department of Computing & Mathematical Sciences, Pasadena, California, USA

Ph.D. in Computer Science, June 2009

Title: *Credit Risk and Non-linear Filtering: Computational Aspects and Empirical Evidence*

Ph.D. Advisor: Professor Jakša Cvitanić

Minor in Applied & Computational Mathematics, GPA 4.0/4.0, March 2007

M.S. in Computer Science, GPA 4.0/4.0, June 2006

University of Rome "La Sapienza"

Bachelor Degree in Computer Science, Department of Computer Science, University of Rome "La Sapienza", Rome, Italy, *Magna cum Laude*, December 2001

PROFESSIONAL EXPERIENCE

Full Professor — Jan. 2024 – present
Department of Industrial Engineering and Operations Research
Columbia Business School (by courtesy) — Sep. 2025 – present
Columbia University, New York, NY.

Director — Nov. 2022 – Present
Center for Digital Finance and Technologies,
School of Engineering and Applied Sciences
Columbia University, New York, NY.

Chief Executive Officer — October 2025 – Present
Digital Directions, Inc.

Visiting Scholar — Sep. 2022 – Dec. 2022
Research & Statistics Group
Federal Reserve Bank of New York, New York, NY.

Visiting Research Professor — Aug. 2022 – Dec. 2022
Leonard N. Stern School of Business, Department of Finance
New York University, New York, NY.

Associate Professor (with tenure) — Jan. 2019 – December 2023
Industrial Engineering and Operations Research Department
Columbia University, New York, NY.

Consultant Feb. 2016 – Dec. 2021
Office of the Chief Economist
U.S. Commodity Futures Trading Commission, Washington D.C.

Tenure-Track Assistant Professor Aug. 2014 – Dec. 2018
Industrial Engineering and Operations Research Department
Columbia University, New York, NY.

Tenure-Track Assistant Professor Aug. 2013 – Aug. 2014
Department of Applied Mathematics and Statistics
Johns Hopkins University, Baltimore, MD.

Tenure-Track Assistant Professor Aug. 2010 – July 2013
Department of Industrial Engineering
Purdue University, West Lafayette, IN.

Visiting Assistant Professor June 2011 – July 2011
Swiss Institute of Finance
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland.

Full-Time Associate Aug. 2009 – Aug. 2010
Derivatives Analysis
Goldman Sachs International, London, U.K.

Instructor May 2009 – July 2009
Department of Industrial and Systems Engineering
University of Southern California, Los Angeles, California.

Patents, Grants, Honors, Awards

Advisory Board Membership

- SG-Forge, Société Générale. Member of the Scientific Council, January 2025-present.
- **Columbia Center for AI and Responsible Financial Innovation Advisory Board**. Member, April 2024-present.
- **GARP's AI and Risk Program Advisory Committee**. Member, July 2023-present.
- **GRI Research Advisory Committee**. Member, April 2023-present.
- **Advisory Committee of Qwafaxnew**. Member, May 2023-present.

Honors and Awards

- **2025 Best Paper Award** from the Journal *Operations Research*, Financial Engineering Area.
- **2025 PECASE**. Presidential Early Career Award for Scientists and Engineers.
- PG&E Energy Analytics Challenge, IISE Annual Conference. Second Place.
- **2024 UBRI** (University Blockchain Research Initiative) Innovator Award.
- **Paradigm Policy**. Inaugural Fellow of the Paradigm Policy Lab, 2023-present
- **Luohan Academy**. Academic Fellow, 2021–present.
- **DLT Science Foundation**. Fellow, 2023-present
- **Fintech Initiative at Cornell**. External Research Fellow, 2021–present.
- **Crypto and Blockchain Economics Research Forum**. Fellow, 2020–present.

- **Inaugural JP Morgan AI Faculty Research Award**. "Robo-Advising as a Symbiotic Human-Machine System". A. Capponi. 2019–2020 ($150,000).
- **NSF CAREER Award**. "Systemic Risk and Strategic Formation in Stochastic Networks", no. 1752326. A. Capponi. 2018–2023 ($500,000).
- **Bar-Ilan Prize**. General Prize for Research in Financial Mathematics, 2016.
- **Honorable Mention, SIFI (Systemic Important Financial Institutions Challenge)**. MIT Center for Finance and Policy and the Harvard Crowd Innovation Laboratory, 2016. ($500).

Research Grants

- **SEAS Interdisciplinary Research Seed (SIRS)** and **SEAS Translational Acceleration Research (STAR)** Funding, 2025 ($85,000) (joint with Harrison Hong)
- **NSF CMMI-2428786**: Sole PI "SupplyChainDCL: Enhancing Resilience, Optimizing Efficiency, and Mitigating Disruption Risks in Supply Chain Network", 2024-2027 ($414,909)
- **Ethereum Foundation.** Academic Research Grant. Sole PI. "Mechanism Design and Empirical Analysis of MEV Prevention Mechanisms", 2022–2023. ($78,269). "Quantifying and Reducing Builder/Searcher/Relay Centralization Risk in the Context of Maximal Extractable Value", 2023-2024. ($100,000).
- **Stellar Development Foundation.** Academic Research Grant. Sole PI. "Towards an Efficient and Privacy Preserving Multi-Token Decentralized Financial System", 2022–2023 ($75,000). "Composability vs Scalability Trade-off in Sharding for the Stellar Ecosystem", 2023-2024 ($80,000).
- **Ripple University Blockchain Research Initiative.** Sole PI. "Decentralized Exchanges and Information Leakage in Blockchain", 2021–2022 ($100,000). "Price Discovery and High Frequency Decentralized Finance", 2022-2023 ($150,000). "Market Design of DeFi protocols", 2023-2025 ($300,000).
- **Global Risk Institute**. Sole PI. "Mortgage Forbearance, Loan Performance, and Implications for Security Markets", 2020 ($20,587).
- **U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E).** CO-PI (joint with D. Bienstock, Y. Dvorkin, G. Iyengar, and M. Chertkov), "Risk-Aware Power System Control, Dispatch and Market Incentives", 2020–2023. (Grant Amount: Total $2,061,355, Columbia SEAS $1,037, 606, A. Capponi $345,868).
- **Columbia-IBM Center for Blockchain & Data Transparency: Special COVID-19 Research Award**. Sole PI. "Transparent Food Supply Chain Systems: Towards increasing Efficiency and Sustainability under Uncertainty". Jun. 2020–Jun. 2021 ($100,000).
- **Clearpool Group**. Sole PI. "Market Impact Modelling on Active/Aggressive Trading and Passive Limit Order Placement", 2018-2019 ($149,241).
- **NSF DMS-1716145**. Sole PI. "Mathematics and Control of Systemic and High-Frequency Trading Risks", 2017-2020 ($225,189).
- **Defense Advanced Research Projects Agency (DARPA)**. Sole PI. "A Mathematical Framework for Complex Human-Machine Interaction Systems", 2016-2017 ($175,000).
- **Global Risk Institute**. Sole PI. "Centralized Trading: Collateral, Risk Shifting, and Competition", 2016-2018 ($119,934).
- **OCP Group**. CO-PI (joint with G. Iyengar and J. Sethuraman). "Pricing and Sales in Fertilizer Markets", 2015-2017 (Grant Amount: Total/Columbia SEAS $285,269, A. Capponi $95,090). Additional funds for the years 2017-2018 (Grant Amount: Total $285,269, A. Capponi $95,090).

- **Institute for New Economic Thinking**. Sole PI. "Dynamic Contagion Mechanisms in Financial Networks", 2013-2014 ($75,000).
- **The Institute for Financial Markets**. Sole PI. "Dynamics of Systemic Risk", 2012 ($15,000).
- **Marie Curie Fellowship**. European Commission, 2003-2004 (€48,000).

Workshop, Conference, and Summer School Grants

- **Uniswap Foundation** Grant awarded to the the Center for Digital Finance and Technologies for the first CBER-CDFT-Uniswap Workshop ($35,000).
- **Ecole Polytechnique.** Grant awarded to the Center for Digital Finance and Technologies for the 2024 Summer School on Blockchain Economics ($30,000).
- **DLT Science Foundation.** Grant awarded to the Center for Digital Finance and Technologies for the 2024 Summer School on Blockchain Economics, 2024 ($60,000).
- **Gene Golub SIAM Summer School.** Lead PI (joint with F. Biagini, S. Jaimungal, and S. Sturm). "Financial Analytics: Networks, Learning, and High Performance Computing", 2022 ($123,760).
- **Banff International Research Station Grant.** CO-PI (joint with C. Frei, R. Sircar, A. Papapantoleon, and T. Zariphopoulou). Workshop: "Modeling, Learning and Understanding: Modern Challenges between Financial Mathematics, Financial Technology and Financial Economics", 2021.

Patents

- **World Patent.** A. Capponi. "Partition process, tracking methods and systems using it". Publication info: WO2005059589-2005-06-30. Publication date: 06/30/2005.

Research Initiatives

Columbia Center for Digital Finance and Technologies (CDFT), Aug. 2022–Aug. 2027:

- Founding Director: A. Capponi
- Affiliated Faculty: Garud Iyengar, Jay Sethuraman, Vineet Goyal, and Adam Elmachtoub from IEOR; Junfeng Yang, Tim Roughgarden, and Ronghui Gu (Computer Science); Gur Huberman, Larry Glosten, Ciamac Moallemi, and Harry Mamaysky (Columbia Business School); Merritt Fox and Kathryn Judge (Columbia Law School); Yeon-Koo Che (Economics);
- Financial Commitments ($560,000):
  - Established Membership Agreements: Global Risk Institute ($200,000), Lenovo ($150,000), Arcane Group ($50,000), Fi-Tek ($150,000), Fidelity ($60,000)

Selected Publications

"Price Discovery on Decentralized Exchanges". A. Capponi, R. Jia and S. Yu. Media Coverage: Bloomberg. Forthcoming at the *Review of Financial Studies*, 2025.

"Maximal Extractable Value and Allocative Inefficiencies in Public Blockchains". A. Capponi, R. Jia, and Y. Wang. **Winner of the Best Paper Award at the 2nd Annual CBER Conference**. **Media Coverage: Cointelegraph**. *Journal of Financial Economics*, Available on line at https://www.sciencedirect.com/science/article/pii/S0304405X25001400?dgcid=author, 2025.

"Liquidity Provision on Blockchain-based Decentralized Exchanges". A. Capponi and R. Jia. **Winner of the 2021 INFORMS Finance Services Student Best Paper Competition**. *Review of Financial Studies*, 2025. Available at https://academic.oup.com/rfs/advance-article-abstract/doi/10.1093/rfs/hhaf046/8200845?utm_source=advanceaccess&utm_campaign=rfs&utm_medium=email

"Stress Testing Spillover Risk in Mutual Funds". A. Capponi, P. Glasserman and M. Weber. *Management Science*, 71(5), 3641-4531, 2025.

"Large Orders in Small Markets: Execution with Endogenous Liquidity Supply". A. Capponi, A. Menkveld and H. Zhang. *Review of Finance*, 29(1), 201–239, 2025.

"Systemic Portfolio Diversification". A. Capponi and M. Weber. *Operations Research*, 72(1), 110–131, 2024.

"Advances in Blockchain and Crypto Economics". B. Biais, A. Capponi, L.W. Cong, V. Gaur, and K. Giesecke. **Featured Article**, *Management Science*, 69(11), 6417–6426, 2023.

"Decentralized Finance: Protocols, Risks, and Governance". A. Capponi, G. Iyengar, and J. Sethuraman. Invited Paper. *Foundations and Trends in Privacy and Security*, 5(3), 144-188, 2023.

"Proof of Work Cryptocurrencies: Does Mining Technology Undermine Decentralization?". H. Alsabah, A. Capponi and S. Olafsson. *Management Science*, 69(11), 6417–7150, 2023. **Winner of the best Doctoral Paper Awards at the Second Toronto Fintech Conference. Winner of the 2019 INFORMS Finance Services Student Best Paper Competition**. *Management Science*.

"Disruption and Rerouting in Supply Chain Networks". J. Birge, A. Capponi and P.C. Chen. **Third Place at the Best Paper Award Competition of the 2021 Post-Pandemic Supply Chain and Healthcare Management Conference**. *Operations Research*, 71(2), 750–767, 2023.

"Swing Pricing: Theory and Evidence". A. Capponi, P. Glasserman and M. Weber. *Annual Reviews of Financial Economics*. Vol. 15, 617–640, 2023.

"Blockchain Private Pools and Price Discovery". A. Capponi, R. Jia, and Y. Wang. *American Economic Association: Papers and Proceedings*, 113, 253-256, May 2023.

"Bail-ins and Bail-outs: Incentives, Connectivity, and Systemic Stability". B. Bernard, A. Capponi and J. Stiglitz. *Journal of Political Economy*, 130(7), 1805—1859, 2022. **Media Coverage: VoX**.

"The Collateral Rule: Evidence from the Credit Default Swap Market". A. Capponi, W.A. Cheng, S. Giglio and R. Haynes. *Journal of Monetary Economics*, 126, 58–86, 2022.

"Optimal Bailouts and the Doom Loop with a Financial Network". A. Capponi, F. Corell and J. Stiglitz. *Journal of Monetary Economics* 128, 35–50, 2022.

"Systemic Risk Driven Portfolio Selection". A. Capponi and A. Rubtsov. *Operations Research*, 70(3), 1598—1612, 2022.

"A Theory of Collateral Requirements for Central Counterparties". A. Capponi, J. Wang and H. Zhang. *Management Science* 68(9), 6993—7017, 2022. **Media Coverage: Oxford Business Law Blog**.

"Counterparty Risk in Over-the-Counter Markets". C. Frei, A. Capponi and C. Brunetti. *Journal of Financial and Quantitative Analysis* 57(3), 1058–1082, 2022. Earlier version appeared in Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System.

"Intraday Market Making with Overnight Inventory Costs". T. Adrian, A. Capponi, M. Fleming, E. Vogt and H. Zhang. **Lead Article**: *Journal of Financial Markets* 50, 100564, 2020.

"Swing Pricing for Mutual Funds: Breaking the Feedback Loop Between Fire Sales and Fund

Runs". A. Capponi, P. Glasserman and M. Weber. *Management Science* 66(8), 3581-–3602, 2020.

"A Dynamic Network Model of Interbank Lending: Systemic Risk and Liquidity Provisioning". A. Capponi, D.D. Yao and X. Sun. **Finalist of the 2017 INFORMS Finance Services Student Best Paper Competition**. *Mathematics of Operations Research* 45(3), 1127—1152, 2020.

"Clearinghouse Collateral Requirements". A. Capponi and W.A. Cheng. *Operations Research* 66(6), 1542–1558, 2018.

"Liability Concentration and Losses in Financial Networks". A. Capponi, P.C. Chen and D.D. Yao. *Operations Research* 64(5), 1121–1134, 2016.

"Price Contagion through Balance Sheet Linkages". A. Capponi and M. Larsson. *Review of Asset Pricing Studies* 5(2), 227–253, 2015.

"Systemic Risk Mitigation in Financial Networks". A. Capponi and P.C. Chen. *Journal of Economic Dynamics and Control* 58(15), 152–166, 2015.

"Counterparty Risk for CDS: Default Clustering Effects". L. Bo and A. Capponi. *Journal of Banking and Finance* 52, 29–42, 2015.

Revise and Resubmit Journal Papers

"A Dynamic Equilibrium Model of Liquidity Risk". A. Capponi, J. Muhle-Karbe, and X. Shi. Major Revision at *Management Science*, 2025.

"Proposer-Builder Separation, Exclusive Order Flow, and Centralization in Blockchain". A. Capponi, R. Jia, and S. Olafsson. Preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4723674, 2024. Major Revision at *Management Science*.

Conference Publications

"Do Private Transaction Pools Mitigate Frontrunning Risk?". Proceedings of *WINE 2023, The 19th Conference On Web And Internet Economics*.

Submitted and Working Papers

"Pricing Residential Mortgage Credit Risk in the Post-GFC Era". A. Capponi, S. Van Nieuwerburgh and X. Wu. Preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5446334, 2025.

"The Paradox of Just-in-Time Liquidity in Decentralized Exchanges: More Providers Can Lead to Less Liquidity". A. Capponi, R. Jia, and B. Zhu. **Runner up at the 2025 INFORMS Finance Student Award Competition**. Preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4648055, 2025.

"Virtual Trading in a Multi-Settlement Electricity Market". A. Capponi, G. Iyengar, B. Yang, and D. Bienstock. Preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4641966, 2024.

"Graph Machine Learning for Asset Pricing: Traversing the Supply Chain and Factor Zoo". A. Capponi, J. Antonio Sidaoui, and J. Zou. Preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5031617, 2024.

"Sustainable Investment Strategies with Real Asset Trades". A. Capponi, J. Sethuraman, and F. Verastegui. Preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4993551, 2024.

"Are supply networks efficiently resilient?". A. Capponi, C. Du, and J. Stiglitz. NBER Working Paper Series, No. 32221.

Book Chapters, Practitioner and Policy Papers

"Derivative Clearinghouses: Collateral Management and Policy Implications". A. Capponi. *Ten Years after the Crash: Financial Crises and Regulatory Responses*, edited by Sharyn O'Halloran and Thomas Groll, Columbia University Press, Chapter 23, 371–383, Oct. 2019.

"Capital and Resolution Policies: the US Interbank Market". A. Capponi, J. Dooley, M. Oet, and S. Ong *Journal of Financial Stability*, 30, 229–239, 2017.

"Systemic Risk, Policy, and Data Needs". A. Capponi. *INFORMS Tutorials in Operations Research*, 185–206, 2016

"Measuring Counterparty Risk of Large Portfolios". A. Capponi. *CreditFlux* Magazine, Apr. 2014.

"Pricing and Mitigation of Counterparty Credit Exposures". A. Capponi. *Handbook of Systemic Risk*, Edited by J.-P. Fouque and J.Langsam, Cambridge University Press, 1–21, 2012.

"Bilateral Credit Valuation Adjustment with Application to Credit Default Swaps". D. Brigo and A. Capponi. *Managing and Measuring Capital*, edited by M. Ong, .Risk Books London, 47–67, 2012.

"Systemic Risk: Clustering and Contagion Mechanisms". A. Capponi and P.C. Chen. *Review of Futures Markets* 21 Special Edition, 57–70, 2011

"Liquidity Modeling for Credit Default Swaps: an Overview". D. Brigo, A. Capponi and M. Pedrescu. *Credit Risk Frontiers. The suprime crisis, Pricing and Hedging, CVA, MBS, Ratings and Liquidity.* Bloomberg Press, 1–36, 2011.

"Bilateral Counterparty Risk with Application to CDSs". D. Brigo and A. Capponi. *Risk Magazine*, 85–90, 2010.

Edited Books and Special Issues

"Machine Learning And Data Sciences For Financial Markets: A Guide To Contemporary Practices'. Book edited by A. Capponi and C.A. Lehalle. *Cambridge University Press*, April 14, 2023.

"Blockchains and Crypto Economics". Special Issue edited by B. Biais, A. Capponi, W Cong, K. Giesecke, and V Gupta. *Management Science*, 2022.

"Systemic Risk and Financial Networks". Special Issue edited by A. Capponi and R. Jarrow. *Mathematics and Financial Economics*, 2021. Preface available at https://link.springer.com/article/10.1007/s11579-020-00286-7

"Optimization Challenges in Complex, Networked and Risky Systems". Tutorial co-edited by A. Capponi and A. Gupta. *INFORMS TutORials in Operations Research*, 2016.

Editorial Board

Advisory Editor

International Journal of Finance and Economics. August 2024–present.

Co-Editor

Mathematics and Financial Economics. Jan. 2021–present.

Area Editor

Management Science. **Finance Area Editor**. Feb. 2019–November 2025.

Operations Research. **Financial Engineering Area Editor**. Jan. 2024-present.

Operations Research Letters. **Financial Engineering Area Editor**, Jan. 2020–Dec. 2023.

IISE Transactions. **Financial Engineering Area Editor**, Nov. 2015–Dec. 2021.

Associate Editor

Digital Finance. **Associate Editor**, September 2023–December 2024.

Frontiers of Mathematical Finance. **Associate Editor**, Jan. 2021–present.

Finance and Stochastics. **Associate Editor**, Jan. 2020–present.

Stochastic Models. **Associate Editor**, March 2019–December 2022.

Journal of Dynamics & Games (American Institute of Mathematical Sciences). **Associate Editor**, Jan. 2019–February 21, 2024.

Mathematics and Financial Economics. **Associate Editor**, Jan. 2019–Dec. 2020.

SIAM Journal on Financial Mathematics. **Associate Editor**, Jan. 2019–present.

Stochastic Systems. **Associate Editor**, Oct. 2018–March 2024.

Management Science. **Associate Editor**, June 2018–Jan. 2019.

Operations Research. **Associate Editor**, Apr. 2018–Dec. 2023.

Mathematical Finance. **Associate Editor**, Jan. 2017–Dec. 2019.

Applied Mathematical Finance. **Associate Editor**, Feb. 2017–December 2024.

Operations Research Letters. **Associate Editor**, Nov. 2012–Dec. 2019.

SIAM News. **Liaison** for the Financial Engineering SIAM Activity Group Jan. 2020–Dec. 2021.

Professional Activities

Leadership Roles

SIAM Activity Group on Financial Mathematics and Engineering. **Member** of the Nominating Committee for the 2024-2025, and 2025-2026, Executive Board Election.

SIAM Activity Group on Financial Mathematics and Engineering. **Chair** of the Selection Committee for the 2023 SIAG/FME Early Career Prize.

Bachelier Finance Society. **Council Officer**, Jan. 2022–present.

5th International Conference on Blockchain Economics, Security, and Protocols - Tokenomics. **Co-Chair** (joint with C. Moallemi), 2023.

3nd Annual CBER Conference. **Co-Chair** (joint with C. Moallemi), 2023.

1st International Conference on Finance & Technology. **Co-Chair** (joint with W. Cong), 2022.

SIAM Activity Group on Financial Mathematics and Engineering. **Chair**, Jan. 2020–Dec. 2021, **Program Director**, Jan. 2017–Dec. 2019.

Mathematics and Computation of Financial Engineering Workshop. **Co-Organizer** (joint with P. Guasoni), Sept. 2021.

Biennial SIAM-FME Meeting. **Co-Chair** (joint with I. Cialenco), June 2021, **Co-Chair** (joint with S. Jaimungal), June 2019.

INFORMS Society. **Chair** of the INFORMS Finance Section, Jan. 2019–Dec. 2021. **Board Member** of INFORMS Applied Probability Society, Dec. 2015–Jan. 2019. **Tutorials Co-chair** (joint with A. Gupta) at the 2016 INFORMS Annual Meeting.

Central Clearing Interdependencies. **Member** of the Roundtable on Central Clearing Interdependencies, Dec. 2015, and Sept. 2017.

Columbia & NYU Courant Math Finance Alumni Networking Event on Quantitative Portfolio Management. **Co-Organizer** (joint with P. Kolm, K. Letang, and J. Cerniglia), 2018.

New Ideas and Cutting-Edge Developments in FinTech Conference. **Co-Chair** (joint with P. Carr, P. Kolm, and A. Papanicolau), 2018.

Berkeley–Columbia Meeting in Engineering and Statistics. **Co-Organizer** (joint with X. Guo, M. Nutz, and Y. Zhang), 2018.

Financial Networks: Big Risks, Macroeconomic Externalities, and Policy Commitment Devices Conference. **Co-Organizer** (joint with J. Stiglitz), 2018.

Eastern Financial Mathematics Conference. **Co-Chair** (joint with P. Carr, P. Kolm, and A. Papanicolau), 2017, **Co-Chair** (joint with A. Minca, R. Sircar, and S. Sturm), 2016.

Cluster, Minisymposium, Area and Session Chair

American Economic/Finance Association. **Session Chair**, 2023, 2024.

INFORMS Annual Meeting. Financial Services **Cluster Chair**, 2017, 2018, 2019, 2024. Risk Management **Cluster Chair**, 2015. **Session Chair**, 2011-2024.

SIAM Annual Meeting. **Minisymposium Chair**, 2018, 2020, 2022.

SIAM-FM Biennial Meeting. **Minisymposium Chair**, 2014, 2016, 2019, 2021.

First International Conference on Finance & Technology. **Session Chair**, 2022.

INFORMS Applied Probability Conference. **Session Chair**, 2017, 2019.

ACM Conference on Economics and Computation. Blockchain and Cryptocurrencies **Area Chair**, 2022, 2023.

Committee Membership

2025 UBRI Awards Judging Panel, **Committee Member**

Advisory Committee for the 5th Annual CBER Conference, **Program Committee Member**, 2025.

The Latest in DeFi Research (TLDR), **Program Committee Member**, 2025.

Workshop on the Role of Education in FinTech and Innovation, **Program Committee Member**, 2025.

ICML 2024, Agentic Markets Workshop, **Program Committee Member**, 2024.

2022 Digital Supply Chain and Supplier Diversity Conference. **Committee Member of the Best Paper Prize Competition**.

3rd ACM International Conference on AI in Finance, **Senior Program Committee Member**, 2022, 2023, 2024.

Tokenomics, **Program Committee Member**, 2021, 2022.

Crypto and Blockchain Economics Research Forum (CBER). **Steering Committee Member**, 2020–present.

Students Mentoring

Current Graduate Students

- Jose A. Sidaoui Gali, Columbia IEOR, Third-Year, Topic: Diffusion Manifold Learning; Millend Roy, Columbia IEOR, Third-Year, Topic: Blackout Risk in Power Networks; Boxuan Li, Columbia IEOR, Third-Year, Topic: Networks and Market Design; Xinkai Wu, Columbia IEOR, Third-Year, Topic: Credit Risk, Real Estate, and Machine Learning in Finance; Felipe Verastegui-Grunewald, Columbia IEOR (jointly advised with Jay Sethuraman), Topic: Sustainable Finance; Brian Zi Qi Zhu, Columbia IEOR, Topic: Decentralized Exchanges and Payment Systems.

Current Postdocs/Associate Research Scientists

- Zhaonan Qu, Columbia IEOR Department and Data Science Institute, Topics: Econometrics and Graph Neural Networks.

Former Graduate Students:

Ruizhe Jia (graduated 2014), First job: Assistant Professor, Management Science and Engineering, *Stanford University*; Felix Corell (visiting, graduated 2021), First job: Assistant Professor of Finance, *Vrije Universiteit Amsterdam*; Humoud Alsabah (graduated 2020), First job: Assistant Professor, *Kuwait University*, Industrial Engineering; Allen Cheng (graduated 2017), First job: *AQR Capital Management*; Peng-Chu Chen (graduated 2016), First job: Assistant Professor, The *University of Hong Kong*, Industrial and Manufacturing Systems Engineering; Stefano Pagliarani (visiting, graduated 2013), First job: Assistant Professor, *University of Bologna*, Mathematics.

Former Postdocs:

Shihao Yu (2022-2024). First job: Assistant Professor, *Singapore Management University*, Lee Kong Chian School of Business; Bo Yang (2022–2024), joint with D. Bienstock and G. Iyengar, First job: Industrial Engineering & Decision Analytics, *The Hong Kong University of Science and Technology*; Khalil Esmkhani (2023), First job: Assistant Professor, *Simon Fraser University*, School of Business; Michael Rath (2021), joint with D. Bienstock and G. Iyengar, First job: *McKinsey & Company*; Sveinn Olafsson (2018–2021), First job: Assistant Professor, *Stevens Institute of Technology*, School of Business; Zhaoyu Zhang (2019–2020), First job: Assistant Professor, *University of Southern California*, Mathematics; Marko Weber (2017–2019), First job: Assistant Professor, *National University of Singapore*, Mathematics; Hongzhong Zhang (2016–2019), First job: Quantitative Researcher, *Enlightenment Research*, LLC; Benjamin Bernard (2016-2017 and 2019), Current Position: Assistant Professor, Economics, *University of Wisconsin-Madison*; Matthew Stern (2017–2018). First job. Data Scientist, *Wayfair*.

Research Undergraduate Student (REU)

Thu Hai Pham (2019), IEOR Department, Columbia University. Topics: Games of Strategic Banks' Liquidation; Sarina Liu, IEOR Department, Columbia University (2019). Topics: Systemic Risk and Crowdfunding.

E.N.G. SEAS's Outreach research program for high school students

Justin Peralta (2018), IEOR Department, Columbia University. Topics: Numerical Implementation of Banks' Liquidation Strategies; Eleazar Neri, IEOR Department, Columbia University. Topics: Numerical Implementation of Banks' Liquidation Strategies. July 2018–Aug. 2018.

Invited Talks, Plenaries, Keynotes

Invited Talks

2026.

Keynotes: 10th Year Anniversary Commodity and Energy Markets Association (CEMA) Conference; Tech for Finance: AI & Blockchain Conference; International Fintech Research Conference; Workshop on credit risk, climate risk and financial contagion; Finance and Business Analytics Conference;

Invited Seminar Talks at Universities. University of Virginia's Darden Finance seminar; University of Cincinnati: Finance, Real Estate, and Insurance and Risk Management seminar; London Mathematical Finance seminar, Imperial Finance & Stochastics seminar;

Invited Lectures and Talks at Conferences, Workshops, and Webinars. Finance in the Digital Age;

2025.

Keynotes: 50th Anniversary of European Conference on Operational Research (EURO 2025); 2nd International Conference on AI and Blockchain in Finance; 15th China International Conference on Insurance and Risk Management (CICIRM 2025); 7th Sydney Market Microstructure and Digital Finance Conference; BBQ Bloomberg Keynote; 9th PKU-NUS Annual International Conference on Quantitative Finance and Economics; FinTech and Market Microstructure Annual Conference;

Plenary: SIAM FM 23 Biennial meeting; 12th general AMaMeF conference; 12th Western Conference on Mathematical Finance (WCMF); 25th Brazilian Finance Meeting,

Invited Talks at Private Companies. Qube Research & Technologies; PGIM, Global Asset Management; Avalanche Labs;

Invited Talks at Governmental Agencies and Policy Making Institutions. European Investment Bank;

2024.

Keynotes: S&P Global Quantitative Investment Management Forum; IEEE Computational Intelligence for Financial Engineering (CIFEr); Annual Gilmore DeFi Conference; Digital Assets Connection; 37th Australasian Finance and Banking Conference; Tokenomics 2024; Certik, New Frontiers: How AI Matters for Crypto Mass Adoption; Financial Street Forum;

Plenary: 2024 Bachelier World Congress; Brazilian Meeting of Finance; First INFORMS Conference on Financial Engineering and FinTech; RISC Forum: Systemic Risk;

Invited Talks at Private Companies. UBS's AI Guild Speaker Series; Bank of America Quant Speaker Series; Banca Intesa's Quant Day; Global Finance Tour 2024;

Invited Talks at Governmental Agencies and Policy Making Institutions. Federal Reserve Board Conference on the Interconnectedness of Financial Systems; U.S. Department of Commerce;

2023.

Keynotes. 67th meeting of the Euro Working Group for Commodities and Financial Modeling; 6th Market Microstructure and Digital Finance Conference; 36th Australasian Finance and Banking Conference; 4th Waterloo Student Conference in Statistics, Actuarial Science and Finance

Plenary. Sixteenth NUS RMI Risk Management Conference;

Distinguished Lectures. CUHK Distinguished Lecture in Quantitative Finance.

Invited Talks at Private Companies. Chaincode research seminar; UBRI Ripple Lunch and Learn Seminar;

Invited Talks at Governmental Agencies and Policy Making Institutions. Financial Stability Board Outreach Event;

2022.

Keynotes. Annual Conference of Chinese SIAM Activity Group of Financial Technology and Algorithm.

Distinguished Lectures. CUHK Distinguished Lecture in Quantitative Finance.

Invited Talks at Private Companies. Goldman Sachs London Mathematical Finance Seminar; D. E. Shaw & Co Seminar; Moody's KMV Innovation Speaker Series.

Invited Talks at Governmental Agencies and Policy Making Institutions. Bank for International Settlements Monetary and Economic Department seminar; Bank of England Banking, Finance and Regulations seminar; Bank of England Roundtable on DeFi; Office

of the Comptroller of the Currency seminar; Department of Treasury's Office of Financial Research seminar.

2021.

Keynotes. 9th Annual Big Data Finance Conference.

Invited Talks at Private Companies. Citigroup MQA Quant Seminar; Morgan Stanley ML Seminar.

Invited Talks at Governmental Agencies and Policy Making Institutions. Division of Economic and Risk Analysis (DERA), U.S. Securities and Exchange Commission.

2020.

Keynotes. Program of the Institute Louis Bachelier: Robo-Advisor Workshop.

Invited Talks at Governmental Agencies and Policy Making Institutions. Banque de France ACPR Research Seminar; Austrian Central Bank.

2019.

Invited Talks at Governmental Agencies and Policy Making Institutions. Bank of Canada.

2018.

Plenary. Center for Financial Studies Workshop 2018 "Artificial Intelligence & Machine Learning in Financial Services"; A Symposium on Optimal Stopping in memory of Larry Shepp.

Invited Talks at Governmental Agencies and Policy Making Institutions. Board of Governors of the Federal Reserve System Finance Seminar; US Securities and Exchange Commission; Department of Treasury's Office of Financial Research.

2017.

Invited Seminar Talks at Universities. Oxford University INET Seminar Series; Oxford University Mathematical and Computational Finance Seminar Series; Massachusetts Institute of Technology, LIDS Center; Cambridge University Judge Business School Seminar; London School of Economics Risk and Stochastics and Financial Mathematics Seminar Series; Stanford University Advanced Financial Technologies Laboratory Seminar Series; Brown-Bag Seminar at Decisions Risk and Operations, Columbia University; The Hong Kong Polytechnique University; The Chinese University of Hong Kong; Indiana University, Economics Department.

Invited Lectures and Talks at Conferences, Workshops, and Webinars. Eighteenth World Congress of Economics (plenary session); Minisymposium on limit order book and high frequency trading at University of Pittsburgh; Centre de recherches mathematiques (CRM) of Montreal, Risk Measurement and Regulatory Issues in Business workshop; Centre de Recherches Mathematiques in Montreal, Workshop on Measurement and Control of Systemic Risk; The Campbell-Lo-MacKinlay conference on the Econometrics of Financial Markets; INFORMS Applied Probability Meeting (Kellog School of Management); University of Chicago, Stevanovich Center for Financial Mathematics Market Microstructure and High-Frequency Data annual conference; INFORMS Annual Meeting; Third Annual conference on Network Science and Economics; IMS-FIPS Workshop; 17th Federal Deposit Insurance Corporation-JFSR Fall Bank Research Conference; Ten Years After the Financial Crisis Conference at Columbia University.

2016.

Invited Seminar Talks at Universities. Financial Engineering Practitioners Seminar Columbia University; Ecole Polytechnique Paris, Center of Applied Mathematics Seminar Series; University of Illinois at Urbana Champaign, Mathematical Finance, Risk and Uncertainty Seminar; ETH Zurich Insurance Mathematics and Stochastic Finance; University of Michigan Financial/Actuarial Mathematics; Fields Institute's Quantitative Finance Seminar

Series 2016.

Invited Lectures and Talks at Conferences, Workshops, and Webinars. Frontiers in Stochastic Modeling for Finance; Second International Congress on Actuarial Science and Quantitative Finance, Cartagena (Colombia); Berkeley-Columbia Meeting in Engineering and Statistics (UC Berkeley); Risk measures, Capital allocation and Central counterparties workshop Standard Chartered offices in Singapore; Canadian Operational Research Society Annual Conference (Banff); Vienna Congress on Mathematical Finance; INFORMS Annual Meeting (**invited tutorial** and session speaker); IMS-FIPS Workshop; GRI-Fields Conference and Workshop on the Stability of Financial Systems: Modelling, Regulation and Stress Testing; Second Bar-Ilan Conference on Financial Mathematics (Tel Aviv); 9-th World Congress of the Bachelier Finance Society; Quant Summit USA 2016; SIAM Conference on Financial Mathematics and Engineering 2016; American Mathematical Society 2016: Fall Eastern Sectional Meeting in Brunswick, ME; Global Risk Institute Summit 2016: Risk and Reward.

Invited Talks at Private Companies. IBM T.J. Watson Research Center Mathematical Sciences Seminar.

2015.

Invited Seminar Talks at Universities. VU University Amsterdam; CUNY Probability Seminar; University of Maryland; Cornell University; Stevens Institute of Technology; Carnegie Mellon University Probability/Math Finance Seminar; Carnegie Mellon University Tepper School of Business Seminar; Columbia University Math Finance Seminar; California Institute of Technology SISL Seminar; Stanford University; Princeton University Math Finance Seminar.

Invited Lectures and Talks at Conferences, Workshops, and Webinars. Systemic Risk in Financial Markets Workshop at University of Hannover; 2015 Financial Stability Conference: Policy Analysis and Data Needs; The Consortium for Systemic Risk Analytics at Massachussets Institute of Technology; Global Risk Institute; Data, Algorithms and Problems on Graphs Workshop (Columbia University); INFORMS Annual meeting; IAQF & Thalesians Seminar Series; 7th General AMaMeF and Swissquote Conference; IMS-FIPS Workshop; April 16th INET Seminar at Columbia University; IPAM Institute.

Invited Talks at Private Companies. IBM T.J. Watson Research Center (Electrical Engineering); Morgan Stanley.

Invited Talks at Governmental Agencies and Policy Making Institutions. US Commodity Futures Trading Commission Office of the Chief Economists Seminar; Office of the Comptroller of Currency.

2014.

Invited Seminar Talks at Universities. TU Berlin and Humboldt University; Columbia University IEOR Seminar; Worcester Polytechnic Institute; Imperial College London Stochastic Analysis Seminar; Imperial College London Finance and Stochastic Seminars; London School of Economics.

Invited Lectures and Talks at Conferences, Workshops, and Webinars. 2014 Financial Stability Conference; SIAM Conference on Financial Mathematics & Engineering; INFORMS Annual meeting; Isaac Newton Institute for Mathematical Sciences; Conference on Credit and Systemic Risk at Boston University; Workshop on New Directions in Financial Mathematics and Mathematical Economics (Banff International Research Station); Joint Mathematics Meetings.

2013.

Invited Seminar Talks at Universities. Dublin City University; Purdue University Computational Finance Seminar; University of Wisconsin-Milwaukee; Illinois Institute of Technology; Johns Hopkins University.

Invited Lectures and Talks at Conferences, Workshops, and Webinars. Conference on Mathematical Finance and Partial Differential Equations (Rutgers University); Texas Quantitative Finance Festival; AMS 2013 Fall Eastern Sectional Meeting; INFORMS Annual

meeting; Frontiers in Financial Mathematics Conference; 2013 Financial Stability Analysis Conference: Using the Tools, Finding the Data.

Invited Talks at Governmental Agencies and Policy Making Institutions. Federal Bank of Cleveland.

2012.

Invited Seminar Talks at Universities. Carnegie Mellon University; Columbia University Math Finance Seminar.

Invited Lectures and Talks at Conferences, Workshops, and Webinars. INFORMS Annual meeting; Quant Congress USA; SIAM-FME Biennial Meeting; IMS on Finance: Probability and Statistics at University of California, Berkeley; Marcus Evans CVA Funding and Valuation for Derivatives Conference.

2011.

Invited Seminar Talks at Universities. Illinois Institute of Technology; École Polytechnique Fédérale de Lausanne, Swiss Institute of Finance Seminar Series; Purdue University Computational Finance Seminar; Cornell University.

Invited Lectures and Talks at Conferences, Workshops, and Webinars: INFORMS Annual meeting; 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011); AMS 2011 Central Section Meeting.

2010.

Invited Lectures and Talks at Conferences, Workshops, Webinars, and Practitioners Events: INFORMS Annual meeting; SIAM Biennial Meeting Financial Mathematics and Engineering, San Francisco; Derivatives, Volatility & Correlation (Warwick Business School, discussant); Fields Institute for Research in Mathematical Science.

Teaching

IEOR E8100: Agentic AI, Fintech, and Data Economy, Graduate level course developed, IEOR Department, Columbia University. Fall 2025.

IEOR E8100: Networks: Games, Contagion and Control, Graduate level course developed, IEOR Department, Columbia University. Spring 2017, Spring 2018, Spring 2019. *Spring 2017, Course Score: 4.64/5.0, Instructor Score: 4.64/5.0, Number of enrolled students: 20. Spring 2018, Course Score: 5.0/5.0, Instructor Score: 5.0/5.0, Number of enrolled students: 10. Spring 2019, Course Score: 4.83/5.0, Instructor Score: 4.83/5.0, Number of enrolled students: 13. Spring 2021, Course Score: 4.25/5.0, Instructor Score: 4.75/5.0, Number of enrolled students: 10.*

IEOR E4602: Quantitative Risk Management, Graduate level course, IEOR Department, Columbia University, Spring 2020, Fall 2021. *Spring 2020: No Course Score due to COVID 19: Number of enrolled students: 39. Fall 2021 Course Score: 4.08/5.0, Instructor Score: 4.17/5.0, Number of enrolled students: 28. Fall 2023 Course Score: 4.35/5.0, Instructor Score: 4.47/5.0, Number of enrolled students: 34. Fall 2024 Course Score: 4.00/5.0, Instructor Score: 4.15/5.0, Number of enrolled students: 44.*

IEOR E4731: Credit Risk/Credit Derivative, Graduate level course, IEOR Department, Columbia University, Summer 2015, Summer 2016, Fall 2017, Fall 2018, Fall 2019. *Summer 2015 Course Score: 4.08/5.0, Instructor Score: 4.23/5.0, Number of enrolled students: 15. Summer 2016 Course Score: 4.71/5.0, Instructor Score: 4.71/5.0, Number of enrolled students: 7. Fall 2017 Course Score: 4.68/5.0, Instructor Score: 4.74/5.0, Number of enrolled students: 31. Fall 2018 Course Score: 4.56/5.0, Instructor Score: 4.61/5.0, Number of enrolled students: 33. Fall 2019 Course Score: 4.43/5.0, Instructor Score: 4.62/5.0, Number of enrolled students: 26. Fall 2023 Course Score: 4.33/5.0, Instructor Score: 4.67/5.0, Number of enrolled students: 13. Fall 2024 Course Score: 5.00/5.0, Instructor Score: 4.67/5.0,*

Number of enrolled students: 7.

Outside Compensated Activities	Morgan Stanley (machine learning and market microstructure): 2025-present
Professional Memberships	Econometric Society, INFORMS Society, SIAM Society, Bachelier Society, American Finance Association, American Economic Association, European Finance Association, International Economic Association, International Association for Quantitative Finance.
Industrial Experience	Signal processing engineer and Marie Curie fellow (Thales Naval Netherlands, Feb. 2003–July 2004), Spring Associate credit trading strategist (JP-Morgan, Mar.–June 2008), Summer Associate (Citigroup, July–Sep. 2008), Summer Associate (Ellington Management Group, July-Sept. 2006 and June–Aug. 2007).