

Andreea Minca

Professor

School of Operations Research and Information Engineering
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APPOINTMENTS

Professor, ORIE Department, Cornell University, July 2023 - present.

Assistant Professor, Associate Professor, ORIE Department, Cornell University, 2011 - 2023.

Visiting Associate Professor, London Business School, 2017 - 2019.

CFM-Imperial Distinguished Visitor, Imperial College, Spring 2018.

Andrew Schultz '36 PhD'41 Sesquicentennial Fellow, Cornell University, July 2012-June 2017.

EDUCATION

PARIS VI PIERRE ET MARIE CURIE UNIVERSITY, Ph.D. in Applied Mathematics, September 2011.

Mathematical modeling of financial contagion.

ECOLE POLYTECHNIQUE, Diplôme de l'Ecole Polytechnique (B.S., M.Eng., M. S.), 2008

M.S. in Probability and Finance.

MEng in Applied Mathematics and Computer Science.

EDITORIAL ACTIVITY

Associate Editor, **Mathematical Finance**

Associate Editor, **Journal of Network Theory in Finance**

Board Member, **European Journal of Operational Research**

Associate Editor, **SIAM Journal of Financial Mathematics**, 2019-2021.

AWARDS AND HONORS

AXA Research Fellow: Mitigating risk in the wake of the Covid-19 Pandemic, 2020.

CFM-Imperial Distinguished Lectures: Modeling and Design of Payment, Clearing and Settlement Systems, Imperial College, Spring 2018.

NSF Faculty Early Career Development (CAREER), 2017: Optimal design, policies and risk management of central nodes in financial networks.

SIAM Activity Group on Financial Mathematics and Engineering Early Career Prize, 2016, "Awarded to an outstanding early career researcher for distinguished contributions to the mathematical modeling of financial markets in the three calendar years prior to the year of the award."

Research award by the Global Association of Risk Professionals (GARP) for the project "Risk Management in the Presence of Central Counterparties", \$15K, 2014.

Research award by the Europlace Institute of Finance for the project "Stochastic Control of Systemic Risk" (joint with Agnes Sulem), €10K, 2014.

Turner-Kirk Visiting fellow of the Isaac Newton Institute for Mathematical Sciences for the program “Systemic Risk: Mathematical Modelling and Interdisciplinary Approaches”, Fall 2014.

Andrew Schultz '36 PhD'41 Sesquicentennial Fellowship, 2012 - 2017.

Natixis Foundation for Quantitative Research Fellowship, €100K, 2008 - 2011.

RESEARCH INTERESTS

FinTech, Stablecoins, Covid-19 epidemic modeling, Systemic risk and financial networks, Risk management and central clearing, Clustering algorithms, Funding liquidity modeling, Insurance and reinsurance networks, Stochastic control and mean field games, Decision making under strategic uncertainty.

GRANTS

1. AXA Research Fund Award on Mitigating risk in the wake of the Covid-19 Pandemic, 08/01/2020 - 12/31/2023, 216000 Euro (Among 10 selected proposals globally, 2% acceptance rate)
2. Bloomberg Data Science Advisor Award, 2020.
3. NSF Innovation Corps (I-Corps): Stablecoin testing and design technology, 07/01/2019 - 06/30/2020, \$50K (I-Corps team with A. Klages-Mundt and Paul Lee).
4. NSF CAREER: Optimal design, policies and risk management of central nodes in financial networks, NSF 1653354, 09/01/2017 - 08/31/2023, \$500K.
5. NSF 1638230-CRISP Type 1/Collaborative Research: Financial and Physical Infrastructure: A Computational Approach for Integrated Network Resilience Analysis Under Extreme Events, 11/01/2016-10/30/2018, \$149,624 (\$ 500K total award, with Matteo Pozzi and Bruno Sinopoli, Civil respectively Electrical Engineering, Carnegie Mellon).
6. NSF RTG: Dynamics, Probability, and PDEs in Pure and Applied Mathematics, 09/01/2017 - 08/31/2022, (Senior Personnel, PI: Steven Strogatz).

RESEARCH PAPERS

Submitted

1. Hamed Amini, Andreea Minca, Oscar Peralta-Gutierrez. Ruin-dependent bivariate stochastic fluid processes
2. Hamed Amini, Andreea Minca, Oscar Peralta-Gutierrez. Duration-dependent stochastic fluid processes and solar energy revenue modeling
3. Hamed Amini, Zhongyuan Cao, Andreea Minca, Agnes Sulem. Ruin Probabilities for Risk Processes in Stochastic Networks.
4. Klages-Mundt, Benson A. and Minca, A. Cascading Risks and Sensitivity in Economic Networks. Under major revision for **Operations Research**.
5. Amini, H., Deguest, R., Iyidogan, E., Minca, A. Blockchain Adoption and Optimal Reinsurance Design
6. Minca A., and Wissel J. Dynamic Debt Issuance with Jumps. Under revision for **Mathematics and Financial Economics**.

JOURNAL ARTICLES

7. Chen Y., Minca A., and Qian X. (2023) Clustering heterogeneous financial networks. **Mathematical Finance**, <https://doi.org/10.1111/mafi.12407>
8. Amini H. and Minca, A. (2023) Cohort Effects, Voluntary Social Distancing and Life Insurance Purchases during a Pandemic. **Annals of Operations Research**, 10.1007/s10479-023-05485-1

9. Chen R., Dumitrescu R., Minca, A and Sulem A. (2023) Mean field BSDEs and global dynamic risk measures. **Probability, Uncertainty and Quantitative Risk**, 2023, Volume 8, Issue 1: 33-52. Doi: 10.3934/puqr.2023002
10. Klages-Mundt A. and Minca, A. (2022) While Stability Lasts: A Stochastic Model of Stablecoins. **Mathematical Finance**, 32:943–981
11. Amini H., Minca, A and Sulem A. (2022) A dynamic contagion risk model with recovery features. **Mathematics of Operations Research**,47(2):1412-1442, <https://doi.org/10.1287/moor.2021.1174>
12. Amini H. and Minca, A. (2022) Epidemic Spreading and Equilibrium Social Distancing in Heterogeneous Networks. **Dynamic Games and Applications**, <https://doi.org/10.1007/s13235-021-00411-1>
13. Klages-Mundt A. and Minca, A. (2021) Optimal Intervention in Economic Networks using Influence Maximization Methods. **European Journal of Operational Research**, <https://doi.org/10.1016/j.ejor.2021.10.042>
14. Guo W., Minca A. (2021), Large VARX model with network regularization. Forthcoming in: **Journal of Network Theory in Finance**.
15. Klages-Mundt A. and Minca, A. (2021) (In)Stability for the Blockchain: Deleveraging Spirals and Stablecoin Attacks. Forthcoming in: **Cryptoeconomic Systems, MIT Press**.
16. Klages-Mundt A, and Minca A. (2020) Cascading Losses in Reinsurance Networks. **Management Science**, <https://doi.org/10.1287/mnsc.2019.3389>.
17. Minca, A., and Wissel, J. (2020) Dynamic Leveraging-Deleveraging Games. **Operations Research**, doi.org/10.1287/opre.2019.1865
18. Amini, H., D. Filipović, and Minca, A. (2020) Systemic Risk in Networks with a Central Node. **SIAM Journal on Financial Mathematics**, 11(1), 60-98.
19. Pozzi, M., Malings, C., and Minca, A. (2020) Information avoidance and overvaluation under epistemic constraints: principles and implications for regulatory policies. **Reliability Engineering and System Safety**, doi.org/10.1016/j.res.2020.106814
20. Jarrow R., Krishenik, A., and Minca, A. (2018) Optimal cash holdings under heterogeneous beliefs. **Mathematical Finance**, Vol. 28, Issue 2, pp. 712-747.
21. Braverman A., Minca, A. (2018) Networks of common asset holdings: aggregation and measures of vulnerability. **Journal of Network Theory in Finance**, 4(3): 53-78.
22. Amini, H., Minca, A., and Sulem, A. (2017) Optimal equity infusions in interbank networks. **Journal of Financial Stability**, 31: 1–17.
23. Avram F. and Minca, A. (2017). On the central management of risk networks. **Advances in Applied Probability**, 49(1).
24. Amini, H. and Minca, A. (2016). Inhomogeneous financial networks and contagious links. **Operations Research**, 64(5): 1109-1120.
25. Amini, H., Cont, R., and Minca, A. (2016). Resilience to contagion in financial networks. **Mathematical Finance**, 26(2), 329–365.
26. Amini, H., D. Filipović, and Minca, A. (2016). To fully net or not to net: adverse effects of partial multilateral netting. **Operations Research**, 64(5): 1135-1142, 2016.
27. Amini, H., D. Filipović, and Minca, A. (2016). Uniqueness of equilibrium in a payment system with liquidation costs. **Operations Research Letters**, 44(1):1–5.
28. Guo, W., Minca, A. and Wang, L. (2016). The topology of overlapping portfolio networks. **Statistics and Risk Modeling**, 33(3-4):139-155.
29. Cont, R., and Minca, A. (2016). Credit default swaps and systemic risk. **Annals of Operations Research**, 247(2), pp 523-547.

30. Krishenik, A., Minca, A., and Wissel, J. (2015). When do creditors with heterogeneous beliefs agree to run? **Finance & Stochastics**, 19(2):233-259.
31. Amini, H., Minca, A., and Sulem, A. (2015). Control of interbank contagion under partial information. **SIAM Journal on Financial Mathematics**, 6(1), 1195–1219.
32. Minca, A., and Sulem, A. (2014). Optimal control of interbank contagion under complete information. **Statistics and Risk Modeling**, 31(1):23-48.
33. Cont, R. and Minca, A. (2013). Recovering portfolio default intensities implied by CDO quotes. **Mathematical Finance**, 23(1):94–121.
34. Amini, H., Cont, R., and Minca, A. (2012). Stress testing the resilience of financial networks. **International Journal of Theoretical and Applied Finance**, 15(01).

Conference papers

35. Huo L., Klages-Mundt A., Minca A., Munter F., Wind M. (2022) Decentralized Governance of Stablecoins with Option Pricing **MARBLE, The 3rd International Conference on Mathematical Research for Blockchain Economy**.
36. Xie Q., Yang Z., Wang Z., Minca A. (2021) Learning while playing in mean-field games: Convergence and optimality **ICML '21**.
37. Klages-Mundt, A., Harz, D., Gudgeon, L., Liu, J.-Y. and Minca, A. (2020) Stablecoins 2.0: Economic Foundations and Risk-based Models, **ACM Advances in Financial Technologies AFT '20**.
38. Pozzi, M., Mailings, C. and Minca, A. (2017). Negative value of information in systems' maintenance. Proc. of the 11th **International Conference on Structural Safety and Reliability (ICOSSAR2017)**.
39. Chen R., Minca, A and Sulem A. (2017) Optimal connectivity for a large financial network. In **ESAIM: Proceedings and Surveys**, Vol. 59, p. 43-55.

Invited papers and peer-reviewed book chapters

40. Amini, H., Minca, A. (2020) Clearing Financial Networks: Impact on Equilibrium Asset Prices and Seniority of Claims. In **TutORials in Operations Research**. Pushing the Boundaries: Frontiers in Impactful OR/OM Research, 154-175
41. Avram, F. and Minca, A. (2015) Steps towards a toolkit for central management of risk networks, using rational approximations and matrix scale functions. In A.B.Piunovskiy, Editor, *Modern Trends in Controlled Stochastic Processes: Theory and Applications, Volume II*.
42. Amini, H. and Minca, A. (2013). Mathematical modeling of systemic risk. In Kranakis, E., Editor, *Advances in Network Analysis and its Applications*, volume 18 of *Mathematics in Industry*, pages 3–26. Springer Berlin Heidelberg.
43. Amini H, Cont R and Minca A (2012). Stress testing the resilience of financial networks. In: Finance at Fields, Editor(s): Grasselli, Hughston, World Scientific Publishing Company, 2012, Pages: 17-36.

TEACHING EXPERIENCE AND COURSE DESIGN

1. Probability, Measure Theory and Applications, ORIE 6510, Spring 2020, (7 enrolled), Spring 2021 (online, 6 enrolled), Spring 2023. Classical course was revamped in 2020, as classes moved online, to include epidemic modeling and applications to Covid-19 spread.
2. Financial Engineering with Stochastic Calculus I (MEng), ORIE 5600, Cornell University, Fall 2012 (63 enrolled), Fall 2013 (68 enrolled), Fall 2015 (74 enrolled), Fall 2016 (90 enrolled), Fall 2019 (45 enrolled), Fall 2020 (online: 22 enrolled), Fall 2022 (50 enrolled) **MEng in Financial engineering: Brownian motion, martingales, the Ito formula, the Feynman-Kac formula, and Girsanov transformations**.

3. Approximate Dynamic Programming (Ph.D.), ORIE 6590, Spring 2019 (16 enrolled).
4. Financial Engineering with Stochastic Calculus II (MEng), ORIE 5610, Spring 2017 (20 enrolled), Spring 2022 (14 enrolled)
MEng in Financial engineering: Feynman-Kac Theorems, PDE pricing methods, local volatility and stochastic volatility, Exotic options, American derivative securities, Interest rate models.
5. Introduction to Engineering Stochastic Processes I (Undergraduate OR/Statistical Science), ORIE/STSCI 3510, Spring 2016 (160+ enrolled)
Large undergraduate core class on stochastic processes. Lectures included interactive modeling and live computer simulation. Designed four elective projects that applied class material to real-world problems in finance/ healthcare /transportation/inventory management. Supervised approx. 30 project teams (60 students).
6. Mathematics of financial systems (Ph.D.), ORIE 6620, Cornell University, Spring 2015 (10 enrolled), *Complete course design.*
7. Risk Measures (Ph.D.), ORIE 6630, Cornell University, Fall 2014 (10 enrolled), Revamped course, **included recent developments on systemic risk measures.**
8. Probability and Measure Theory (Ph.D.), ORIE 6510, Cornell University, Spring 2013 (17 enrolled), Spring 2014 (20 enrolled)
9. Introduction to Mathematical Finance (Undergraduate), ORIE 4600, Cornell University, Fall 2011 (36 enrolled).

PHD STUDENTS (WITH PLACEMENT AND AWARDS)

1. **Andrey Krishenik** (chair), "Mathematical Modeling of Funding Liquidity", Cornell University, May 2015.
First position: JPMorgan, Quantitative Research.
2. **Anton Braverman** (co-chair, chair: Jim Dai), Steady-state diffusion approximations in service systems: engineering solutions and error bounds, Cornell University, April 2017.
First position: Assistant Professor, Kellogg School of Management at Northwestern University.
3. **Rui Chen**, "Dynamic optimal control for large financial networks and mean field systems with jumps" (co-chair, chair: Agnes Sulem), INRIA-Mathrisk, July 2019.
Award: *PhD fellowship from the Paris Foundation of Mathematical Sciences (FSMP)*.
First position: Quantitative Researcher, Citadel.
4. **Weilong Guo** (chair), "Advancing quantitative investment with machine learning and network analysis" Cornell University, January 2020. First position: Quantitative Researcher, AQR.
5. **Ariah Klages-Mundt** (chair), Cornell University, April 2023.
Awards: Bloomberg PhD Fellowship, Cornell Commercialization Fellowship.
INFORMS Finance Section Student Paper Competition 2021 (Honorable mention). First position: Co-founder, Gyroscope Stablecoin

CURRENT:

6. **Yuxuan Liu** (co-chair, chair: Bob Jarrow), Cornell University, ORIE, Expected 2023.
7. **Peihan Huo** (chair), Cornell University, CAM.

POSTDOCTORAL RESEARCHER

Oscar Peralta Gutiérrez - January 2023 - present

INDUSTRY EXPERIENCE

Financial Engineering MEng Capstone Projects with Industry Partners

Alpha Research using Supply Chain Factset Data, in collaboration with Oddo.

Treasury Risk (5 Financial Engineering students), in collaboration with Citibank

Multi currency models of interest rate risk and impact on balance sheet (4 Financial Engineering students), in collaboration with Citibank, 2020.

A novel optimization framework for joint risk metrics (4 Financial Engineering students), in collaboration with Citibank, 2019.

Convergence of Transfer Pricing Model and the Risk Metrics for Deposits (5 Financial Engineering students), in collaboration with Citibank, 2018.

Optimal Project Selection for Secured Lending (6 Financial Engineering students), in collaboration with JPMorgan Quantitative Research, 2016.

The Valuation of Demand Deposits (5 Financial Engineering students), in collaboration with Citibank, 2015.

Mergers and Acquisitions Premiums for Demand Deposits (5 Financial Engineering students), in collaboration with Citibank, 2014.

Option hedging with limit orders (4 Financial Engineering students), in collaboration with KALX, 2013.

Constructing Targeted Volatility Portfolios Using Passive Algorithms (6 Financial Engineering students), in collaboration with Goldman Sachs Asset Management, 2012.

JPMorgan Quantitative Research

Credit index options pricing and smile modeling, M.S. Thesis, April - October 2008.

PLENARY TALKS

San-Francisco Blockchain Week (CESC), October 28, 2019.

Eastern Conference in Mathematical Finance (ECMF), October 25-27, 2019.

Wharton Reg@Tech, Sept 5-7, 2019.

The Inaugural Waterloo Conference in Statistics, Actuarial Science, and Finance, April 2019.

Stochastic Networks Conference, Edinburgh, Scotland, UK, June 2018.

Inaugural Workshop on Quantitative Finance and Risk Analytics, Lally School of Management, Rensselaer Polytechnic Institute, May 2017.

INVITED TALKS

Seminars (Academic)

Stochastic Control & Financial Engineering Methods and Numerics, Princeton, June 2023.

One World Optimal Stopping and Related Topics, January 2023.

Workshop Systemic Risk and Stress Testing, Institute for Mathematical and Statistical Innovation Chicago, April 4-8, 2022.

World Online Seminars on Machine Learning in Finance, May 2021.

Stochastic Networks, Applied Probability, and Performance (SNAPP) Seminar, May 2021.

Vienna University of Economics and Business, Institute of Statistics and Mathematics, June 2019.

University College London School of Management, April 2019.

Dipartimento di Impresa e Management Seminar, LUISS, June 2018.
 Operations Management Seminar, Imperial College Business School, February 2018.
 IEMS Seminar, Northwestern University, December 2017.
 Finance Seminar, Swiss Finance Institute at EPFL, November 2017.
 Stochastic Finance Seminar, University of Warwick, October 2017.
 Management Science and Operations Seminar, London Business School, September 2017.
 Probability and Computational Finance Seminar, Carnegie Mellon Mathematics, 13 March 2017.
 Financial/Actuarial Mathematics Seminar, University of Michigan, 28 October 2016.
 Intelligent Infrastructures Seminar, Carnegie Mellon Civil Engineering, 23 September 2016.
 Finance and Stochastics Seminar, Imperial College, January 2014, June 2016.
 Mathematical Finance Seminar, London School of Economics, May 2016.
 Mathematical Finance Seminar, UT-Austin, February 2016.
 Operations Management Seminar, NYU Stern, November 2015.
 Mathematical Finance Seminar, Columbia University, October 2015.
 Stochastics Seminar, Worcester Polytechnic Institute, November 2014.
 Stochastic Methods in Finance Seminar, ENPC - INRIA - UPEMLV, October 2009, June 2014.
 Scientific Computing and Numerics (SCAN) Seminar, Cornell, May 2014.
 Probability Seminar, Cornell University, November 2013.
 Risk Management Seminar, Robinson College of Business, Georgia State University, November 2013.
 Mathematical Finance, Probability and PDE Seminar, Rutgers University, April 2012.
 Financial Mathematics Seminar, Stanford University, February 2012.
 GT CMAP Seminar, Ecole Polytechnique, January 2010 and January 2012.
 CAM Seminar, Cornell University, November 2011.
 ORIE Seminar, Cornell University, October 2011.
 Stochastic Analysis Seminar (SAS), Princeton, October 2011.
 Computational Probability in Finance Seminar, LPMA, Paris 6 University, October 2009 and May 2011.

Seminars and Workshops Organized by Central Banks

Financial innovation: A threat to financial stability, Federal Reserve Bank of Atlanta, October 2022.
 German Central Bank, Frankfurt, December 2019.
 Bank of England Stress Testing Division, September 2017.
 Financial Stability: Policy Analysis and Data Needs Conference, Cleveland Fed and OFR, Washington DC, December 3-4, 2015.
 European Central Bank Workshop on Forecasting with Big Data, Frankfurt, April 2014.
 Capital Markets Function Seminar, NY Fed, December 2011.

Conferences and Workshops

Cornell Financial Engineering Manhattan & Rebellion Research's Future Of Finance Conference, September 16, 2022.
 2nd ACM International Conference on AI in Finance (ICAIF), Nov 3-5, 2021

Advances in Stochastic Analysis for Handling Risks in Finance and Insurance”, CIRM September 13-17, 2021

INFORMS Annual Meeting 2020, Tutorial, November 2020.

The World Federation of Exchanges Clearing and Derivatives Conference, March 2020.

13th Financial Risks International Forum, “The Rise of Fintechs”, March 2020.

Women in Financial Mathematics Workshop, IPAM, April 2017.

Invited Lectures at the Winter School on Systemic Risk, Part of Long Program Stochastic Dynamical Models in Mathematical Finance, Econometrics, and Actuarial Sciences, EPFL, January 2017.

SIAM Conference on Financial Mathematics and Engineering, November 2016.

INFORMS Annual Meeting, November 2016.

Systemic Risk in Derivatives Markets: The Fourth Annual Conference on Systemic Risk Modeling, London School of Economics Systemic Risk Centre, October 2016.

INFORMS Annual Meeting, November 1-4, 2015.

Cornell Research Workshop on Data Analytics, Johnson Graduate School of Management, June 22, 2015.

IPAM Program Broad Perspectives and New Directions in Financial Mathematics Culminating Workshop, June 5-12, 2015.

Methods of Mathematical Finance; a conference in honor of Steve Shreve’s 65th Birthday, June 2015 (panelist).

Workshop on Network Formation and Systemic Risk, University of Pennsylvania Warren Center, May 2015.

Workshop on Systemic Risk and the Financial Networks, IPAM, March 23 - 27, 2015

Workshop on “Monitoring Systemic Risk: Data, Models and Metrics”, Newton Institute, September 2014.

Workshop on “Systemic Risk: Models and Mechanisms”, Newton Institute, August 2014.

First SIAM-SMAI conference, Paris, June 2014.

AMS/IMU International Meeting, Israel, June 2014.

Keynote Speaker at the 8th Bachelier Colloquium, Metabief, France, January 2014.

“Information, Instability and Fragility in Networks” Info-Metrics Institute Workshop at University of Colorado, Boulder, CO, November 2013.

6th Financial Risks International Forum - “Liquidity Risk”, Paris, March 2013.

Research in Options, Rio, November 2011 and December 2012.

INRIA-CEA-EDF School on Systemic Risk, October 2012.

Symposium Critical Challenges at the Interface of Mathematics and Engineering, IMSE at the University of Illinois at Urbana-Champaign, September 2012.

INFORMS International Beijing, June 2012.

IMS Workshop on Probability and Statistics in Finance, UC Berkeley, May 2012.

IMA Hot Topics Workshop “Mathematics of the New Financial Systems”, May 2012.

Conference on “Asymptotics in Finance”, University of Chicago’s Stevanovich Center for Financial Engineering, May 2012.

Information and Econometrics of Networks Workshop, Washington DC, March 2012.

ICIAM, Vancouver, July 2011.

Mathematical Modeling of Systemic Risk, Paris, June 2011.

Young Researchers Workshop on Finance, Tokyo, March 2011.

SIAM Conference on Financial Mathematics and Engineering, San Francisco, November 2010.

Counterparty Risk, Systemic Risk and Clearing Houses, Paris, September 2010.

10th Franco-Romanian Conference on Applied Mathematics, Poitiers, August 2010.

Workshop on financial derivatives and risk management, Toronto, May 2010.

Other Practitioner Seminars and Workshops

CFEM Financial Engineering Seminar, April 2022.

Natixis Seminar on Quantitative Research, Paris, June 2007, July 2010.

Standard and Poor's Credit Risk Summit, London, September 2009.

PROFESSIONAL SERVICE

Conference Leadership

American Finance Association Annual Meeting, Session on Digital Currencies, 2024 (chair)

5th Eastern Conference on Mathematical Finance at Cornell, 2021 (chair)

SIAM Conference on Financial Mathematics and Engineering Mini-Symposia, 2021.

SIAM Conference on Financial Mathematics and Engineering Mini-Symposia, 2016.

Co-organizer of the Inaugural Eastern Conference on Mathematical Finance, 18-20 March, 2016 (joint with Agostino Capponi, Ronnie Sircar, Stephan Sturm).

INFORMS Annual Meeting Invited Session "New Perspectives in Risk Management", 2015.

SIAM Conference on Financial Mathematics Mini-Symposium "Liquidity Risk in a System Context", 2014.

INFORMS Annual Meeting Invited Session "Systemic and Liquidity Risk Management", 2013.

INFORMS International Beijing Invited Session "Systemic Risk", 2012.

Conference Program/Technical Committee

Financial Stability Conference: Frontier Risks, a New Normal, and Policy Challenges, Federal Reserve Bank of Cleveland and the Office of Financial Research, Scientific Committee, 2022.

ACM International Conference on AI in Finance (ICAIF), Senior Program Committee, 2022.

1st Workshop on Decentralized Finance, 2021.

The World Federation of Exchanges, OMA Clearing and Derivatives Conference, 2019-2020 and 2020-2021.

Complex Networks, the 9th International Conference on Complex Networks and their Applications, 2020 & 2021.

Economics and Data track, BESC, Shanghai, 2014.

IEEE GlobalSIP Symposium on Signal and Information Processing in Finance and Economics, 2013.

Professional societies

INFORMS Finance Section (Elected board member in Optimization Area), 2016-2018.

INFORMS Applied Probability Society (Judge for best paper competition), 2018.

Proposal Review Panelist for the National Science Foundation, 2017-present.

Refereeing

Mathematical Finance, Management Science, Operations Research, SIAM Journal of Financial Mathematics, Mathematics of Operations Research, Journal of Banking and Finance, Journal of Economic Dynamics and Control, Quantitative Finance, European Journal of Operational Research, Journal of Financial Stability, Statistics and Probability Letters, Statistics and Risk Modeling, IEEE Trans. on Network Science and Engineering, IEEE Trans. on Knowledge and Data Engineering, Springer Books.

Software Packages

PREMIA Platform for Pricing Financial Derivatives, 2010-2011.

CORNELL SERVICE

Graduate Fields: OR, Applied Mathematics.

Academic Integrity Hearing Board (Elected), 2021 - 2023.

Committee service

ORIE PhD Admissions Chair, 2021 - 2023.

ORIE PhD Admissions Committee, 2020, 2021.

ORIE Director Search Committee, 2019,2021.

ORIE Faculty Search Committee, 2015, 2016, 2018.

MEng Financial Data Science Curriculum Committee, 2015-2016.

MEng Financial Engineering Admissions Committee, 2012-2017, 2019-2021.

Seminar organization

Co-organizer of the Center for Applied Mathematics Colloquium, 2013-2014.

Undergraduate Research Supervision

Yuchen Kristina Tian, Optimal interventions in economic networks, Summer 2021.

Senmiao Wang, Fictitious play in Mean Field Games, Fall 2019 - Spring 2020. (Tsinghua Visiting student, admitted to PhD program at Northwestern)

Yixin Shi, "Network reconstruction and clustering", Fall 2019.

Xin Qian, Spring 2017, "Clustering", (PKU Visiting student, admitted to PhD program at Northwestern)

Jane Lee, Soyeon Yoon, Dae Won Kim, Ivy Suiwen Wu, Healthcare project "Efficient design of acute care workflow" (collaboration with the Health Design Innovations Lab in the Department of Design & Environmental Analysis at Cornell University), Fall 2016, Spring 2017.

Li Wang (ORIE), "Networks of Overlapping Portfolios" , 2013-2014 (admitted to PhD program at MIT).

Divya Singhvi and Somya Singhvi (ORIE), "Systemic risk measures in hedge fund networks", 2014-2015 (admitted to PhD program at MIT).

MEng Research Supervision

Rohini Jayanthi (FE MEng, ORIE), "Clustering in networks of funds", Spring 2016.

Hersh Mehta (CS), "Order books in pro-rata matching trading venues", Fall 2013.

Weilong Guo (Statistics), "Networks of Overlapping Portfolios", 2014-2015 (admitted to PhD program at Cornell).

PhD Committees other than chair or co-chair

Karen Grigorian, Cornell University (Committee member, significant interaction on teaching/outreach projects).

Shuo Li, Carnegie Mellon University, 2022 (External Committee member, main advisor on research project on value of information and Covid-19 testing)

Anna Srapionyan, Cornell University, 2019 (Committee member, significant teaching & mentoring).

Serkan Kiraç, Cornell University, 2014 (Committee member)

OUTREACH

Program Director for CURIE Academy, Cornell University, 2020.

First online Cornell CURIE Academy, for high-school girls and underrepresented minorities in STEM fields.

Curriculum: Introduction to financial mathematics and engineering with Matlab live modeling.

RESEARCH VISITS

Swiss Finance Institute at EPFL, Visiting Associate Professor, Nov-Dec 2017.

London School of Economics, Summer 2016.

Institute of Pure and Applied Mathematics at UCLA for the Program Broad Perspectives and New Directions in Financial Mathematics, March 9-June 12, 2015.

Isaac Newton Institute for Mathematical Sciences for the program “Systemic Risk: Mathematical Modeling and Interdisciplinary Approaches”, Fall 2014

INRIA Mathrisk, regular visits, 2012-present.

LANGUAGES

Romanian (native), English (fluent), French (fluent), German (intermediate).

MEDIA COVERAGE

The Conversation

<https://theconversation.com/how-covid-broke-supply-chains-and-how-ai-and-blockchain-could-fix-them-163140>

Focus by World Federation of Exchanges

<https://focus.world-exchanges.org/articles/clearing-impact-equilibrium>

Cornell Chronicle <https://news.cornell.edu/stories/2020/10/project-will-strengthen-global-supply-chains-ai>

Cornell Chronicle, <https://research.cornell.edu/news-features/studying-complex-financial-networks>.

GARP Webinar on Systemic Risk and Central Counterparty Clearing Design.

FED, Economic Research and Data, FEDS Notes

<https://www.federalreserve.gov/econresdata/notes/feds-notes/2015/taxonomy-of-studies-on-interconnectedness-20150731.html>

On Greek Debt Crisis <http://www.savoirs.essonne.fr/sections/actualites/crise-grecque-quelle-responsabilite-ont-les-marches-financiers/>