YU LUO

University of Delaware, 150 Academy St., Newark, DE 19716
yuluo@udel.edu; https://l16cn.github.io

EDUCATION

Columbia University, Graduate School of Arts and Sciences 02/2017
Doctor of Philosophy, Chemical Engineering

Columbia University, Fu Foundation School of Engineering and Applied Science 05/2012
Master of Science, Chemical Engineering
Full GPA (4.13/4)

National University of Singapore, Faculty of Engineering 06/2011
Bachelor of Engineering, Chemical Engineering
First Class Honors

PUBLICATIONS

Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. Social influence makes self-interested crowds smarter: an optimal control perspective. *IEEE Transactions on Computational Social Systems*, 2017. Accepted

Garud Iyengar, Yu Luo, Shivaram Rajgopal, Venkat Venkatasubramanian, and Zhizun Zhang. Towards a financial statement based approach to modeling systemic risk in insurance and banking. *Columbia Business School Research Paper*, 17(177), 2017. Available at SSRN. **Featured by the "SSRN Top Ten List" in Banking and Insurance; Risk Management and Analysis in Financial Institutions; Risk Management; and Financial Crises categories**

Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. Soft regulation with crowd recommendation: coordinating self-interested agents in sociotechnical systems under imperfect information. *PLoS ONE*, 11(3):e0150343, 2016

Venkat Venkatasubramanian, Yu Luo, and Jay Sethuraman. How much inequality in income is fair? a microeconomic game theoretic perspective. *Physica A: Statistical Mechanics and its Applications*, 435:120–138, 2015. **Featured by the "ScienceDirect Top 25 List of Most Downloaded Articles"**

Richard Bookstaber, Paul Glasserman, Garud Iyengar, Yu Luo, Venkat Venkatasubramanian, and Zhizun Zhang. Process systems engineering as a modeling paradigm for analyzing systemic risk in financial networks. *The Journal of Investing*, 24(2):147–162, 2015

AWARDS AND HONORS

SSRN Top Ten List (4)	08/2017–10/2017
AIChE CAST Division Director's Student Presentation Award (Finalist)	05/2016
ScienceDirect Top 25 List of Most Downloaded Articles	06/2015
Undergraduate Degree with First Class Honors	06/2011
Dean's List (3)	08/2007–06/2011
Science and Technology Undergraduate Scholarship for International Students	08/2007–06/2011

EXPERIENCE

University of Delaware, Chemical and Biomolecular Engineering 06/2017–Present
Postdoctoral Researcher *Newark, DE*

- **Advisors**: Prof. Babatunde Ogunnaike and Prof. Kelvin Lee
- Collaborated with Johnson & Johnson researchers to develop a multiscale glycosylation model
- Analyzed data from shake-flask study experiments to estimate the nonlinear multiscale dynamic system
- Designed factorial experiments to identified the effect from different media conditions
- Developed a process design tool to identify necessary media components to achieve target glycoform
- Reorganized predecessor's MATLAB codes and enhanced overall readability of the program

Columbia University, Chemical Engineering 09/2011–05/2017
Doctoral Student (2011–2016) and Postdoctoral Researcher (2017) *New York, NY*

- **Advisors**: Prof. Venkat Venkatasubramanian and Prof. Garud Iyengar
- **Dissertation**: Multi-agent control in sociotechnical systems
- Designed control-theoretic soft feedback mechanisms that could make intelligent crowds "smarter"
- Discovered deep connections through game theory between income inequality and thermodynamics
- Conducted behavioral research experiments on social influence with human subjects
- Developed a data-driven early warning system to predict mine accidents based on regulatory data
- Applied process hazard analysis (signed digraph) to identifying vulnerabilities in financial networks
- Worked with Prudential Financial on a financial statement-based risk measure for insurers and banks
- Implemented an agent-based model to understand high-frequency trading and its market impacts
- Modeled collective dynamics of multiple interacting and intelligent agents
- Managed website and assisted in organizing three university-level symposia and workshops
- Collaborated with both world-class scholars and executive-level practitioners on systemic risk research
- Led multiple interdisciplinary research teams of graduate and undergraduate students
- Guest-lectured graduate-level courses including "Managing Systemic Risk in Complex Systems"

PNC Bank 08/2015–12/2015
Quantitative Analyst Intern *New York, NY*

- **Manager**: Dr. Brian Burk
- Supervised two graduate students and collaborated with finance professionals at PNC Bank
- Built an operational risk model based on the loss distribution approach

Singapore-MIT Alliance, Environmental Sensing and Modeling 05/2010–06/2011
Undergraduate Research Assistant *Singapore*

- **Advisor**: Prof. Wing-Keung Law
- Modeled and simulated sand sedimentation dynamics
- Improved image processing algorithm and numerical model for sand sedimentation experiments

PRESENTATIONS

Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. Control with soft feedback in social systems: mathematical principles, empirical evidence, and applications. In *AIChE Annual Meeting*, Minneapolis, MN, 2017. Oral presentation

Yu Luo, Ashutosh Nanda, Shivaram Rajgopal, Vinay Ramesh, Zhizun Zhang, Catherine Zhao, and Venkat Venkatasubramanian. A data-driven early warning system for mining accidents. In *Global Congress on Process Safety*, San Antonio, TX, 2017. Oral presentation

Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. The control of self-interested agents: learning from nature's wisdom of crowds. In *AIChE Annual Meeting*, San Francisco, CA, 2016. Oral presentation. **Finalist and travel grant recipient for the AIChE CAST Division Director's Student Presentation Award**

Yu Luo, Richard Bookstaber, Paul Glasserman, Garud Iyengar, Zhizun Zhang, and Venkat Venkatasubramanian. Process systems engineering beyond chemical plants: signed digraph as a modeling tool for analyzing systemic risk in financial networks. In *AIChE Annual Meeting*, San Francisco, CA, 2016. Oral presentation

Yu Luo. Process systems engineering beyond chemical plants. In *AIChE Annual Meeting*, San Francisco, CA, 2016. Poster presentation

Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. Soft regulation: coordinating distributed self-interested agents in sociotechnical systems. In *AIChE Annual Meeting*, Atlanta, GA, 2014. Oral presentation

PROFESSIONAL SERVICE

Journal of Computers and Chemical Engineering 12/2012–Present
Invited Reviewer *New York, NY*

· Reviewed 20+ manuscripts on fault detection, fault diagnosis, optimization, risk management, etc.

Columbia University, Center for the Management of Systemic Risk 12/2012–05/2017
Webmaster and Event Assistant *New York, NY*

· Designed print media, assisted event logistics, and facilitated coordination between schools
· Assisted organizing Symposium on the Management of Systemic Risk in Finance
· Assisted organizing Symposium on Managing Systemic Risk in Energy, Environment, and Infrastructure
· Assisted organizing Workshop on Systemic Risk in Insurance

TECHNICAL STRENGTHS

Language	Python, R, MATLAB, JavaScript, SQL, LISP, HTML, and LaTeX
Simulation	SimuLink, COMSOL, NetLogo, and Aspen HYSYS
Media	Adobe Photoshop, Adobe Illustrator, Adobe Premiere, and Adobe After Effects
Graphic Design	Vector art, brochure design, and event poster
Traditional Art	Portrait painting, calligraphy, and piano
Creative Art	Musical composition, song writing, and video editing