

# YU LUO

University of Delaware, 150 Academy St., Newark, DE 19716

<https://l16cn.github.io>

## EDUCATION

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<b>Columbia University, Graduate School of Arts and Sciences</b> Doctor of Philosophy, Chemical Engineering	02/2017
<b>Columbia University, Fu Foundation School of Engineering and Applied Science</b> Master of Science, Chemical Engineering <b>Full GPA</b>	05/2012
<b>National University of Singapore, Faculty of Engineering</b> Bachelor of Engineering, Chemical Engineering <b>First Class Honors</b>	06/2011

## PUBLICATIONS

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Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. Social influence makes self-interested crowds smarter: an optimal control perspective. *IEEE Transactions on Computational Social Systems*, 5(1):200–209, March 2018

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

Yu Luo, Robert J. Lovelett, J. Vincent Price, Devesh Radhakrishnan, Kristopher Barnthouse, Ping Hu, Gene Schaefer, John Cunningham, Kelvin H. Lee, Raghu Shivappa, and Babatunde A. Ogunnaike. Multiscale modeling of antibody production and glycosylation for improved upstream process design. In preparation<sup>1</sup>

## AWARDS AND HONORS

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SSRN Top Ten List (4)	08/2017–10/2017
Elsevier Outstanding Contribution in Reviewing	07/2017
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
National University of Singapore Dean’s List (3)	08/2007–06/2011

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<sup>1</sup>My postdoctoral research involves a close collaboration with a major pharmaceutical company and lengthy internal reviews are required to protect the company’s intellectual properties. This manuscript is listed here because I believe that it would have been otherwise published.

## EXPERIENCE

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### University of Delaware, Chemical and Biomolecular Engineering

*Postdoctoral Researcher*

06/2017–Present

*Newark, DE*

- **Advisors:** Prof. Babatunde A. Ogunnaike and Prof. Kelvin H. Lee
- **Project(s):** Multiscale modeling of antibody and glycosylation for improved upstream process design
- Collaborated closely with a major pharmaceutical company to design manufacturing process of antibody
- Employed systems techniques to identify a multiscale dynamical model of cell culture and glycosylation
- Developed a model to quantify effect of process conditions on cell growth and glycosylation dynamics
- Validated out-of-sample model performance against a representative industrial cell culture data set
- Implemented an algorithmic decision-making tool (user interface) for upstream process development
- Optimized MATLAB codes to run 60 times faster than the previous version

### Columbia University, Chemical Engineering

*Doctoral Student (2011–2016) and Postdoctoral Researcher (2017)*

09/2011–05/2017

*New York, NY*

- **Advisors:** Prof. Venkat Venkatasubramanian and Prof. Garud Iyengar
- **Dissertation:** Multi-agent control in sociotechnical systems
- Led multiple interdisciplinary research teams of graduate and undergraduate students
- Guest-lectured graduate-level courses including “Managing Systemic Risk in Complex Systems”
- Modeled collective dynamics of interacting and intelligent agents using control theory
- Designed soft feedback mechanisms to 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
- 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

### PNC Bank

*Quantitative Analyst Intern*

08/2015–12/2015

*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

*Undergraduate Research Assistant*

05/2010–06/2011

*Singapore*

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

## PROFESSIONAL SERVICE

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### **Journal of Computers and Chemical Engineering**

*Outstanding Reviewer*

12/2012–Present

*New York, NY*

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

### **Columbia University, Center for the Management of Systemic Risk**

*Webmaster and Event Assistant*

12/2012–05/2017

*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

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