

# YU LUO

University of Delaware | <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**
- National University of Singapore, Faculty of Engineering** 06/2011  
Bachelor of Engineering, Chemical Engineering  
**First Class Honors**

## PUBLICATIONS

---

- Venkat Venkatasubramanian and Yu Luo. How much income inequality is fair? Nash bargaining solution and its connection to entropy. In Anindya Chakrabarti, Lukas Pichl, and Taisei Kaizoji, editors, *Network Theory and Agent-Based Modeling in Economics and Finance*. Springer, Singapore, December 2019. Accepted
- Yu Luo, Garud Iyengar, and Venkat Venkatasubramanian. A one-third advice rule based on a control-theoretic opinion dynamics model. *IEEE Transactions on Computational Social Systems*, 6(3):576–581, June 2019
- Venkat Venkatasubramanian, Yu Luo, and Zhizun Zhang. Control of complex sociotechnical systems: importance of causal models and game theory. *Computers & Chemical Engineering*, 123:1–11, April 2019
- 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
- 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), July 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, March 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, October 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, May 2015

## RESEARCH

---

### University of Delaware, Chemical and Biomolecular Engineering

*Postdoctoral Researcher*

06/2017–Present

*Newark, DE*

- **Advisors:** Prof. Babatunde A. Ogunnaike and Prof. Kelvin H. Lee
- Modeling antibody production and glycosylation processes
- Design and control of antibody production and glycosylation processes

### 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
- Multi-agent control in sociotechnical systems
- Income inequality through population games and statistical mechanics
- Managing systemic risk in finance, public health, mining using data science and systems techniques

### PNC Bank

*Quantitative Analyst Intern*

08/2015–12/2015

*New York, NY*

- **Manager:** Dr. Brian Burk
- Measuring operational risk through loss distribution approach

### Singapore-MIT Alliance, Environmental Sensing and Modeling

*Undergraduate Research Assistant*

05/2010–06/2011

*Singapore*

- **Advisor:** Prof. Adrian Wing-Keung Law
- Modeling sand sedimentation dynamics

## TEACHING

---

### Managing Systemic Risk in Complex Systems (Graduate)

Guest Lecturer

Spring 2016

Columbia University

### Managing Systemic Risk in Complex Systems (Graduate)

Guest Lecturer

Fall 2015

Columbia University

### Molecular Phenomena (Undergraduate)

Teaching Assistant

Spring 2012

Columbia University

### Thermodynamics (Undergraduate)

Teaching Assistant

Fall 2011

Columbia University

## PRESENTATIONS

---

Yu Luo, Devesh Radhakrishnan, Anne Robinson, and Babatunde A. Ogunnaike. Control of glycosylation and titer in fed-batch monoclonal antibody production. In *AIChE Annual Meeting*, Orlando, FL, November 2019. Oral presentation

Yu Luo. Systems approach to advanced decision-making in chemical engineering, biomanufacturing, and society. In *AIChE Annual Meeting*, Orlando, FL, November 2019. Poster presentation

Yu Luo. Systems and advanced decisions: from biomanufacturing to opinion dynamics applications. Imperial College London, London, U.K., June 2019. Invited seminar

Yu Luo. Systems and advanced decisions: from biomanufacturing to opinion dynamics applications. Clarkson University, Potsdam, NY, June 2019. Invited seminar

Yu Luo. Systems and advanced decisions: from biomanufacturing to opinion dynamics applications. Stevens Institute of Technology, Hoboken, NJ, March 2019. Invited seminar

Yu Luo. Systems and advanced decisions: from biomanufacturing to opinion dynamics applications. University of Waterloo, Waterloo, ON, Canada, March 2019. Invited seminar

Yu Luo, J. Vincent Price, Robert J. Lovelett, Devesh Radhakrishnan, Kristopher Barnthouse, Gene Schaefer, John Cunningham, Ping Hu, Kelvin H. Lee, and Babatunde A. Ogunnaike. Multiscale modeling of antibody production and glycosylation for improved upstream process design. In *ACS National Meeting & Expo*, Orlando, FL, April 2019. Oral presentation

Yu Luo, J. Vincent Price, Robert J. Lovelett, Devesh Radhakrishnan, Kristopher Barnthouse, Gene Schaefer, John Cunningham, Ping Hu, Kelvin H. Lee, and Babatunde A. Ogunnaike. Multiscale modeling of antibody production and glycosylation for improved upstream process design. In *Biotherapeutics and Vaccines Development (Gordon Research Conference)*, Galveston, TX, January 2019. Poster presentation

Yu Luo, J. Vincent Price, Robert J. Lovelett, Devesh Radhakrishnan, Kristopher Barnthouse, Gene Schaefer, John Cunningham, Ping Hu, Kelvin H. Lee, Raghu Shivappa, and Babatunde A. Ogunnaike. Multiscale modeling of monoclonal antibody (mAb) production and glycosylation in a Chinese hamster ovary (CHO) cell culture process. In *AIChE Annual Meeting*, Pittsburgh, PA, October 2018. Oral presentation

Yu Luo. Process systems engineering and artificial intelligence for advanced manufacturing: including applications to biopharmaceuticals. In *AIChE Annual Meeting*, Pittsburgh, PA, October 2018. Poster presentation

Yu Luo, J. Vincent Price, Robert J. Lovelett, Devesh Radhakrishnan, Kristopher Barnthouse, Gene Schaefer, John Cunningham, Ping Hu, Kelvin H. Lee, Raghu Shivappa, and Babatunde A. Ogunnaike. Multiscale modeling of monoclonal antibody (mAb) production and glycosylation in a CHO cell culture process. In *AMBIC Semiannual Meeting*, Fremont, CA, June 2018. Poster presentation

Yu Luo, J. Vincent Price, Robert J. Lovelett, Devesh Radhakrishnan, Kristopher Barnthouse, Gene Schaefer, John Cunningham, Ping Hu, Kelvin H. Lee, Raghu Shivappa, and Babatunde A. Ogunnaike. Multiscale modeling of monoclonal antibody (mAb) production and glycosylation in a CHO cell culture process. In *Cell Culture Engineering XVI*, Tampa, FL, May 2018. Poster presentation

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, November 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, March 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, November 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, November 2016. Oral presentation

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

## PROFESSIONAL SERVICE

---

### **The Canadian Journal of Chemical Engineering**

04/2019–Present

*Reviewer*

- Reviewed manuscripts on data science, cell culture engineering

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

12/2012–Present

*Outstanding Reviewer*

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

### **AIChE**

11/2014–Present

*Member, Session Chair*

- Served as session chair for the Pharmaceutical Discovery, Development, and Manufacturing Forum

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

12/2012–05/2017

*Webmaster, Event Assistant, Graphic Designer*

- Designed print media, assisted organizing three university-level symposia

## TECHNICAL STRENGTHS

---

<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