Ningyuan Chen

Contact Information

Department of Management
University of Toronto Mississauga
Mississauga, Ontario

Phone: +1-905-828-5218
E-mail: ningyuan.chen@utoronto.ca
Web: http://individual.utoronto.ca

Employment

Department of Management, University of Toronto Mississauga
Rotman School of Management, University of Toronto
Assistant Professor — 2019 - present

IEDA, HKUST, Hong Kong
Assistant Professor — 2016 - 2019

Yale School of Management, New Haven, CT
Postdoctoral Associate — 2015 - 2016

Education

Columbia University, New York, NY
Ph.D., Industrial Engineering and Operations Research — 2010 - 2015
M.S., Operations Research — 2010 - 2012

Peking University, Beijing, China
B.S., Mathematics — 2006 - 2010

Professional Experience

National University of Singapore, Singapore
Visiting Scholar, Department of Mathematics — Oct 2013 - Nov 2013
Visiting Scholar, Risk Management Institute — Jan 2015

Credit Suisse, New York, NY
Quantitative Summer Associate — June 2013 - Aug 2013
- Analyzed the strong correlation between the spot and the implied volatility movements
- Constructed and backtested a portfolio of options with different strikes to exploit the correlation

Grants and Awards

Management Science Service Award — 2020

Principal investigator of NSERC Discovery Grants Program RGPIN-2020-04038, *Leveaging Machine Learning in Modern Revenue Management*, C$31,000 each year — 2020 - 2025

Co-investigator (PI: Guillermo Gallego) of General Research Fund 16211619, *Discrete Choice Models with Search Costs: Sequential vs Simultaneous Observations*, HK$695,919 — 2018 - 2021

Principal investigator (Co-I: Guillermo Gallego) of General Research Fund 16502819, *Congestion Pricing in the Tourism Industry and the Transport System of Hong Kong*, HK$492,400 — 2019 - 2021

Co-investigator (PI: Guillermo Gallego) of General Research Fund 16211118, *Multi-product inventory and dynamic pricing decisions with dynamic substitution effects*, HK$790,526 2018 - 2021

Principal investigator of RGC Early Career Scheme 26201617, *Pricing and Promotion of Products with Network Externality*, HK$383,333 2017 - 2019

INFOMRS IBM Best Student Paper in Service Science, Awarded to coauthor Xiao Lei 2019

INFORMS Financial Services Section Best Student Paper Competition, Finalist 2015

Class of 1988 Doctoral Fellowship 2015

Chinese National Scholarship (top 3%) 2007 - 2008

Journal Publications

[1] Lee, Donald KK, Ningyuan Chen, and Hemant Ishwaran. "Boosting Hazard Regression with Time-Varying Covariates." *The Annals of Statistics*, Forthcoming.

[2] Chen, Ningyuan, Adam Elmachtoub, Michael Hamilton, and Xiao Lei. "Loot Box Pricing and Design." *Management Science*, Forthcoming.

[3] Chen, Ningyuan, Anran Li, and Kalyan Talluri. "Reviews and Self-Selection Bias with Operational Implications." *Management Science*, Forthcoming.

[4] Chen, Ningyuan, and Guillermo Gallego. "Nonparametric Pricing Analytics with Customer Covariates." *Operations Research*, Forthcoming.

[5] Chen, Ningyuan, and Ying-Ju Chen. "Duopoly Competition with Network Effects in Discrete Choice Models." *Operations Research*, 69.2 (2021): 545-559.

[6] Chen, Ningyuan, and Javad Nasiry. "Does Loss Aversion Preclude Price Variation?" *Manufacturing & Service Operations Management*, 22.2 (2020): 383-395.

[7] Chen, Ningyuan, Donald KK Lee, and Sahand Negahban. "Super-Resolution Estimation of Cyclic Arrival Rates." *The Annals of Statistics*, 47.3 (2019): 1754-1775.

[8] Chen, Ningyuan, and Guillermo Gallego. "Welfare Analysis of Dynamic Pricing." *Management Science*, 65.1 (2019): 139-151.

[9] Chen, Ningyuan, Steven G. Kou, and Chun Wang. "A Partitioning Algorithm for Markov Decision Processes and Its Application to Market Microstructure." *Management Science*, 64.2 (2018): 784-803.

[10] Chen, Ningyuan, Nelly Litvak, and Mariana Olvera-Cravioto. "Generalized PageRank on Directed Configuration Networks." *Random Structure and Algorithms*, 51.2 (2017): 237-274.

[11] Chen, Ningyuan, and Mariana Olvera-Cravioto. “Coupling on Weighted Branching Trees.” *Advances in Applied Probability*, 48.2 (2016): 499-524.

[12] Chen, Ningyuan, and Mariana Olvera-Cravioto. “Directed Random Graphs with Given Degree Distributions.” *Stochastic Systems*, 3.1 (2013): 147-186.

Conference Proceedings

[1] Chen, Ningyuan, and Mariana Olvera-Cravioto. “Efficient Simulation for Branching Linear Recursions.” In *Proceedings of the Winter Simulation Conference. Winter Simulation Conference, 2015*.

[2] Chen, Ningyuan, Nelly Litvak, and Mariana Olvera-Cravioto. “PageRank in Scale-free Random Graphs.” In *Proceedings of the 11th Workshop on Algorithms and Models for the Web Graph*, Beijing, China, December 2014.

Working Papers

[1] Chen, Ningyuan, Andre Cire, Ming Hu, and Saman Lagzi. “Model-Free Assortment Pricing with Transaction Data.” Working paper, 2021.

[2] Li, Wenhao, Ningyuan Chen, and Jeff Hong. “Dimension Reduction in Contextual Online Learning via Nonparametric Variable Selection.” Working paper, 2020.

[3] Chen, Ningyuan, Ming Hu, and Chaoyu Zhang. “Capacitated SIR Model with an Application to COVID-19.” Working paper, 2020.

[4] Chen, Ningyuan, and Amin Khademi. “Adaptive Seamless Dose-finding Trials.” Working paper, 2020.

[5] Chen, Ningyuan, Chun Wang, and Longlin Wang. “Learning and Optimization with Seasonal Patterns.” Working paper, 2020.

[6] Chen, Ningyuan, Guillermo Gallego, and Zhuodong Tang. “The Use of Binary Choice Forests to Model and Estimate Discrete Choices.” Working paper, 2019.

[7] Chen, Ningyuan, and Yan Liu. “Dynamic Pricing with Money Back Guarantees.” Working paper, 2019.

[8] Chen, Ningyuan, Guillermo Gallego, Pin Gao, and Steven Kou. “Dealership or Marketplace: A Dynamic Comparison.” Working paper, 2019.

[9] Chen, Ningyuan, and Guillermo Gallego. “A Primal-Dual Learning Algorithm for Personalized Dynamic Pricing with an Inventory Constraint.” Working paper, 2018.

[10] Alizamir, Saed, Ningyuan Chen, Sang-Hyun Kim, and Vahideh Manshadi. “Impact of Network Structure on New Service Pricing.” Working paper, 2018.

[11] Chen, Ningyuan, Donald KK Lee, and Haipeng Shen. “Can Customer Arrival Rates Be Modelled by Sine Waves?” Working paper, 2018.

[12] Chen, Ningyuan, Pin Gao, and Steven Kou. “Does the Prohibition of Trade-Through Hurt Liquidity Demanders?” Working paper, 2017.

Talks

The Use of Binary Choice Forests in Estimating and Modelling Discrete Choices

- School of Management, Xi’an Jiaotong University, Xi’an 2020
- INFORMS Annual Meeting, Maryland 2020
- Department of Decision Sciences, HEC Montreal, Montreal 2020
- Guanghua School of Management, Peking University, Beijing 2020
- The School of Management, USTC, Hefei 2020

Dimension Reduction in Online Learning

- INFORMS Annual Meeting, Seattle 2019

A Primal-Dual Learning Algorithm for Personalized Dynamic Pricing with an Inventory Constraint

- INFORMS Annual Meeting, Seattle 2019

Reviews and Self-selection Bias with Operational Implications

- The School of Management, USTC, Hefei 2020
- INFORMS MSOM Conference, Singapore 2019
- The University of Hong Kong 2019
- School of Economics and Management, Tsinghua University, Beijing 2019

Nonparametric Pricing Analytics with Customer Covariates

- The ISE department, NCSU, North Carolina 2021
- INFORMS Annual Meeting, Seattle 2019
- University of Toronto, Toronto 2019
- Xiamen University, Xiamen 2019
- INFORMS Annual Meeting, Phoenix 2018
- Department of Management Sciences, City University of Hong Kong, Hong Kong 2018
- IDDA, CUHK Shenzhen, Shenzhen 2018
- Workshop on Revenue Management, SJTU, Shanghai 2018

Duopoly Competition with Network Effects in Discrete Choice Models

- Antai College of Economics & Management, SJTU, Shanghai 2018
- INFORMS MSOM Conference, Dallas 2018
- INFORMS Revenue Management and Pricing Conference, Toronto 2018

Does Loss Aversion Preclude Price Variation?

- INFORMS Annual Meeting, Phoenix 2018
- INFORMS International Meeting, Taipei 2018
- INFORMS Annual Meeting, Houston 2017

Impact of Network Structure on New Service Pricing

- CSAMSE Annual Conference, Guangzhou 2017
- Workshop on Revenue Management, South China University of Technology, Guangzhou 2017
- INFORMS Revenue Management and Pricing Conference, Amsterdam 2017
- POMS-HK International Conference, Hong Kong 2017
- SEEM, CUHK, Hong Kong 2016
- INFORMS Annual Meeting, Nashville 2016

Dynamic Pricing in Dealership Markets
- INFORMS MSOM Conference, Aukland 2016
- INFORMS Revenue Management and Pricing Conference, New York 2016

Welfare Analysis of Dynamic Pricing
- Technion-UST Joint Workshop, Hong Kong 2016
- ISOM, HKUST, Hong Kong 2016
- INFORMS Annual Meeting, Philadelphia 2015

Does the Prohibition of Trade-through Hurt Liquidity Demanders?
- 4th NUS Workshop on Risk & Regulation, Singapore 2016
- INFORMS Annual Meeting, Philadelphia 2015

A Partitioning Algorithm for Markov Decision Processes and Its Application to Market Microstructure
- IELM, HKUST, Hong Kong 2016
- The Department of Mathematics, NUS, Singapore 2016
- The Department of Statistics, University of Toronto, Toronto 2015
- The School of Management Seminar, Yale University, New Haven 2015
- INFORMS APS Conference, Istanbul, Turkey 2015
- First Berlin-Singapore Workshop on Quantitative Finance and Financial Risk, Berlin 2014
- European Economic Association Annual Congress and Econometric Society European Meeting, Toulouse 2014
- INFORMS Annual Meeting, San Francisco 2014

Efficient Simulation for Branching Linear Recursions
- INFORMS APS Conference, Istanbul, Turkey 2015

Ranking Algorithms on Directed Configuration Networks
- INFORMS Annual Meeting, San Francisco 2014

Directed Random Graphs with Given Degree Distributions
- INFORMS APS Conference, San Jose, Costa Rica 2013
- INFORMS Annual Meeting, Minneapolis 2013
- Columbia Business School DRO Student Seminar Series, New York 2013

Supervised Students

Postdoctoral Fellows
- Wenhao Li 2021 - present
- Jialin Li 2021 - present

PhD Students
- Hojat Abdolanezhad 2020 - present
- Saman Lagzi 2019 - present
- Setareh Farajollahzadeh 2020 - present
- Zhuodong Tang 2019 - present
- Pin Gao 2017 - 2020
- Xiao Lei 2017 - 2017

MPhil Students
- Guan Wang 2021 - present

- Ko Hin Huang — 2018 - 2019

Undergraduate Students

- Tianyu Wang — 2020 - present
- Longlin Wang — 2018 - present

Undergraduate Final Year Projects

- Trading Strategy in Equity Markets — 2018
  - CHAN Shun Yue
  - CHAN Tung Ling
  - HUNG Ho Yan
- Consumer Irrationality Sales Strategy — 2018
  - CHENG Man Nok
  - YAU Sze Keung
  - AU Mong Fung
  - Ng Ting Yan
- Study the Social Networking in Facebook — 2018
  - HUNG Faan Cheuk
  - YIN Jiaqi
  - AU Ga Hay
- Call Center Data Analytics — 2019
  - LO Ho Cheung
  - AU Chun Wai
  - MAK Long Ching
- Industry Project — 2019
  - SO Chun Hei
  - HO Chung Hin
  - KIM Kyungdo

Teaching

University of Toronto, Toronto

Instructor

- MGT270, Data Analytics for Management
- RSM3049, Online Learning and Multi-armed Bandit
- MGM301, Analysis for Decision and Control
- BTC2120, Decision Analytics in Business, Healthcare and Management

HKUST, Hong Kong

Instructor

- IEDA 2540, Statistics for Engineers
- IELM 5270, Engineering Statistics
- IELM 4331, Quantitative Methods in Financial Engineering
- IELM 6100F, Dynamic Programming Under Uncertainty

Columbia University, New York, NY

Teaching Assistant, responsible for weekly recitation and office hour

- IEOR E4731, Credit Risk/Credit Derivatives — Summer 2015
- IEOR E4700, Introduction to Financial Engineering — Fall 2010, Spring 2012

- IEOR E4404, Simulation — Fall 2012
- IEOR E4706, Foundations of Financial Engineering — Summer 2012
- IEOR E4500, Applications Programming for Financial Engineering Spring 2011

Substitute Instructor

- IEOR E4106, Introduction to OR: Stochastic Models — February 2015
- SIEO W3600, Introduction to Probability and Statistics — April 2015

Academic Service

Reviewer

- European Journal of Operational Research, INFORMS Journal on Computing, Management Science, Manufacturing & Service Operations Management, Mathematical Finance, Mathematics of Operations Research, Operations Research, Production and Operations Management, Stochastic Systems

Session Organizer

- INFORMS Annual Meeting, California — 2021
- CSAMSE Annual Meeting, Shanghai — 2021
- INFORMS Annual Meeting, Online — 2020
- INFORMS Annual Meeting, Seattle — 2019
- INFORMS Annual Meeting, Phoenix — 2018
- INFORMS International Meeting, Taipei — 2018
- INFORMS Annual Meeting, Houston — 2017

Paper Competition Committee

- POMS-HK Student Paper Competition, Hong Kong — 2017, 2018

Committee Membership

Thesis Examination Committee

Hojat Abdolanezhad, PhD at Rotman	2021
Pin Gao, PhD in IEDA	2021
Zhen Xu, PhD in IELM	Aug 2017
Elina Muceniece, MPhil in TLE	Aug 2017
Hailun Zhang, PhD in IELM	Jul 2018
Yixing Cheng, PhD in IELM	Aug 2018
Ke Zhang, PhD in IELM	Aug 2018
Shidong Cui, PhD in Math	Aug 2018
Yican Wang, MPhil in TLE	Aug 2018

Other Services

First-year Student Advisor	2017-2018
Engineering Exploration Day Interviewer	2017, 2018
Research Presentation at the Engineering Student Summer Camp	Jul 2018
UG Committee	2018

Last updated: May 3, 2021