NINGYUAN CHEN

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EMPLOYMENT

Department of Management, University of Toronto Mississauga, Rotman School of Management, University of Toronto

2019 - present Assistant Professor

IEDA, HKUST, Hong Kong

2016 – 2019 Assistant Professor

Yale School of Management, New Haven, CT

2015 – 2016 Postdoctoral Associate

EDUCATION

2010 – 2015 Columbia University, New York, NY
Ph.D., Industrial Engineering and Operations Research

2010 – 2012 M.S., Operations Research
Peking University, Beijing, China

2006 – 2010 B.S., Mathematics

PROFESSIONAL EXPERIENCE

National University of Singapore, Singapore

Oct 2013 - Nov 2013 *Visiting Scholar*, Department of Mathematics

Jan 2015 *Visiting Scholar*, Risk Management Institute

Credit Suisse, New York, NY

June 2013 - Aug 2013 Quantitative Summer Associate

- 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 Scalefree 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, Guillermo Gallego, and Zhuodong Tang. “The Use of Binary Choice Forests to Model and Estimate Discrete Choices.” Working paper, 2019.
2. Chen, Ningyuan, and Yan Liu. “Dynamic Pricing with Money Back Guarantees.” Working paper, 2019.
3. Chen, Ningyuan, Guillermo Gallego, Pin Gao, and Steven Kou. “Dealership or Marketplace: A Dynamic Comparison.” Working paper, 2019.
4. Chen, Ningyuan, and Guillermo Gallego. “A Primal-Dual Learning Algorithm for Personalized Dynamic Pricing with an Inventory Constraint.” Working paper, 2018.
5. Alizamir, Saed, Ningyuan Chen, Sang-Hyun Kim, and Vahideh Manshadi. “Impact of Network Structure on New Service Pricing.” Working paper, 2018.
6. Chen, Ningyuan, Donald KK Lee, and Haipeng Shen. “Can Customer Arrival Rates Be Modelled by Sine Waves?” Working paper, 2018.
7. Chen, Ningyuan, 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

- 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 at NCSU, Online, 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

Welfare Analysis of Dynamic Pricing

- Technion-UST Joint Workshop, Hong Kong, 2016
- ISOM, HKUST, Hong Kong, 2016

- INFORMS Annual Meeting, Philadelphia

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
    1. First Berlin-Singapore Workshop on Quantitative Finance and Financial Risk, Berlin, 2014
    2. European Economic Association Annual Congress and Econometric Society European Meeting, Toulouse, 2014
    3. 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

PhD Students • Pin Gao 2017 - 2019

- Qiuyi Yan (co-supervised with Prof. Ying-Ju Chen)

Current MPhil Students 2018 - 2019

- Ko Hin Huang

Undergraduate Final Year Projects 2018 - 2019

- Trading Strategy in Equity Markets
- CHAN Shun Yue
- CHAN Tung Ling

HUNG Ho Yan 2018

- Consumer Irrationality Sales Strategy
- CHENG Man Nok

- YAU Sze Keung
- AU Mong Fung

Ng Ting Yan 2018

- Study the Social Networking in Facebook
- HUNG Faan Cheuk
- YIN Jiaqi

AU Ga Hay 2018

- Call Center Data Analytics
- LO Ho Cheung
- AU Chun Wai

MAK Long Ching 2019

- Industry Project
- SO Chun Hei
- HO Chung Hin

KIM Kyungdo 2019

TEACHING

University of Toronto, Toronto

Instructor

- 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, Management Science, Manufacturing & Service Operations Management, Mathematical Finance, Operations Research, Production and Operations Management, Stochastic Systems

Session Organizer

- 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

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	