

Michael Lingzhi Li

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Research Interests Inference for Machine Learning, Scalable Algorithms with Probabilistic Guarantees, Applications to Healthcare Operations & Public Policy, Epidemiology

Education **Massachusetts Institute of Technology**, Cambridge, MA
Candidate for PhD in Operations Research; Expected completion: End of 2021 GPA: 5.0/5.0
Master's in Business Analytics, June 2018. GPA: 5.0/5.0
Advisor: Prof. Dimitris Bertsimas

University of Cambridge, Cambridge, UK
Bachelor of Arts (Hons.) in Mathematics, June 2017.
1st Class Honors (Wrangler); Top 10% of Class

Publications

Methodological Contributions for Statistics and Machine Learning (ML)

Inference for ML **Experimental Evaluation of Individualized Treatment Rules**
(with K. Imai)
Accepted at Journal of American Statistical Association.

Statistical Inference for Heterogeneous Treatment Effects in Randomized Experiments
(with K. Imai)
To submit to Journal of American Statistical Association.

Pricing for Heterogeneous Products: Analytics for Ticket Reselling
(with M. Alley, M. Biggs, R. Hariss, C. Hermann, G. Perakis)
Accepted at Manufacturing and Services Operations Management (MSOM).

Robust Inference for Machine Learning with Observational Data
(with D. Bertsimas, K. Imai)
In preparation.

Scalable ML Algorithms **Fast Exact Matrix Completion: A Unifying Optimization Framework**
(with D. Bertsimas)
Journal of Machine Learning Research 21 (231): 1-43

Scalable Holistic Linear Regression
(with D. Bertsimas)
Operations Research Letters 48(3), 203-208

Stochastic Cutting Planes for Data-Driven Optimization
(with D. Bertsimas)
Accepted with Minor Revision at INFORMS Journal on Computing.

Slowly Varying Regression under Sparsity
(with D. Bertsimas, V. Digalakis, and O. S. Lami)
Submitted to Operations Research.

Interpretable Matrix Completion: A Discrete Optimization Approach
(with D. Bertsimas)
Submitted to Machine Learning.

Biomedical and Epidemiology Applications

Personalized Healthcare **Selecting Children with VUR Who Are Most Likely to Benefit from Antibiotic Prophylaxis: Application of Machine Learning to RIVUR**
(with D. Bertsimas and Advanced Analytics Group of Pediatric Urology)
Journal of Urology 2021 Apr; 205(4): 1170-1179.

Prescriptive Analytics for Reducing 30-day Hospital Readmissions after General Surgery
(with D. Bertsimas, I. Paschalidis, and T. Wang)
PLOS One 15(9), e0238118

Targeted Workup after Initial Febrile Urinary Tract Infection: Using a Novel Machine Learning Model to Identify Children Most Likely to Benefit from VCUG
(with D. Bertsimas, J. Dunn, D. Zhuo and Advanced Analytics Group of Pediatric Urology)
Journal of Urology 2019 Apr; 202(1): 144–152.

Baseline Correction in Urodynamics with Local Gradient Flow
(with H. S. Wang)
In preparation.

Epidemiology **Forecasting COVID-19 and Analyzing the Effect of Government Interventions**
(with H. Tazi Bouardi, O. Skali Lami, T. Trikalinos, N. Trichakis, and D. Bertsimas.)
Minor Revision at Operations Research
Reported by [New York Times](#) and [FiveThirtyEight](#)

From Predictions to Prescriptions: A Data-driven Response to COVID-19
(with D. Bertsimas, L. Boussioux, R. Cory Wright, A. Delarue, V. Digalakis, A. Jacquillat, et al.)
Health Care Management Science 24, 253-272

Data-Driven COVID-19 Vaccine Development for Janssen
(with D. Bertsimas, S. Soni, H. Tazi Bouardi)
To Submit to Nature.
Reported by [MIT News](#)

Where to Locate COVID-19 Mass Vaccination Facilities?
(with D. Bertsimas, V. Digalakis Jr., A. Jacquillat, A. Previero)
Naval Research Logistics 10.1002/nav.22007

Short-term Forecasting of COVID-19 in Germany and Poland During the Second Wave - A Preregistered Study
(with J. Bracher, D. Wolfram, J. Deuschel, K. Goergen, J. L. Ketterer, et al.)
Accepted at Nature Communications.

Honors and Awards

- 2021** INFORMS Doing Good with Good OR Competition Finalist (Final Round Pending)
INFORMS Innovative Applications in Analytics Award (1st Prize)
Highly Commended Solution for the Trinity Challenge
- 2020** INFORMS Pierskalla Best Paper Award (Health Applications)
Mixed Integer Programming (MIP) Workshop Best Student Poster Competition Finalist
- 2018** INFORMS MSOM Practice-Based Paper Competition Finalist
- 2015, 2016** Christine and Hermann Bondi Prize for Mathematics (Top of College)
- 2015** Finalist in Mathematical Competition in Modeling (Top 0.2%)
- 2014** Longmeng Scholarship (Surpassing All-time High School Academic Record)

Teaching Experience

- 2021 Fall** **Massachusetts Institute of Technology, Cambridge, MA**
Teaching Assistant for MBA core class Data, Models, and Decisions (15.060)
- 2020 Fall** **Massachusetts Institute of Technology, Cambridge, MA**
Head Teaching Assistant for Machine Learning under a Modern Optimization Lens (15.095)
Led a group of 4 TAs to help design, prepare, and teach an online/in-person hybrid teaching class for a core class of Master of Business Analytics (MBAn) and PhDs. Student Rating: 6.8/7.0
- 2019 Fall** **Massachusetts Institute of Technology, Cambridge, MA**
Teaching Assistant for Machine Learning under a Modern Optimization Lens (15.095)
Student Rating: 6.2/7.0
- 2019 Spring** **Massachusetts Institute of Technology, Cambridge, MA**
Teaching Assistant for The Analytics Capstone (15.089)
Mentored two MBAn students on capstone project with Quest Diagnostics. (Course not rated)

Work Experience

- 2019–Present** **Lineage Logistics, San Francisco, CA**
Machine Learning Scientist
· Led development of Lineage Logistics' first machine learning system to predict duration-of-stay of shipments; Patent Granted (USPTO Patent Number: 10,796,278, Second Named Inventor)
- 2018** **StubHub (Ebay), San Francisco, CA**
Machine Learning & Quantitative Analyst
· Led development of StubHub's first machine learning system to predict ticket pricing
- 2017** **Boston Consulting Group, London, UK**
Summer Associate
- 2016** **J.P. Morgan Chase, London, UK**
Structuring Intern

Selected Talks

- 2020-21** **Data-Driven COVID-19 Vaccine Development for Janssen**
INFORMS 2021 Doing Good with Good OR Finalist (Session: VSA84)
- Forecasting COVID-19 with Application to Vaccine Trial Design**
INFORMS 2021 Annual Meeting (Session: VWD12) & Healthcare Meeting
ACM SIGMETRICS 2021 "Highlights beyond Sigmetrics"
- Experimental Evaluation of Individualized Treatment Rules**
Joint Statistical Meetings 2020, Invited Session
Atlantic Causal Inference Conference 2020 (Postponed)
- DELPHI: Modeling the COVID-19 Crisis**
INFORMS 2020 Annual Meeting
Cambridge University Judge Business School Seminar
University of Southampton CORMSIS Seminar
Swiss Re COVID-19 Summit
- 2018-19** **Fast Exact Matrix Completion: A Unifying Optimization Framework**
INFORMS 2018, 2019 Annual Meeting
- 2017** **Selecting Children with VUR Who Are Likely to Benefit from Antibiotic Prophylaxis**
INFORMS 2017 Annual Meeting

Service and Outreach

- 2021** Operations Research Seminar Co-Organizer
- 2020–2021** Student Representative of the MIT Legal, Ethical, and Equity Committee
- 2018–Present** Reviewer for European Journal of Operational Research, OMEGA, Preventive Medicine, Harvard Data Science Review, Management Science, and PLOS One

Professional Qualifications and Activities

Fellow of the Institute and Faculty of Actuaries
Programming: Python, Julia, R, Matlab, SQL
Optimization/Machine learning: Gurobi, Tensorflow, Pytorch, CPLEX
Languages: Mandarin, English (Native), Japanese (Intermediate, N3)
Interests: Piano (ABRSM Grade 8), Swimming, Diving, Mountain Biking

- Citizenship** Citizen of Canada