

Arthur Delarue
Assistant Professor
H. Milton Stewart School of Industrial and Systems Engineering
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Earned Degrees

Ph.D. 06/2021 Massachusetts Institute of Technology *Operations Research*
Advisor: Prof. Dimitris Bertsimas
S.B. 06/2016 Massachusetts Institute of Technology *Physics and Mathematics*

Employment History

| | | |
|--------------------------------|--|-----------------|
| Assistant Professor | H. Milton Stewart School of Industrial and Systems Engineering, College of Engineering Georgia Institute of Technology | 08/2022–present |
| Postdoctoral Fellow | Lyft Rideshare Labs | 06/2021–07/2022 |
| Research/Teaching Asst. | Operations Research Center Massachusetts Institute of Technology | 06/2016–06/2021 |
| Research Intern | Google (Operations Research team) | 06/2019–05/2020 |

I. Honors and Awards

A. International or National Awards

- INFORMS¹ William Pierskalla Award for Best Paper in Health Care, 2020. Received for the paper “From Predictions to Prescriptions: A Data-Driven Response to COVID-19”.
- INFORMS Data Mining Section Best Student Paper, Finalist, 2019. Received for the paper “The Price of Interpretability”.
- INFORMS Franz Edelman Laureate, 2019. Received for the paper “Bus Routing Optimization Helps Boston Public Schools Design Better Policies”.
- INFORMS Doing Good with Good OR Competition, Second Place, 2018. Received for the paper “Optimizing schools’ start times and bus routes”.
- Boston Public Schools Transportation Challenge, First Place, 2017 (\$30,000 prize).

B. Institute or School Awards

- Student Recognition of Excellence in Teaching: Fall 2022 CIOS Honor Roll (Georgia Tech).

C. Student Awards

- MIT William L. Stewart Award for outstanding contributions to extracurricular activities and events, 2020.

¹Institute for Operations Research and Management Science (national professional society).

- MIT LIDS Student Conference Best Presentation, Second Place, 2019. Received for the paper “Optimizing schools’ start times and bus routes”.
- MIT Operations Research Center Best Student Paper Award, 2018. Received for the paper “Optimizing Schools’ Start Time and Bus Routes”.
- William Asbjornsen Albert Memorial Fellowship, 2016.
- Zeno Karl Schindler Foundation Research Grant, 2014.
- Third prize in Latin from “Concours général des lycées” (French national contest for high school students).

II. Research, Scholarship, and Creative Activities

A. Refereed Publications and Submitted Articles

A.1. Published and Accepted Journal Articles

- [J6] Dimitris Bertsimas, Arthur Delarue. “Policy Analytics in Public School Operations”, *Operations Research* 71(1):289-313.
- [J5] Cynthia Barnhart, Dimitris Bertsimas, Arthur Delarue, Julia Yan. “Course Scheduling Under Sudden Scarcity: Applications to Pandemic Planning”, *Manufacturing & Service Operations Management* 24(2): 727-745 (2022).
- [J4] Dimitris Bertsimas, Leonard Boussiou, Ryan Cory-Wright, Arthur Delarue, Vassilis Digalakis, Alexandre Jacquillat, Driss Lahlou Kitane, Galit Lukin, Michael Li, Luca Mingardi, Omid Nohadani, Agni Orfanoudaki, Theodore Papalexopoulos, Ivan Paskov, Jean Pauphilet, Omar Skali Lami, Bartolomeo Stellato, Hamza Tazi Bouardi, Kimberly Villalobos Carballo, Holly Wiberg, Cynthia Zeng. “From Predictions to Prescriptions: A Data-Driven Response to COVID-19”. *Health Care Management Science* 24, 253-272 (2021).
- [J3] Dimitris Bertsimas, Arthur Delarue, William Eger, John Hanlon, Sebastien Martin. “Bus Routing Optimization Helps Boston Public Schools Design Better Policies”, *INFORMS Journal of Applied Analytics* 50(1):37-49 (2020).
- [J2] Dimitris Bertsimas, Arthur Delarue, Sebastien Martin. “Optimizing Schools’ Start Time and Bus Routes”, *Proceedings of the National Academy of Sciences* 116(13):5943-5948 (2019).
- [J1] Dimitris Bertsimas, Arthur Delarue, Patrick Jaillet, Sebastien Martin. “Travel Time Estimation in the Age of Big Data”, *Operations Research* 67(2): 498-515 (2019).

A.2. Conference Presentations with Proceedings (Refereed)

- [C1] Arthur Delarue, Ross Anderson, Christian Tjandraatmadja. “Reinforcement Learning with Combinatorial Actions: Application to Vehicle Routing”, in *Advances in Neural Information Processing Systems (NeurIPS 2020)*. [Acceptance Rate 20%]

A.3. Other Refereed Material

- [O1] Ido Bright, Arthur Delarue, Ilan Lobel, “Reducing Marketplace Interference Bias Via Shadow Prices”, ACM Conference on Economics and Computation (EC), 2023. [Acceptance Rate 28%]

A.4. Submitted Journal Articles

- [SJ3] Dimitris Bertsimas, Arthur Delarue, Jean Pauphilet, “Adaptive Optimization for Prediction with Missing Data”. Submitted.
- [SJ2] Arthur Delarue, Zhen Lian, Sebastien Martin, “Algorithmic Precision and Human Decision: A Study of Interactive Optimization for School Schedules”. Revise & Resubmit at *Management Science*.
- [SJ1] Ido Bright, Arthur Delarue, Ilan Lobel, “Reducing Marketplace Interference Bias Via Shadow Prices”, Minor Revision in *Management Science*.

A.5. Submitted Conference Articles

- [SC3] Arthur Delarue, Kleanthis Karakolios, “Heterogeneous Treatment Effects in Matching Marketplaces Under Interference: From Estimation to Decision”. Submitted.
- [SC2] Dimitris Bertsimas, Arthur Delarue, Jean Pauphilet, “Simple Imputation Rules for Prediction with Missing Data: Contrasting Theoretical Guarantees with Empirical Performance”. Submitted.
- [SC1] Puneet Singh Bagga, Arthur Delarue, “Solving the Quadratic Assignment Problem Using Deep Reinforcement Learning”. Submitted.

B. Other Publications and Creative Products

B.1. Dissertations

- [D1] Arthur Delarue, “Optimizing School Operations”, Ph.D. Dissertation, Operations Research, Massachusetts Institute of Technology, 6/2021.

C. Presentations

C.1. Keynote Addresses and Plenary Lectures

- [K1] Reducing Marketplace Interference Bias Via Shadow Prices (Plenary Talk), YinzOR Student Conference, Carnegie Mellon University, August 26-27, 2022.

C.2. Invited Conference and Workshop Presentations

- [IP6] Reducing Marketplace Interference Bias Via Shadow Prices, Summer Workshop on Innovations in the Management Sciences, Halkidiki, Greece, July 2023.
- [IP5] Reducing Marketplace Interference Bias Via Shadow Prices, POMS Annual Meeting, Orlando, FL, May 2023.
- [IP4] Interactive Optimization for Public Policy: Improving School Schedules in San Francisco, INFORMS Annual Meeting, Innovations in Public Transit Workshop, Indianapolis, IN, October 2022.
- [IP3] Optimizing School Operations, Kellogg-Wharton OM Workshop (Virtual), June 2020.
- [IP2] Analytics for Public Schools, Data as a Resource Workshop, Center for Strategic and Budgetary Assessments, Washington, DC, September 2019.
- [IP1] 8 Months on a School Bus: Analytics for Public Policy, MIT Operations Research Center Seminar on Operations Research for Social Good, Cambridge, MA, January 2018.

C.3. Submitted Conference and Workshop Presentations

- [SP12] Reducing Marketplace Interference Bias Via Shadow Prices, ACM Conference on Economics and Computation (EC), London, UK, July 2023.
- [SP11] Reducing Marketplace Interference Bias Via Shadow Prices, INFORMS Annual Meeting, Indianapolis, IN, October 2022.
- [SP10] Interactive Optimization for Public Policy: Improving School Schedules in San Francisco, Society for Research on Educational Effectiveness, Arlington, VA, September 2022.
- [SP9] Reducing Marketplace Interference Bias Via Shadow Prices, INFORMS Revenue Management & Pricing Conference (Virtual), June 2022.
- [SP8] Prediction with Missing Data, INFORMS Annual Meeting, Data Mining Workshop (Virtual), October 2020.
- [SP7] From Assignment to Routing: Optimizing Public School Operations, INFORMS Annual Meeting (Virtual), October 2020.
- [SP6] Ventilator Allocation and Policy Evaluation, INFORMS Annual Meeting (Virtual), October 2020.
- [SP5] The Price of Interpretability, INFORMS Annual Meeting, Seattle, WA, October 2019.
- [SP4] From Transportation to Policy: Optimizing School Start Times and Bus Routes, INFORMS Annual Meeting, Seattle, WA, October 2019.
- [SP3] Finding Equitable Start Times for Boston Public Schools, INFORMS Annual Meeting, Phoenix, AZ, October 2018.
- [SP2] Travel Time Estimation in the Age of Big Data, International Symposium on Mathematical Programming (ISMP), Bordeaux, FR, July 2018.
- [SP1] Travel Time Estimation in the Age of Big Data, INFORMS Annual Meeting, Houston, TX, October 2017.

C.4. Invited Seminar Presentations

- [IS10] Optimizing School Start Times: Failures and Successes from Coast to Coast, University of British Columbia, Sauder School of Business, February 2023.
- [IS9] Policy Analytics in Public School Operations, Lyft, Inc, Rideshare Labs, March 2021.
- [IS8] Policy Analytics in Public School Operations, Cornell University, Johnson School of Management, January 2021.
- [IS7] Policy Analytics in Public School Operations, Columbia Business School, Decisions, Risk and Operations Department, January 2021.
- [IS6] Policy Analytics in Public School Operations, Boston University, Questrom School of Business, January 2021.
- [IS5] Policy Analytics in Public School Operations, University of California Los Angeles (UCLA), Anderson School of Management, January 2021.
- [IS4] Policy Analytics in Public School Operations, Georgia Institute of Technology, H. Milton Stewart School of Industrial and Systems Engineering, December 2020.

- [IS3] Policy Analytics in Public School Operations, Naval Postgraduate School, Operations Research Department, November 2020.
- [IS2] Families Over Algorithms: Are We Better Off Using Optimization to Choose School Start Times and Bus Routes?, Google Research, Cambridge, MA, July 2019.
- [IS1] Driving Policy with Optimization, Massachusetts Institute of Technology, Operations Research Center, October 2018.

D. Grants and Contracts

D.1. As Co-Principal Investigator

1. Title of Project: Data-Driven Optimal Police Patrol Zone Districting and Staffing
 Agency/Company: NSF
 Total Dollar Amount: \$564,547
 Role: Co-PI (replacing former co-PI George Nemhauser)
 Collaborators: He Wang (PI), Yao Xie (Co-PI)
 Period of Contract: 10/2020–9/2023
 Candidate’s Share: 5% (\$20,000)

III. Education

A. Courses Taught

A.1. Complete Courses

| Semester | Course Number | Course Title | Students |
|-------------|---------------|---------------------------------|----------|
| Fall 2022 | ISyE 6673 | Financial Optimization | 63 |
| Spring 2023 | ISyE 3133 | Engineering Optimization Studio | 34 |
| Fall 2023 | ISyE 6673 | Financial Optimization | 51 |

A.2. Guest Lectures

5. Optimizing Schools’ Start Time and Bus Routes
 Course: Transportation Analytics and Logistics (Columbia IEOR)
 Semester: Spring 2022
 Level: Undergraduate
 Instructor: Adam Elmachtoub
4. Optimizing Schools’ Start Time and Bus Routes
 Course: Policy Analysis for Transnational Affairs (Harvard Kennedy School)
 Semester: Spring 2021
 Level: Masters
 Instructor: Matthew Bunn
3. Optimization in Practice: Pandemic Course Scheduling
 Course: Data, Models and Decisions (MIT Sloan)
 Semester: Fall 2020
 Level: MBA
 Instructor: Amr Farahat

2. Optimization for Public Schools
 - Course: Optimization Methods in Business Analytics (MIT Sloan)
 - Semester: Spring 2019, Spring 2020, Spring 2021
 - Level: Undergraduate
 - Instructors: Martin Copenhaver, Jim Orlin

1. From School Buses to Start Times: Driving Policy with Optimization
 - Course: The Analytics Edge (MIT Sloan)
 - Semester: Spring 2018, Spring 2019, Fall 2019
 - Level: MBA
 - Instructors: Dimitris Bertsimas, Robert Freund, Alexandre Jacquillat

B. Individual Student Guidance

B.1. Ph.D. Students

B.1.b. In Process

1. Name: Kleanthis Karakolios
Tentative Thesis Title: TBD
Advising Start Date: Fall 2022.

2. Name: Weiqing (Lynn) Xu
Tentative Thesis Title: TBD
Advising Start Date: Spring 2022.

3. Name: Olivia Phillips
Tentative Thesis Title: TBD
Advising Start Date: Fall 2023.

B.2. Undergraduate Students

1. Name: Puneet S. Bagga
Advised: Fall 2022 - present

B.3. Service on Thesis or Dissertation Committees

B.4.a Internal

| Student Name | School | Advisor | Committee | Date |
|----------------------|--------|------------------|--------------|--------------|
| Yujia Xu | ISyE | Benoit Montreuil | ML Qual | April 2022 |
| Guantao Zhao | ISyE | Nicoleta Serban | ML Qual | April 2023 |
| Cindy Azuero Pedraza | ISyE | Valerie Thomas | Dissertation | June 2023 |
| Yujia Xu | ISyE | Benoit Montreuil | Proposal | January 2024 |

IV. Service

A. Professional Contributions

A.1. Society Officers, Activities, and Membership

- Membership:
 1. INFORMS: Institute for Operations Research and Management Science (2017 - present)
 2. IISE: Institute of Industrial and Systems Engineers (2022 - present)
 3. SREE: Society for Research on Educational Effectiveness (2022)

A.2. Organization and Chairmanship of Technical Sessions, Workshops and Conferences

- Member of Organizing Committee for Conferences and Workshops:
 1. Workshop Co-Chair for INFORMS Future of OR and Analytics Workshop, Indianapolis, IN, 2022
- Organizing Technical Sessions:
 1. INFORMS Annual Meeting 2022, Indianapolis, IN (co-chair: Julia Yan)
 2. INFORMS Annual Meeting 2021 (Virtual, co-chair: Vassilis Digalakis)
 3. INFORMS Annual Meeting 2020 (Virtual)

A.3. Technical Journal or Conference Referee Activities

- Technical Journal Referee: Operations Research, Management Science, Manufacturing & Service Operations Management, Transportation Science, Transportation Research Part C: Emerging Technologies, Service Science, Wireless Networks.
- Conference Referee: IEEE International Conference on Robotics and Automation (2022), INFORMS Transportation & Logistics Society Conference (2023)

B. Institute Contributions

B.1. School Committee Service

1. Graduate Student Admission Committee - 2021–present.

B.2. Service as a Student

1. Graduate Residential Advisor, Simmons Hall, Massachusetts Institute of Technology (2018-2021)
2. Resource for Easing Friction and Stress (REFS), MIT Operations Research Center (2017-2021)