

MERVE BODUR

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(Last updated on October, 2023)

EDUCATION

- **University of Wisconsin-Madison**, Madison, WI
 - Ph.D. in Industrial and Systems Engineering 2015
 - ▷ Dissertation: On Valid Inequalities for Polyhedra in Extended and Projected Spaces with Application to Two-Stage Stochastic Integer Programming
 - ▷ Advisor : James R. Luedtke
 - M.S. in Computer Sciences 2014
 - M.S. in Industrial and Systems Engineering 2014
- **Bogazici University**, Istanbul, Turkey
 - B.S. in Industrial Engineering 2011
 - B.A. in Mathematics 2011

APPOINTMENTS

- **University of Edinburgh (UoE)**, Edinburgh, United Kingdom
 - Reader (Associate Professor) in Operational Research, School of Mathematics 2023 - present
- **Toronto Metropolitan University (TMU)**, Toronto, Ontario, Canada
 - Adjunct Professor, Mechanical and Industrial Engineering 2023 - Present
- **University of Toronto (UofT)**, Toronto, Ontario, Canada
 - Adjunct Professor, Mechanical and Industrial Engineering 2023 - Present
 - Assistant Professor, Mechanical and Industrial Engineering (MIE) 2017 - 2023
 - Dean's Spark Professor 2018 - 2021
 - Faculty Associate of Centre for Healthcare Engineering at the UofT 2017 - Present
 - Faculty Associate of the UofT Transportation Research Institute 2019 - Present
 - Faculty Associate of the Smart Freight Centre 2019 - Present
- **Georgia Institute of Technology**, Atlanta, Georgia
 - Postdoctoral researcher 2015 - 2017
 - Advisors: Professors Shabbir Ahmed, Natashia Boland and George L. Nemhauser
- **IBM T.J. Watson Research Center**, Yorktown Heights, New York
 - Intern (for 3 months), Mathematical Sciences Department 2014
 - Intern (for 3 months), Mathematical Sciences Department 2013
 - Mentors: Drs. Sanjeeb Dash and Oktay Günlük

RESEARCH INTERESTS

Methodologies: Stochastic Programming, Robust Optimization, (Approximate) Dynamic Programming, Integer Programming, Combinatorial Optimization, Multiobjective Optimization, Inverse Optimization, Constraint Programming, Machine Learning

Application Areas: Decision Making Under Uncertainty, Healthcare, Transportation, Telecommunication, Service System Staffing and Scheduling, Power Systems, Networks

PREPRINTS

- [P1] M.P. Castro[‡], **M. Bodur**, and Y. Song, “Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming with an Application to Disaster Relief Logistics”, (2023) [[pdf](#)]
 - [P2] M. Daryalal*, A.N. Arslan, and **M. Bodur**, “Two-stage and Lagrangian Dual Decision Rules for Multistage Adaptive Robust Optimization”, (2023) [[pdf](#)]
 - [P3] N. Tanoumand*, **M. Bodur**, and J. Naoum-Sawaya, “Data-driven Distributionally Robust Optimization: Intersecting Ambiguity Sets, Performance Analysis and Tractability”, (2023) [[pdf](#)]
 - [P4] C. Guo*, **M. Bodur**, and J. Taylor, “Copositive Duality for Discrete Energy Markets”, (2023) [[pdf](#)]
 - [P5] C. Riascos*, **M. Bodur**, and D. Aleman, “A Feasibility Look to Two-stage Robust Optimization in Kidney Exchange”, (2023) [[pdf](#)]
 - [P6] A. Dehghan-Kooshkghazi*, M. Cevik, and **M. Bodur**, “An Enhanced Approximate Dynamic Programming Approach to On-demand Ride Pooling”, (2023) [[pdf](#)]
 - [P7] N. Sereshti, **M. Bodur**, and J. Luedtke, “Stochastic Dynamic Lot-sizing with Supplier-Driven Substitution and Service Level Constraints”, (2022) [[pdf](#)]
 - [P8] M. MacNeil*, and **M. Bodur**, “Leveraging Decision Diagrams to Solve Two-stage Stochastic Programs with Binary Recourse and Logical Linking Constraints”, (2022) [[pdf](#)]
 - [P9] K. Mousavi*, **M. Bodur**, M. Cevik, and M.J. Roorda, “Approximate Dynamic Programming for Crowd-shipping with In-store Customers”, (2022) [[pdf](#)]
 - [P10] Z. Ansarilari*, **M. Bodur**, and A. Shalaby, “A Novel Model for Transfer Synchronization in Transit Networks and a Lagrangian-based Heuristic Solution Method”, (2022) [[pdf](#)]
 - [P11] C. Guo*, H. Nagarajan, and **M. Bodur**, “Tightening Quadratic Convex Relaxations for the AC Optimal Transmission Switching Problem”, (2022) [[pdf](#)]
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REFEREED JOURNAL PUBLICATIONS

- [J1] **M. Bodur**, M. Cevik, A.A. Cire, M. Ruschin, and J. Wang*, “Multistage Stochastic Fractionated Intensity Modulated Radiation Therapy Planning”, *Computers and Operations Research*, (2023) [[url](#)]
- [J2] C. Riascos*, **M. Bodur**, and D. Aleman, “A Branch-and-Price Algorithm Enhanced by Decision Diagrams for the Kidney Exchange Problem”, *Manufacturing & Service Operations Management*, (2023) [[pdf](#)]
- [J3] O. Şeker[‡], **M. Bodur**, and H. Pouya[‡], “Routing and Wavelength Assignment with Protection: A Quadratic Unconstrained Binary Optimization Approach Enabled by Digital Annealer Technology”, *IIE Transactions*, 1-26 (2023) [[url](#)]
- [J4] O. Şeker[‡], M. Cevik, **M. Bodur**, Y. Lee-Bartlett, and M. Ruschin, “A Multiobjective Approach for Sector Duration Optimization in Stereotactic Radiosurgery Treatment Planning”, *INFORMS Journal on Computing*, (2022) [[url](#)]
- [J5] M. Daryalal*, **M. Bodur**, and J. Luedtke, “Lagrangian Dual Decision Rules for Multistage Stochastic Mixed Integer Programming”, *Operations Research*, (2022) [[url](#)]
(2021 CORS Open Student Paper Competition Finalist)
- [J6] O. Şeker[‡], N. Tanoumand*, and **M. Bodur**, “Digital Annealer for Quadratic Unconstrained Binary Optimization: A Comparative Performance Analysis”, *Applied Soft Computing*, 127: 109367 (2022) [[url](#)]

- [J7] M. Anderson*, **M. Bodur**, S. Rathwell**, and V. Sarhangian, “Optimization Helps Scheduling Nursing Staff at the Long-Term Care Homes of the City of Toronto”, *INFORMS Journal of Applied Analytics*, 53(2): 133-154 (2023) [[url](#)]
- [J8] M. Daryalal*, and **M. Bodur**, “Stochastic RWA and Lightpath Rerouting in WDM Networks”, *INFORMS Journal on Computing*, 34(5): 2383-2865 (2022) [[url](#)]
- [J9] C. Guo*, **M. Bodur**, and D. Papageorgiou, “Generation Expansion Planning with Revenue Adequacy Constraints”, *Computers and Operations Research*, 142: 105736 (2022) [[url](#)]
- [J10] Z. Ansarilari*, M.M. Nesheli[‡], **M. Bodur**, and A. Shalaby, “Transfer Time Optimization in Public Transit Networks: Assessment of Alternative Models”, *Transportmetrica A: Transport Science*, 19(3): 2056655 (2023) [[url](#)]
- [J11] **M. Bodur**, S. Ahmed, N. Boland, and G. L. Nemhauser, “Decomposition for loosely coupled integer programs: A multiobjective perspective”, *Mathematical Programming*, 196: 427-477 (2022) [[url](#)]
- [J12] **M. Bodur**, T.C.Y. Chan, and I.Y. Zhu*, “Inverse Mixed Integer Optimization: Polyhedral Insights and Trust Region Methods”, *INFORMS Journal on Computing*, 34(3): 1305-1840 (2022) [[url](#)]
(First Place at the 2022 CORS Open Student Paper Competition) (alphabetical order)
- [J13] J. Wang*, M. Cevik, and **M. Bodur**, “On the Impact of Deep Learning-based Time-series Forecasts on Multistage Stochastic Programming Policies”, *INFOR: Information Systems and Operational Research*, 60(2): 133-164 (2022) [[url](#)]
- [J14] K. Mousavi*, **M. Bodur**, and M.J. Roorda, “Stochastic Last-mile Delivery with Crowd-shipping and Mobile Depots”, *Transportation Science*, 56(3): 567-798 (2022) [[url](#)]
- [J15] M. MacNeil*, and **M. Bodur**, “Constraint Programming Approaches to the Discretizable Molecular Distance Geometry Problem”, *Networks*, 79(4): 515-536 (2022) [[url](#)]
- [J16] D. Bergman, **M. Bodur**, C. Cardohna, and A.A. Cire, “Network Models for Multiobjective Discrete Optimization”, *INFORMS Journal on Computing*, 34(2): 990-1005 (2022) [[url](#)] (alphabetical order)
(Honorable Mention in MCDM Junior Researcher Best Paper Award Competition)
- [J17] M. MacNeil*, and **M. Bodur**, “Integer Programming, Constraint Programming, and Hybrid Decomposition Approaches to Discretizable Distance Geometry Problems”, *INFORMS Journal on Computing*, 34(1): 297-314 (2022) [[url](#)]
- [J18] C. Guo*, **M. Bodur**, D. Aleman, and D. Urbach, “Logic-based Benders Decomposition and Binary Decision Diagram Based Approaches for Stochastic Distributed Operating Room Scheduling”, *INFORMS Journal on Computing*, 33(4): 1551-1569 (2021) [[url](#)]
- [J19] **M. Bodur**, A. Del Pia, S.S. Dey, and M. Molinaro, “Lower bounds on the lattice-free rank for packing and covering integer programs”, *SIAM Journal on Optimization*, 29(1): 55-76 (2019) [[url](#)] (alphabetical order)
- [J20] **M. Bodur**, and J. Luedtke, “Two-Stage Linear Decision Rules for Multi-stage Stochastic Programming”, *Mathematical Programming*, 191: 347-380 (2022) [[url](#)]
- [J21] **M. Bodur**, and J. Luedtke, “Integer Programming Formulations for Minimum Deficiency Interval Coloring”, *Networks*, 72(2): 249-271 (2018) [[url](#)]
- [J22] **M. Bodur**, A. Del Pia, S.S. Dey, M. Molinaro, and S. Pokutta, “Aggregation-based cutting-planes for packing and covering integer programs”, *Mathematical Programming*, 171(1-2): 331-359 (2018) [[url](#)] (alphabetical order)
- [J23] **M. Bodur**, S. Dash, and O. Günlük, “A new lift-and-project operator”, *European Journal of Operational Research*, 257(2): 420-428 (2017) [[url](#)]
- [J24] **M. Bodur**, S. Dash, and O. Günlük, “Cutting Planes from Extended LP Formulations”, *Mathematical Programming*, 161(1-2): 159-192 (2016) [[url](#)]

- [J25] **M. Bodur**, S. Dash, O. Günlük, and J. Luedtke, “Strengthened Benders Cuts for Stochastic Integer Programs with Continuous Recourse”, *INFORMS Journal on Computing*, 29(1): 77-91 (2016) [[url](#)]
- [J26] **M. Bodur**, and J. Luedtke, “Mixed-Integer Rounding Enhanced Benders Decomposition for Multi-class Service System Staffing and Scheduling with Arrival Rate Uncertainty”, *Management Science*, 63(7): 2073-2091 (2016) [[url](#)]
- [J27] **M. Bodur**, T. Ekim, and Z. C. Taşkın, “Decomposition Algorithms for Solving the Minimum Weight Maximal Matching Problem”, *Networks*, 62(4): 273-287 (2013) [[url](#)]

REFEREED CONFERENCE PUBLICATIONS

- [C1] J. Song*, A. Shalaby, and **M. Bodur**, “Extraboard Transit Operator Planning and Scheduling under Uncertainty”, *to appear in CD Proceedings of the 103th Annual Transportation Research Board Meeting (TRB)*, Washington, USA (2024)
- [C2] J. Dumouchelle*, R. Patel*, E.B. Khalil, and **M. Bodur**, “Neur2SP: Neural Two-Stage Stochastic Programming”, *Proceedings of the 36th Annual Conference on Advances in Neural Information Processing Systems (NeurIPS)* (2022) [[pdf](#)]
- [C3] N. Prayogo**, M. Cevik, and **M. Bodur**, “Time Series Sampling for Probabilistic Forecasting”, *Proceedings of the 30th Annual International Conference on Computer Science and Software Engineering (CASCON)*, Toronto, Canada (2020) [[url](#)]
- [C4] Z. Ansarilari*, M. M. Nesheli[‡], **M. Bodur**, A. Shalaby, and S. Srikukenthiran, “Improving Transfer Time Optimization Modelling for Public Transit Systems”, *CD Proceedings of the 99th Annual Transportation Research Board Meeting (TRB)*, Washington, USA (2020) [[pdf](#)]
- [C5] Z. Ansarilari*, M. M. Nesheli[‡], S. Srikukenthiran, **M. Bodur**, and A. Shalaby, “Multi-Directional Transfer Time Optimization at a Single Transfer Node”, *CD Proceedings of the 14th Conference on Advanced Systems for Public Transport (CASPT)*, Brisbane, Australia (2018) [[url](#)]

PATENT

- Z. Ansarilari*, M.M. Nesheli[‡], S. Srikukenthiran, **M. Bodur**, and A. Shalaby, “Comprehensive Transfer Time Optimization Tool”. Disclosure Reference No: 10003810. Disclosure date: July 23, 2019.

PRESENTATIONS

Invited Talks at Academic Institutions

1. *Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming*, HEC Montréal and GERAD, Montréal, QC, Canada, May 2023.
2. *Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming*, North Carolina State University, 2023.
3. *Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming*, Texas Tech University, virtual, 2023.
4. *Leveraging Decision Diagrams to Solve Two-stage Stochastic Programs with Binary Recourse and Logical Linking Constraints*, Institut de Mathématiques de Bordeaux, Université de Bordeaux, France, 2022.
5. *Lagrangian Dual Decision Rules for Multistage Stochastic Mixed-Integer Programming*, Koc University, virtual, 2021.
6. *Copositive Duality for Discrete Markets and Games*, DeGroote School of Business, McMaster University, Burlington, Ontario, Canada, virtual, 2021.

7. *Copositive Duality for Discrete Markets and Games*, Paul Merage School of Business, University of California - Irvine, CA, USA, virtual, 2021.
8. *Copositive Duality for Discrete Markets and Games*, Bogazici University, Istanbul, Turkey, virtual, 2021.
9. *Copositive Duality for Discrete Markets and Games*, University of Minnesota, Minneapolis, MN, USA, virtual, 2021.
10. *Copositive Duality for Discrete Markets and Games*, Rotman School of Management, University of Toronto, ON, Canada, 2020.
11. *Two-stage (Dual) Linear Decision Rules for Multi-stage Stochastic (Integer) Programming*, University of Waterloo, ON, Canada, 2019.
12. *Aggregation-based Cutting-planes for Packing and Covering Integer Programs*, University of Waterloo, ON, Canada, 2018.
13. *Integer Programming Formulations for Minimum Deficiency Interval Coloring*, Pontificia Universidad Católica de Chile, Santiago, Chile, 2018.
14. *Integer Programming: Logical Constraints and Better Formulations*, Universidad Adolfo Ibañez, Santiago, Chile, 2018.
15. *Improved Decomposition Algorithms for Two-Stage Stochastic Integer Programs*, Bogazici University, Istanbul, Turkey, 2018.
16. *Two-stage (Dual) Linear Decision Rules for Multi-stage Stochastic (Integer) Programming*, University of British Columbia, Vancouver, BC, Canada, 2018.
17. *Two-stage (Dual) Linear Decision Rules for Multi-stage Stochastic (Integer) Programming*, Universidad Adolfo Ibañez, Santiago, Chile, 2017.
18. *Two-stage Linear Decision Rules for Multi-stage Stochastic Programming*, Pontificia Universidad Católica de Chile, Santiago, Chile, 2017.
19. *Improved Decomposition Algorithms for Two-Stage Stochastic Integer Programs*, Clemson University, Clemson, SC, USA, 2015.

Other Invited Talks

1. *Neural Approximate Dynamic Programming for the Ultra-fast Delivery Problem*, Workshop on Recent Advances in Optimization, Fields Institute, Toronto, Canada, October 2023.
2. *Neural Approximate Dynamic Programming for the Ultra-fast Delivery Problem*, Cargese-Porquerolles Workshop on Combinatorial Optimization (with the theme of Machine Learning and Discrete Optimization), Porquerolles, France, September 2023.
3. Short research announcement talk, *Copositive Duality for Discrete Energy Markets*, Mixed-integer Nonlinear Optimization: A Hatchery for Modern Mathematics Workshop, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, August 2023.
4. **Plenary talk**, *A Walk Through the ACOPF World*, Mixed-integer Nonlinear Optimization: A Hatchery for Modern Mathematics Workshop, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, August 2023.
5. **Tutorial session**, *Benders Decomposition Based Approaches in Two-stage Stochastic Integer Programming*, Distributed Computing and Decomposition Methods for Optimization Under Uncertainty, International Conference on Stochastic Programming, Davis, CA, USA, July 2023.
6. *Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming*, Linear and Non-Linear Mixed Integer Optimization Workshop, Institute for Computational and Experimental Research in Mathematics (ICERM) at Brown University, Providence, RI, USA, February 2023.

7. *Two-stage and Lagrangian Dual Decision Rules for Multistage Adaptive Robust Optimization*, Aussois Combinatorial Optimization Workshop, CNRS Centre Paul Langevin, Aussois, France, January 2023.
8. *Two-stage and Lagrangian Dual Decision Rules for Multistage Adaptive Robust Optimization*, Workshop on Recent Advances in Optimization, Fields Institute, Toronto, Canada, December 2022.
9. **Plenary talk**, *Methodological Advances in Two-stage Stochastic Programming*, Workshop to Celebrate 20 Years of Solving Constraint Integer Programs (SCIP), Zuse Institute Berlin, Germany, November 2022.
10. *Lagrangian Dual Decision Rules for Sequential Decision-making Under Uncertainty*, OPTiMA AI-based Optimisation Seminar Series, virtual, 2022.
11. *A Binary Decision Diagram Approach to a Special Class of Two-stage Stochastic Programs*, Autumn School on Decision Diagrams, virtual, 2021.
12. *Lagrangian Dual Decision Rules for Multistage Stochastic Mixed-Integer Programming*, CRM Workshop on Decision Making under Uncertainty, virtual, 2021.
13. *Integer Programming, Constraint Programming, and Hybrid Decomposition Approaches to DDGPs*, Mini-symposium on Sensor Network Localization and Dynamical Distance Geometry, virtual, 2021.
14. *Stochastic Decision Making in Optical Networks*, Group for Applied Mathematical Modeling and Analytics (GAMMA) Seminar Series, virtual, 2021.
15. *Copositive Duality for Discrete Markets and Games*, Systems, Information, Learning and Optimization (SILO) Seminar Series, virtual, 2021.
16. *Inverse Mixed Integer Optimization: Polyhedral Insights and Trust Region Methods*, Discrete Optimization Talks (DOTs), virtual, 2021.
17. *Incentive Compatibility for Power System Planning*, ISE Symposium at University of Toronto, Toronto, ON, Canada, 2020.
18. **Semi-plenary talk**, *Linear Decision Rules for Multistage Stochastic Programming*, XV International Conference on Stochastic Programming, Trondheim, Norway, 2019.
19. *Modeling Optimization Problems via Stochastic Programming*, UT-ITE Seminar Series, 2019, Toronto, ON, Canada.
20. *Network Models for Multiobjective Discrete Optimization*, Conference on Optimization, Fields Institute, Toronto, ON, Canada, 2019.
21. *Linear Decision Rules for Multistage Stochastic Programming*, Data Science Lab Seminars at Ryerson University, Toronto, ON, Canada, 2019.
22. *Network Models for Multiobjective Discrete Optimization*, Data Science Lab Seminars at Ryerson University, Toronto, ON, Canada, 2019.
23. *Cutting Planes from Extended LP Formulations*, Industrial Optimization Seminar, the Fields Institute, Toronto, ON, Canada, 2019.
24. *Integrated Staffing and Scheduling for Service Systems via Stochastic Integer Programming*, UT-ITE Seminar Series, 2018, Toronto, ON, Canada.
25. *Decomposition for Loosely Coupled Integer Programs: A Multiobjective Perspective*, Mixed Integer Programming Workshop 2016, Coral Gables, FL, USA.
26. *Decomposition for Loosely Coupled Integer Programs: A Multiobjective Perspective*, ISyE DOS Optimization Seminars 2016, Atlanta, GA, USA.

Conferences, Workshops, Meetings

1. *Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming*, INFORMS 2023 Annual Meeting, Phoenix, AZ, USA, 2023.
2. *Markov Chain-based Policies for Multi-stage Stochastic Integer Linear Programming*, XVI International Conference on Stochastic Programming, Davis, CA, USA, 2023.
3. *On Novel Primal And Dual Bounding Techniques For Multistage Adaptive Robust Optimization*, INFORMS 2022 Annual Meeting, Indianapolis, IN, USA, 2022.
4. *Network Models For Multiobjective Discrete Optimization*, INFORMS 2022 Annual Meeting, Indianapolis, IN, USA, 2022.
5. *Stochastic Dynamic Lot Sizing with Substitution and Service Level Constraints*, CAIMS 2022, hybrid.
6. *Incorporating Service Reliability in MDVSP: A Chance-Constrained Approach*, Optimization Days 2022, Montréal, QC, Canada.
7. *Incorporating Service Reliability In Multi-depot Vehicle Scheduling: A Chance-constrained Approach*, INFORMS 2021 Annual Meeting, hybrid.
8. *Integer/Constraint Programming and Hybrid Decomposition Approaches to Discretizable Distance Geometry Problems*, 40th Congress on Operations Research - Industrial Engineering, virtual, 2021.
9. *Stochastic RWA and Lightpath Rerouting in WDM Networks*, CORS 2021, virtual.
10. *Stochastic Decision Making in Optical Networks*, INFORMS 2020 Annual Meeting, virtual.
11. *Combinatorial Benders Decompositions for Optimal Discretization Orders in Distance Geometry Problems*, INFORMS 2019 Annual Meeting, Seattle, WA, USA.
12. *A Lagrangian Dual Decision Rule Approach to Multistage Stochastic Service System Scheduling*, INFORMS 2019 Annual Meeting, Seattle, WA, USA.
13. *Network Models for Multiobjective Discrete Optimization*, Optimization Days 2019, Montréal, QC, Canada.
14. *Network Models for Multiobjective Discrete Optimization*, INFORMS 2018 Annual Meeting, Phoenix, AZ, USA.
15. *Dual Linear Decision Rules for Multi-stage Stochastic Integer Programming*, INFORMS 2018 Annual Meeting, Phoenix, AZ, USA.
16. *Network Models for Multiobjective Discrete Optimization*, Symposium on Decision Diagrams for Optimization, 2018, Pittsburgh, PA, USA.
17. *Aggregation-based Cutting-planes for Packing and Covering Integer Programs*, 23rd International Symposium on Mathematical Programming, Bordeaux, France, 2018.
18. *Decomposition for Loosely Coupled Integer Programs: A Multiobjective Perspective*, Optimization Days 2018, Montréal, QC, Canada.
19. *Two-Stage Linear Decision Rules for Multi-Stage Stochastic Programming*, INFORMS 2017 Annual Meeting, Houston, TX, USA.
20. *Two-Stage Linear Decision Rules for Multi-Stage Stochastic Programming*, IFORS Conference 2017, Québec City, QC, Canada.
21. *Two-Stage Linear Decision Rules for Multi-Stage Stochastic Programming*, Modern Convex Optimization Workshop 2017, Toronto, ON, Canada.
22. *Two-Stage Linear Decision Rules for Multi-Stage Stochastic Programming*, SIAM Conference on Optimization 2017, Vancouver, BC, Canada.

23. *Decomposition for Loosely Coupled Integer Programs: A Multiobjective Perspective*, INFORMS 2016 Annual Meeting, Nashville, TN, USA.
24. *Decomposition for Loosely Coupled Integer Programs: A Multiobjective Perspective*, University of Bergamo/Georgia Institute of Technology Workshop 2016, Atlanta, GA, USA.
25. *Cutting Planes from Extended LP Formulations*, INFORMS Optimization Society Conference 2016, Princeton, NJ, USA.
26. *Cutting Planes from Extended LP Formulations*, INFORMS 2015 Annual Meeting, Philadelphia, PA, USA.
27. *Cutting Planes from Extended LP Formulations*, ISyE DOS Optimization Seminars, 2015, Atlanta, GA, USA.
28. *Integrated Staffing and Scheduling for Service Systems via Stochastic Integer Programming*, 22nd International Symposium on Mathematical Programming, Pittsburgh, PA, USA, 2015.
29. *Strengthened Benders Cuts for Stochastic Integer Programs with Continuous Recourse*, INFORMS Computing Society Conference 2015, Richmond, VA, USA.
30. *Strengthened Benders Cuts for Stochastic Integer Programs with Continuous Recourse*, INFORMS 2014 Annual Meeting, San Francisco, CA, USA.
31. *Strengthened Benders Cuts for Stochastic Integer Programs with Continuous Recourse*, INFORMS Optimization Society Conference 2014, Houston, TX, USA.
32. *Strengthened Benders Cuts for Stochastic Integer Programs with Continuous Recourse*, Systems Information Learning Optimization (SILO) Seminars, 2013, Madison, WI, USA.
33. *Integrated Staffing and Scheduling for Service Systems via Stochastic Integer Programming*, INFORMS 2013 Annual Meeting, Minneapolis, MN, USA.
34. *Integer Programming Formulations for the Minimum Weighted Maximal Matching Problem*, 2nd Istanbul Design Theory, Graph Theory and Combinatorics Conference, Istanbul, Turkey, 2011.

Posters

1. *Aggregation-based cutting-planes for packing and covering integer programs*, Mixed Integer Programming Workshop 2016, Coral Gables, FL.
2. *Cutting Planes from Extended LP Formulations*, ACNW Optimization Workshop 2015, Chicago, IL, USA.
3. *Cutting Planes from Extended LP Formulations*, Mixed Integer Programming Workshop 2015, Chicago, IL, USA.
4. *Strengthened Benders Cuts for Stochastic Integer Programs with Continuous Recourse*, Mixed Integer Programming Workshop 2014, Columbus, OH, USA.
5. *A Stochastic Integer Programming Approach to Integrated Service System Staffing and Scheduling Problem*, Mixed Integer Programming Workshop 2013, Madison, WI, USA.

RESEARCH GRANTS and FUNDING

- **Mitacs Accelerate Grant, 2021** \$30,000
 Role: PI (co-PI: Prof. Amer Shalaby)
 Granting agency: Mathematics of Information Technology and Complex Systems
 Project title: *Stochastic Optimization Approach for the Multi Depot Vehicle Scheduling Problem*

- **NSERC Alliance Grant, 2020-2024**

Role: Co-applicant, lead of 1/24 projects (Main PI: Prof. Matthew Roorda)

Granting agency: Natural Sciences & Engineering Research Council of Canada

Project title: City Logistics Solutions for Distribution in the Last-mile Economy

Bodur portion: \$115,000
- **Dean's Strategic Fund, 2019-2021**

Role: 1/22 collaborators (PI: Prof. Amer Shalaby)

Granting agency: Faculty of Applied Science and and Engineering, University of Toronto

Project title: Transit Analytics Lab (TAL)

project total value: \$447,000
- **Canada Research Continuity Emergency Fund (for the Fujitsu project), 2020**

Granting agency: Tri-agency of Canadian Government (namely CIHR, NSERC, and SSHRC)

\$17,439
- **Canada Research Continuity Emergency Fund (for the LG project), 2020**

Granting agency: Tri-agency of Canadian Government (namely CIHR, NSERC, and SSHRC)

\$10,164
- **Connaught New Researcher Award, 2019-2020**

Project title: Optimizing Strategic Decisions for Electric Car Sharing Systems

\$20,000
- **France-Canada Research Fund, 2020-2022+2**

Role: PI (co-PI: Prof. Ayse Nur Arslan)

Project title: Data-driven decision rules for optimization under uncertainty

\$14,800
- **LG Sciencepark, 2019-2020**

Role: PI (co-PI: Prof. Mucahit Cevik)

Project title: Data Driven Prediction

\$175,000
- **Fujitsu Group, 2019-2020**

Project title: Optimization using a Digital Annealer: Performance Analyses and New Methodology Development for Scalability and Applicability

\$135,000
- **CIHR Spring Project Grant, 2019-2023**

Role: 1/8 co-applicants (PI: Dr. David Urbach)

Granting agency: Canadian Institutes of Health Research

Project title: Using Real-world Data to Simulate the Effects of Efficient Referral Strategies on Wait Times for Elective Surgery in Canada

project total value: \$673,200
- **Fujitsu Group, 2018-2019**

Project title: Optimization using a Digital Annealer: Performance Analyses and Decomposition Algorithms

\$100,000
- **UHN Subgrant, 2018-2019**

Role: Subgrantee PI (UHN PI: Dr. David Urbach)

Granting agency: University Health Network

Project title: Distributed Operating Room Scheduling Under Uncertainty

\$15,000
- **Dean's Spark Professorship, 2018-2021**

Granting agency: Faculty of Applied Science and and Engineering, University of Toronto

\$225,000
- **NSERC Discovery Launch Supplement, 2018-2019**

\$12,500
- **NSERC Discovery Grant, RGPIN-2018-04984, 2018-2023+2 yr extension**

Granting agency: Natural Sciences & Engineering Research Council of Canada

Project title: Multistage Stochastic Integer Programming: Approximate Solution Methods and Applications

\$180,000 + \$72,000

- **UHN Subgrant, 2017-2018** \$25,000
Role: Subgrantee PI (UHN PI: Dr. David Urbach)
Granting agency: University Health Network
Project title: Operating Room Scheduling in a Network of Hospitals
 - **Start-up Funds, 2017-2023** \$100,000
Granting agency: University of Toronto
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AWARDS and HONORS¹

• Individual Awards

- Honorable Mention in MCDM Junior Researcher Best Paper Award Competition 2022
- Connaught New Researcher Award, UofT 2019-2020
- MIE Early Career Teaching Award, UofT 2019
- Dean's Spark Professorship, UofT 2018-2021
- Honorable Mention in Best Poster Competition in MIP Workshop 2015
- IBM Ph.D. Fellowship 2014-2015
- MIP Workshop Student Travel Award 2014
- Department of ISyE Graduate Student Travel Award, University of Wisconsin-Madison 2014
- Honorable Mention in Best Poster Competition in MIP Workshop 2013
- Dean's High Honor List in Mathematics, Bogazici University 2011
- Dean's High Honor List in Industrial Engineering, Bogazici University 2011

• Selected Student Awards

- Centennial Senior Project (Thesis) Award 2022
Haoyuan Xue, Undergraduate student
- First Place, CORS Student Paper Competition 2022
Ian Zhu, Ph.D. student (co-supervised with Prof. Timothy Chan)
- Finalist, CORS Student Paper Competition 2021
Maryam Daryalal, Ph.D. student
- Finalist, INFORMS Undergraduate Operations Research Prize 2020
Anna Deza, Undergraduate student
- Best Operations Research Poster Presentation in MIE Graduate Research Symposium 2018
Maryam Daryalal, Ph.D. student

• Service Awards

- UTOrg (for which I act as the faculty supervisor)
 - INFORMS Student Chapter Annual Award as a Magna Cum Laude chapter 2022
 - INFORMS Student Chapter Annual Award as a Magna Cum Laude chapter 2021
 - Honorable mention in INFORMS Student Chapter Annual Award 2020

¹Abbreviations. UofT: University of Toronto, MIE: Mechanical and Industrial Engineering, ISyE: Industrial and Systems Engineering, MCDM: Multiple Criteria Decision Making, MIP: Mixed Integer Programming, CORS: Canadian Operational Research Society, INFORMS: Institute for Operations Research and the Management Sciences, UTOrg: University of Toronto Operations Research Group

UNIVERSITY SERVICE

Ph.D. Committee Member

- Vahid Roshanaei (June 2017), Margarita Castro (November 2020), Hassan Anis (December 2022), Jason Zhang (TBD), Bo Lin (TBD), Oscar Guaje (TBD), Rahul Patel (TBD), David Islip (TBD), Justin Dumouchelle (TBD)

Ph.D. Thesis External Examiner

- Sharaf Christopher Mohamed, MIE (January 2021)

M.A.Sc. Thesis Examiner

- Neal Kaw (August 2017), Alexia Yeo (March 2018), Chang Liu (July 2018), Ian Zhu (August 2018), Benjamin Potter (September 2018), Ranjith Kumar (January 2019), Leyi Chang (July 2019), Seyed Farzad Mousavi (from ECE; September 2020), Lyle Gauthier (January 2022), Anton Korikov (June 2022), Dylan Camus (September 2022)

Faculty Advisor

- [UTORG](#) (University of Toronto Operations Research Group), 2020-2023
 - INFORMS 2022 Student Chapter Annual Award as a Magna Cum Laude chapter
 - INFORMS 2021 Student Chapter Annual Award as a Magna Cum Laude chapter
 - Honorable mention in INFORMS 2020 Student Chapter Annual Award

Departmental Committees

- UofT MIE PTR committee, 2020-2021
- UofT IE curriculum renewal committee member, 2018-2022
- UofT MIE faculty search committee member, 2022-2023
- UofT MIE faculty search committee member, 2021-2022
- UofT MIE faculty search committee member, 2020-2021
- UofT MIE faculty search committee member, 2019-2020
- UofT MIE faculty search committee member, 2018-2019

Roles in Departmental Seminar Series

- [UofT MIE Distinguished Seminar Series](#) committee chair, 2021-2023
- [UofT MIE Distinguished Seminar Series](#) committee member, 2017-2021
- **Founder and organizer** of [Operations Research Seminar Series](#) in UofT MIE, 2018-2023

EXTERNAL SERVICE

Ph.D. Thesis External Examiner

- Mehran Poursoltani, HEC Montréal (May 2023)
- Seyed Hossein Hashemi Doulabi, École Polytechnique de Montréal (May 2017)

Associate Editor

- [INFOR: Information Systems and Operational Research](#) (Optimization Area), 2021-present

Ad-hoc Journal Paper Reviewer

- Operations Research, Management Science, Mathematical Programming, Mathematical Programming Computation, INFORMS Journal on Computing, Mathematics of Operations Research, Transportation Science, Production and Operations Management, European Journal of Operational Research, IIE Transactions, Annals of Operations Research, Naval Research Logistics, Journal of Optimization Theory and Applications, International Transactions in Operational Research, Omega, IIE Transactions on Healthcare Systems Engineering, International Journal of Critical Infrastructure Protection, Energy Systems, INFORMS Journal on Optimization, Transportation Research Record, Fields Institute Communications Series, IEEE Transactions on Pattern Analysis and Machine Intelligence

Ad-hoc Conference Paper Reviewer

- 35th AAAI (Association for the Advancement of Artificial Intelligence) Conference on Artificial Intelligence, 2021
- 20th CPAIOR (International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research), 2023

Ad-hoc Grant Proposal Reviewer

- NSERC Discovery Grant
- NWO (Dutch Research Council) Talent Programme
- NSERC Alliance Grant
- Mitacs Accelerate

Paper/Poster Competition Judge

- **Reviewed Submissions Committee Member:** INFORMS Optimization Society Conference 2024 (*Upcoming*)
- **Prize Committee Member:** INFORMS Optimization Society Student Paper Prize, 2023
- **Reviewer:** CORS Open Student Paper Competition, 2022
- **Prize Committee Member:** INFORMS Computing Society Student Paper Prize, 2021
- **Reviewer:** CORS Open Student Paper Competition, 2021
- **Judge:** INFORMS 2021 Poster Competition

Professional Organization Membership

- **Committee on Stochastic Programming** (COSP: elected board of Stochastic Programming Society), 2023-Present
- INFORMS (Institute for Operations Research and the Management Sciences), INFORMS Optimization Society, INFORMS Computing Society, CORS (Canadian Operational Research Society), MOS (Mathematical Optimization Society), SPS (Stochastic Programming Society), SIAM (Society for Industrial and Applied Mathematics)

Conference/Workshop Organization

- **Co-organizer:** Dagstuhl Seminar, 2024 (*Upcoming*)
- **Co-organizer:** Discrete Stochastic Programming stream of the Optimization under Uncertainty cluster for the 25th International Symposium on Mathematical Programming (ISMP), 2024 (*Upcoming*)

- **Program committee member:** International Symposium on Combinatorial Optimization (ISCO), 2024 (*Upcoming*) (*Ongoing*)
- **Program committee member:** IPCO 2023 (the 24th Conference on Integer Programming and Combinatorial Optimization)
- **Organizing committee member:** Workshop on Quantum Computing and Operations Research, 2022
- Big Data Analytics and Optimization **cluster co-chair:** CORS-INFORMS International Conference, 2022
- **Program committee member:** International Symposium on Combinatorial Optimization (ISCO), 2022
- Integer Programming **cluster chair:** INFORMS Computing Society (ICS) Conference, 2022
- Discrete Optimization **cluster co-chair:** INFORMS Optimization Society (IOS) Conference, 2022
- **Program committee member:** Canadian Operational Research Society (CORS) 62th Annual Conference, 2021
- Optimization **cluster co-chair:** Canadian Operational Research Society (CORS) 62th Annual Conference, 2021
- INFORMS Optimization Society (IOS) **Vice Chair** of Integer and Discrete Optimization, 2020-2021
- INFORMS Computing Society (ICS) **cluster co-chair** for the INFORMS Annual Meeting 2019
- **Co-chair:** The Workshop of the 25th International Conference on Principles and Practice of Constraint Programming, 2019
(Workshop on Constraint Solving and Special Purpose Hardware Architectures)
- **Organizing committee member:** Mixed Integer Programming (MIP) Workshop 2017
- **Session chair:** INFORMS Annual Meeting 2013, INFORMS Annual Meeting 2014, SIAM Conference on Optimization 2017, IFORS Conference 2017, INFORMS Annual Meeting 2018

STUDENT SUPERVISION

Current Research Group

(EG: expected graduation, co-S: co-supervisor)

PH.D. STUDENTS

- Moira MacNeil, Ph.D. student (EG: 2024)
- Zoha Sherkat-Masoumi, Ph.D. student (EG: 2025)
- Arash Dehghan-Kooshkghazi, Ph.D. student at TMU-MIE (EG: 2025, co-S: Mucahit Cevik)
- Jilin Song, Ph.D. student at CIV (EG: 2026, co-S: Amer Shalaby, UofT-CIV)
- Haoyuan Xue, Ph.D. student (EG: 2027)

SENIOR UNDERGRADUATE STUDENTS

- Daniel Deza, EngSci student (EG: 2024, co-S: Amer Shalaby, UofT-CIV)

Graduated Students, Past Postdocs and Visitors

(The list is in the reverse chronological order.)

POSTDOCTORAL FELLOWS

- Oylum Şeker, Postdoctoral Fellow: 2019-2022
- [Margarita Castro](#), Postdoctoral Fellow: 2020-2021
(First Position: Assistant Professor, Department of Industrial Engineering at Pontificia Universidad Católica de Chile)
- Hamed Pouya, Postdoctoral Fellow: 2019-2020
(First Position: Senior Associate, Network Planning at Ciena)

PH.D. STUDENTS

- Lizeth Carolina Riascos Álvarez, Ph.D.: Graduated in August 2023 (co-S: Dionne Aleman, UofT-MIE)
Thesis: Optimization Models for Kidney Paired Donation
- [Ian Zhu](#), Ph.D.: Graduated in June 2023 (co-S: Timothy Chan, UofT-MIE)
Thesis: Inverse and Robust Models for Optimization with Objective Uncertainty
(First Position: Assistant Professor, Department of Analytics and Operations at National University of Singapore Business School)
- Zahra Ansarilari, Ph.D. at CIV: Graduated in December 2022 (co-S: Amer Shalaby, UofT-CIV)
Thesis: Transfer Time Optimization in Transit Scheduling
- [Maryam Daryalal](#), Ph.D.: Graduated in August 2022
Thesis: [Sequential Decision-making Under Uncertainty: Novel Methodologies and Applications](#)
(First Position: Assistant Professor, Department of Decision Sciences at HEC Montréal)
- Kianoush Mousavi, Ph.D at CIV: Graduated in August 2022 (co-S: Matthew J. Roorda, UofT-CIV)
Thesis: [Strategic, Tactical, and Operational Decision-making in Crowd-shipping](#)
(First Position: Postdoctoral Fellow, College of Management of Technology at EPFL, Risk Analytics and Optimization Lab)
- [Cheng Guo](#), Ph.D.: Graduated in August 2021
Thesis: [Optimization Models and Algorithms for Nonconvex Planning, Pricing and Operational Problems in Power Systems and Energy Markets](#)
(First Position: Assistant Professor, School of Mathematical and Statistical Sciences at Clemson University)
- Narges Sereshti, Visiting Ph.D. student (from HEC Montréal), 2020-2021 (continued the collaboration until September 2022)

M.A.Sc. STUDENTS

- Neda Tanoumand, M.A.Sc.: Graduated in December 2022 (co-S: Prof. Joe Naoum-Sawaya, Ivey Business School)
Thesis: Data-driven Distributionally Robust Optimization: Intersecting Ambiguity Sets, Performance Analysis and Tractability
- Manion Anderson, M.A.Sc.: Graduated in January 2022 (co-S: Prof. Vahid Sarhangian, UofT-MIE)
Thesis: [Integer and Stochastic Programming Approaches to Scheduling Nursing Staff at Long-Term Care Homes](#)
(First Position: Business Analyst, Princess Margaret Cancer Centre)
- [Juyoung Wang](#), M.A.Sc.: Graduated in August 2021 (co-S: Prof. Mucahit Cevik, TMU-MIE)
Thesis: [Multistage Stochastic Programming Combined with Deep Learning-based Time Series Forecasting: New Methodologies and Applications](#)
(First Position: Data Scientist at acrossB)
- Moira MacNeil, M.A.Sc.: Graduated in August 2019
Thesis: [Integer and Constraint Programming Approaches to Discretizable Distance Geometry Problems](#)
(First Position: Ph.D. student at UofT-MIE)
- Stefana Filipova, M.A.Sc.: Graduated in September 2018 (co-S: Prof. Chris Beck, UofT-MIE)
Thesis: [A Formal Analysis of the Propagation for the Ellipsoid Global Constraint and an Application to the Selective Tree Breeding Problem](#)
(First Position: Staff Engineer, Numerical Methods at Pratt & Whitney | Applied Data Science)

SENIOR UNDERGRADUATE STUDENTS

- Lorna Licollari, EngSci student, 2022-2023 (co-S: Amer Shalaby, UofT-CIV)
B.A.Sc. Thesis: Analysis and Optimization of On-Route Charging of Electric Bus Fleets in Canadian Transit Systems

- Haoyuan Xue, MIE student, 2021-2022
B.A.Sc. Thesis: A Chance-Constrained Programming Approach to Wavelength Dimensioning Under Traffic Uncertainty
(First Position: Ph.D. student at UofT-MIE)
- Anna Deza, EngSci student, 2019-2020
B.A.Sc. Thesis: A Multi-Stage Stochastic Integer Programming Approach to the Distributed Operating Room Scheduling Problem
(First Position: Ph.D. student at Berkeley-IEOR)

Capstone Projects

(Each project was conducted by a group of three/four senior undergraduate students.)

- Trillium 2017-2018, Air Canada1 2018-2019, Air Canada2 2018-2019 (3rd place in IE Poster), Air Canada1 2019-2020, Air Canada2 2019-2020, Ceridian2 2020-2021, LEAP 2020-2021, Ceridian1 2021-2022, Ceridian2 2021-2022, LEAP 2022-2023

TEACHING

Graduate Courses at University of Toronto

- **MIE 1603 / MIE 1653: Integer Programming / Integer Programming Applications**
 - Audience:
 - ▷ MIE 1603: Graduate research students (i.e., PhD and MASc)
 - ▷ MIE 1653: MEng students
 - Note: This is a 2-in-1 course. There are officially two course codes (namely MIE 1603 and MIE 1653). The course content is mostly the same for the two groups, and I hold common lectures. However, I have different expectations from two groups of students (and have different grading scale for them). In that regard, differences appear in some bi-weekly assignment and exam questions, and the fact that the latter group is not expected to do a course project.
 - Class size (total): Around 25 (the range has been 16-32)
 - Summary: This course covers fundamentals of integer programming such as advanced modeling techniques, branch-and-bound, valid inequalities, decomposition methods, Lagrangian relaxation, and column generation. The course has bi-weekly homework assignments covering both theoretical and computational aspects, midterm and final exams, as well as a term research project for research students. As the course covers both theoretical and computational aspects, it improves students' mathematical skills and programming ability.
 - Terms Taught: Winter 2017, Winter 2018, Winter 2019, Winter 2020, Winter 2021, Winter 2022, Winter 2023
 - Design Responsibilities: Although the course existed when I joined UofT, I designed its whole content completely differently myself. Other than the design and organization of the course topics, which I slightly modify every time I teach the course, I create new assignment and exam questions every year.
- **MIE 1612: Stochastic Programming and Robust Optimization**
 - Audience: Graduate students (primarily PhD and MASc, but some interested MEng students also benefit from the course)
 - Class size: Around 15 (the range has been 11-20)

- Summary: The stochastic programming portion of the course covers fundamentals such as modeling concepts, risk measures and their incorporation into stochastic models, two-stage stochastic programming algorithms (e.g., Benders decomposition, trust-region methods, level method and progressive hedging), sampling methods (e.g., SAA and statistical inference), multistage stochastic programming modeling and solution method basics. The robust optimization portion discusses basics such as tractable robust counterparts, adjustable robust models, affine decision rules and finite adaptability. The course design is pretty much the same as in MIE1603; there are bi-weekly homework assignments covering both theoretical and computational aspects, midterm and final exams, as well as a term research project. As the course covers both theoretical and computational aspects, it improves students' mathematical skills and programming ability.
- Terms Taught: Fall 2019, Fall 2020, Fall 2021, Fall 2022
- Design Responsibilities: This is a completely new course that I designed and started to offer in Fall 2019 for the first time. As in MIE1603/1653, other than the design and organization of the course topics, which I slightly modify every time I teach the course, I create new assignment and exam questions every year.

Undergraduate Courses at University of Toronto

- **MIE 335: Algorithms and Numerical Methods**

- Audience: 3rd year IE students
- Class size: Around 120
- Summary: The course covers fundamentals of algorithm design and analyses such as efficiency, running time, input size, worst-case analyses, big-O complexity, recursion, divide-and-conquer, hashing and greedy methods with examples on sorting, encryption and combinatorial optimization; as well as some important numerical methods such as matrix multiplication and inversion, Gaussian elimination, forward/backward substitution and matrix decomposition. Also, the last portion of the course introduces unconstrained optimization, mostly focusing on Steepest Descent and Newton's methods. As the course covers both methodological and computational aspects, it improves students' mathematical skills and programming ability. The course structure consists of lectures, tutorials, labs, and term-wide group project.
- Terms Taught: Winter 2018, Winter 2019, Winter 2020, Winter 2021, Winter 2022, Winter 2023
- Design Responsibilities: Keeping the course topics intact, I re-designed all the course material, namely lecture slides, lab assignments, tutorial questions, and course project (a new one for each year taught), as well as created brand new midterm and final questions every year.

- **MIE191: Seminar Course - Introduction to Mechanical and Industrial Engineering**

- Audience: 1st year ME & IE students
- Class size: Around 200
- Summary: This is a seminar series that previews the core fields in MIE. Each seminar is given by a professional (professor or someone from industry) in one of the major areas in MIE. The seminar format varies and includes methodology and application examples, challenges, case studies, career opportunities, etc. The purpose of the seminar series is to provide first-year students with some understanding of the various options within the department to enable them to make educated choices for their future years and inspire them for their career. This course is offered on a credit/no credit basis.
- Terms Taught: Winter 2019 (shared the work load with another professor), Winter 2020 (shared the work load with another professor), Winter 2021 (coordinated the full course)

- Design Responsibilities: I followed the existing format where my primary responsibilities were finding speakers, preparing the seminar schedule, and moderating the seminars. For the case when the course is taught fully online due to the pandemic, I designed a final assessment task for students to reflect their learning and inspirations from the course.
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