

Velibor V. Mišić

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Employment

University of California Los Angeles
Anderson School of Management
Decisions, Operations and Technology Management

Assistant Professor, June 2016 – present

Education

Massachusetts Institute of Technology
Operations Research Center

Ph.D. in Operations Research, September 2012 – June 2016

Cumulative GPA: 5.00 / 5.00

Thesis title: Data, Models and Decisions in Large-Scale Stochastic Optimization Problems

Thesis advisor: Professor Dimitris Bertsimas

University of Toronto
Department of Mechanical and Industrial Engineering

M.A.Sc. in Industrial Engineering, September 2010 – April 2012

Cumulative GPA: A+ / A+

Thesis title: Adaptive and robust radiation therapy optimization for lung cancer

Thesis advisor: Professor Timothy C. Y. Chan

B.A.Sc. in Industrial Engineering, September 2005 – June 2010

Cumulative GPA: 3.99 / 4.00

Class rank: 2nd (Fall 2005), 1st (Spring 2006 – Spring 2010)

Thesis title: Computational enhancements to fluence map optimization for total marrow irradiation using IMRT

Thesis advisor: Professor Dionne M. Aleman

Publications

Submitted/Working Papers

1. **Mišić, V. V.**, Rajaram, K. and Gabel, E. (2020) A framework for evaluating healthcare machine learning models: application and analysis using hospital readmission. Submitted.
2. Chen, Y.-C. and **Mišić, V. V.** (2019) Decision forest: a nonparametric approach to modeling irrational choice. Under second round review (first round decision: major revision) in *Management Science*.

Winner, 2019 INFORMS Decision Analysis Society Student Paper Award (awarded to student co-author Y.-C. Chen)

Second Place, 2019 INFORMS Revenue Management and Pricing (RMP) Student Paper Award (student co-author Y.-C. Chen)

Finalist, 2019 INFORMS Service Science Section Best Paper Award

Spotlight Presentation (16 out of 80+ submissions), INFORMS Revenue Management and Pricing (RMP) Conference 2019, Stanford, CA

Refereed Journal Articles

1. Ciocan, D. F. and **Mišić, V. V.** (2019). Interpretable optimal stopping. Forthcoming in *Management Science*.

Finalist, INFORMS Data Mining Section Best Paper Award, Methodological Track, 2018

2. **Mišić, V. V.**, Gabel, E., Hofer, I., Rajaram, K. and Mahajan, A. (2019). Machine learning prediction of post-operative emergency department hospital readmission. *Anesthesiology*, 132 (5) 968-980.
3. **Mišić, V. V.** (2019) Optimization of tree ensembles. Forthcoming in *Operations Research*.

Second Place, INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, 2017

4. **Mišić, V. V.** and Perakis, G. (2020) Data analytics in operations management: a review. *Manufacturing & Services Operations Management*, 22 (1) 158-169.
5. Bertsimas, D. and **Mišić, V. V.** (2019). Exact first-choice product line optimization. *Operations Research*, 67 (3) 651-670.

An earlier version of this work was titled "Data-driven assortment optimization".

6. Bertsimas, D., Chang, A. A., **Mišić, V. V.** and Mundru, N. (2019) The airlift planning problem. *Transportation Science*, 53 (3) 773-795.
7. Bertsimas, D., Griffith, J. D., Gupta, V., Kochenderfer, M., and **Mišić, V. V.** (2017). A comparison of Monte Carlo tree search and rolling horizon optimization for large scale dynamic resource allocation. *European Journal of Operational Research*, 263 (2) 664-678.
8. Bertsimas, D. and **Mišić, V. V.** (2017) Robust product line design. *Operations Research*, 65 (1) 19-37.
9. Bertsimas, D. and **Mišić, V. V.** (2016) Decomposable Markov decision processes: a fluid optimization approach. *Operations Research*, 64 (6) 1537-1555.

10. **Mišić, V. V.** and Chan, T. C. Y. (2015) The perils of adapting to dose errors in radiation therapy. *PLoS ONE*, 10 (5), e0125335. DOI: 10.1371/journal.pone.0125335.

An earlier version of this work was titled “Dose-reactive methods in adaptive robust radiation therapy for lung cancer”.

11. Chan, T. C. Y. and **Mišić, V. V.** (2013) Adaptive and robust radiation therapy optimization for lung cancer. *European Journal of Operational Research*, 231 (3) 745-756.

Honorable Mention, Canadian Operational Research Society (CORS) 2012 Student Paper Competition, Open Category

12. Aleman, D. M., **Mišić, V. V.**, and Sharpe, M. B. (2013) Computational enhancements to fluence map optimization for total marrow irradiation using IMRT. *Computers & Operations Research*, 40 (9) 2167-2177.
13. **Mišić, V. V.**, Aleman, D. M., and Sharpe, M. B. (2010) Neighborhood search approaches to non-coplanar beam orientation optimization for total marrow irradiation using IMRT. *European Journal of Operational Research*, 205 (3) 522-527.

Book Chapters

1. Aleman, D. M., Ghaffari, H. R., **Mišić, V. V.**, Sharpe, M. B., Ruschin, M., and Jaffray, D. A. Chapter “Optimization methods in large-scale radiotherapy” in *Systems Analysis Tools for Better Health Care Delivery*. P. M. Pardalos, P. G. Georgiev, P. Papajorgji and B. Neugaard, editors. Springer, 2012.

Refereed Conference Proceedings

1. **Mišić, V. V.** (2017) Optimization of tree ensembles. Extended abstract for 2017 MSOM Conference.
2. Bertsimas, D. and **Mišić, V. V.** (2015) Data-driven assortment optimization. Extended abstract for 2015 MSOM Conference, Toronto, Canada.
3. **Mišić, V. V.**, Aleman, D. M., and Sharpe, M. B. (2009) Total Marrow Irradiation Using Intensity Modulated Radiation Therapy Optimization. Proceedings of the IIE Annual Conference, IERC 2009, Miami, Florida.

Research in Progress

1. Chen, Y.-C. and **Mišić, V. V.** Assortment Optimization under the Decision Forest Model. Research in progress; targeted for *Operations Research*.
2. Chen, Y.-C. and **Mišić, V. V.** Column-Randomized Linear Programs: Performance Guarantees and Applications. Research in progress; targeted for *Mathematical Programming*.
3. Akçakuş, I. and **Mišić, V. V.** A Novel Integer Optimization Approach to Tree Modeling. Research in progress; targeted for *Operations Research*.
4. Guan, X. and **Mišić, V. V.** Randomized Policies for High-Dimensional Optimal Stopping Problems. Research in progress; targeted for *Operations Research*.
5. **Mišić, V. V.**, Rajaram, K. and Gabel, E. Virtual Simulation of Post-Operative Hospital Readmission Predictors: a Roadmap for Assessing Viability of Machine Learning in the Setting of Constrained Clinical Resources. Research in progress; targeted for *Health Affairs*.

Presentations

Invited Talks

1. Machine Learning Prediction of Post-Operative Emergency Department Hospital Readmission. Presented at:
 - 2019 POMS Conference, Washington, DC, 2019.
2. Decision Forest: A Nonparametric Approach to Modeling Irrational Choice. Presented at:
 - 2019 INFORMS Annual Conference, Seattle, WA (presented by student co-author Y.-C. Chen).
 - 2019 ICCOPT Conference, Berlin, Germany.
 - 2019 INFORMS RMP Conference (**spotlight presentation**), Stanford, CA (presented by student co-author Y.-C. Chen).
 - 2019 POMS Conference, Washington, DC (presented by student co-author Y.-C. Chen).
 - 2018 INFORMS Annual Conference, Phoenix, AZ (presented by student co-author Y.-C. Chen).
3. Interpretable Optimal Stopping. Presented at:
 - 2019 INFORMS Annual Conference, Seattle, WA.
 - 2019 POMS Conference, Washington, DC.
 - University of Maryland, Smith School of Business, Decisions, Operations and Information Technologies Seminar, April 18, 2019.
 - 2018 INFORMS Annual Conference, Phoenix, AZ.
 - 2018 University of Minnesota, IMA Workshop on “Forging a New Discipline: Data-driven Supply Chain Management”, Minneapolis, MN.
 - 2018 ISMP Conference, Bordeaux, France.
4. Exact First-Choice Product Line Optimization. Presented at:
 - 2018 INFORMS Annual Conference, Phoenix, AZ.
 - 2017 INFORMS Annual Conference, Houston, TX.
5. Optimization of Tree Ensembles. Presented at:
 - 2019 INFORMS Annual Conference, Seattle, WA.
 - 2019 Machine Learning in Science and Engineering (MLSE) Conference, Atlanta, GA.
 - 2018 INFORMS Annual Conference, Phoenix, AZ.
 - Duke University, Fuqua School of Business, Decision Sciences Seminar, March 14, 2018.
 - 2017 INFORMS Annual Conference, Houston, TX.
 - 2017 MSOM Conference, Chapel Hill, NC, June 19-21, 2017.
 - INSEAD, Decision Sciences and Technology and Operations Management Seminar, June 7, 2017.
 - 2017 Computational Management Science Conference, Bergamo, Italy, May 30 - June 2, 2017.
 - 2017 SoCal OR/OM Day, University of Southern California, May 19, 2017.

6. The Airlift Planning Problem. Presented at:
2016 INFORMS Annual Conference, Nashville, TN.
7. Data, Models and Decisions in Large-Scale Stochastic Optimization Problems. Presented at:
University of California Los Angeles, Anderson School of Management, Decisions, Operations and Technology Management Group, February 2016.
University of Chicago, Booth School of Business, Operations Management Group, February 2016.
Carnegie Mellon University, Tepper School of Business, Operations Management Group, January 2016.
8. Data-Driven Assortment Optimization. Presented at:
2017 POMS Conference, Seattle, WA.
University of Southern California, Marshall School of Business, Department of Data Sciences and Operations, February 2016.
University of Waterloo, Department of Management Sciences, January 2016.
University of Toronto, Department of Mechanical and Industrial Engineering, January 2016.
2015 INFORMS Annual Conference, Philadelphia, PA.
2015 MSOM Conference, Toronto, Canada.
9. Decomposable Markov Decision Processes: A Fluid Optimization Approach. Presented at:
2015 ISMP Conference, Pittsburgh, PA.
2014 INFORMS Annual Conference, San Francisco, CA.
10. Robust Product Line Design. Presented at:
2017 POMS Conference, Seattle, WA.
2014 Data-driven Optimization Workshop, Cornell University, Ithaca, NY.
11. A Comparison of Robust Optimization and Monte Carlo Tree Search for Dynamic Resource Allocation. Presented at:
2013 INFORMS Annual Conference, Minneapolis, MN.
12. The aggregate deviation method for adaptive radiation therapy of lung cancer. Presented at:
2012 CORS Annual Conference, Niagara Falls, ON, Canada.
13. Adaptive and robust radiation therapy optimization for lung cancer. Presented at:
2012 CORS Annual Conference, Niagara Falls, ON, Canada. (CORS Student Paper Competition)
2011 INFORMS Annual Conference, Charlotte, NC.
2011 INFORMS Healthcare Conference, Montreal, PQ, Canada. (Old title: "Dynamic robust optimization for fractionated IMRT treatment planning")
14. Non-coplanar Beam Orientation Optimization for Total Marrow Irradiation using IMRT. Presented at:
2009 CORS-INFORMS International Meeting, Toronto, ON, Canada.

Teaching

Instructor

1. **MGMTMSA408 – Operations Analytics** (UCLA Anderson MS in Business Analytics Core Course), Spring 2020 (1 section)
2. **MGMT402 – Data and Decisions** (UCLA Anderson FEMBA Core Course), Fall 2019 (2 sections)
3. **MGMTMSA408 – Operations Analytics** (UCLA Anderson MS in Business Analytics Core Course), Spring 2019 (1 section)
4. **MGMT402 – Data and Decisions** (UCLA Anderson FEMBA Core Course), Fall 2018 (2 sections)
5. **MGMTMSA408 – Operations Analytics** (UCLA Anderson MS in Business Analytics Core Course), Spring 2018 (1 section)
6. **MGMT402 – Data and Decisions** (UCLA Anderson Full-time MBA Core Course), Fall 2017 (3 sections)
7. **MGMT402 – Data and Decisions** (UCLA Anderson FEMBA Core Course), Fall 2016 (2 sections)

Teaching Assistantships

1. **15.727 – The Analytics Edge** (MIT Sloan Executive MBA Elective), Spring 2015
2. **15.071 – The Analytics Edge** (MIT Sloan MBA Elective), Spring 2014
3. **15.071x – The Analytics Edge** (Massive Open Online Course (MOOC) offered through MITx, MIT's online course platform), Spring 2014

Instructors: Professor Dimitris Bertsimas and Dr. Allison O'Hair

Together with a team of four other PhD students, assisted in creating course content (lecture slides, recitations and homework problems)

Other

1. **15.053 – Optimization Methods in Management Science** (MIT Sloan Undergraduate Elective), Spring 2014

Guest Lecturer

Instructor: Professor James B. Orlin

Delivered part of a lecture on optimization applications, on the topic of "Optimization in eHarmony".

2. **15.S60 – Special Seminar in Management (SSIM): Software Tools for Operations Research** (IAP Course), January 2014

Module Instructor

Coordinators: Professor Dimitris Bertsimas, Iain Dunning and Vishal Gupta

Designed and delivered an introductory lecture on technical computing in the Julia programming language (<http://julialang.org>) and modeling optimization problems using JuMP (Julia for Mathematical Programming – <http://juliaopt.org>)

Supervision and Mentorship

PhD supervision:

Yi-Chun Chen, DOTM PhD student (3rd year)

Irem Akçakuş, DOTM PhD student (2nd year)

Jian Gao, DOTM PhD student (1st year)

Xinyi Guan, DOTM PhD student (1st year)

PhD committees:

Bobby Nyotta, DOTM PhD student (5th year; committee member)

Other supervision:

Xinyi Guan, MSBA summer research student (2018)

Guanhua Huang, MSBA summer research student (2018)

Botao An, MSBA summer research student (2018)

Professional Experience

Simulation Consultant, Visual Thinking International Ltd., September 2008 to September 2009

Developed simulation-based planning and scheduling applications in SIMUL8 Planner

Conducted internal research into incorporating optimization solvers (such as the linear programming package GLPK) into SIMUL8 Planner applications

Awards and Honors

MSBA Faculty Excellence Award 2019, UCLA Anderson

Second Place, 2019 INFORMS Revenue Management and Pricing (RMP) Student Paper Award, for the paper titled “Decision forest: a nonparametric approach to modeling irrational choice” (co-authored with Y.-C. Chen).

Finalist, INFORMS Service Science Section Best Paper Award 2019, for the paper titled “Decision forest: a nonparametric approach to modeling irrational choice” (co-authored with Y.-C. Chen).

Winner, INFORMS Decision Analysis Society Student Paper Award 2019, for the paper titled “Decision forest: a nonparametric approach to modeling irrational choice” (co-authored with Y.-C. Chen; awarded to student co-author Y.-C. Chen).

Spotlight Presentation at INFORMS Revenue Management and Pricing (RMP) Conference 2019, for the paper titled “Decision forest: a nonparametric approach to modeling irrational choice” (co-authored with Y.-C. Chen).

MSBA Faculty Achievement Award 2018, UCLA Anderson

Finalist, INFORMS Data Mining Section Best Paper Award Competition 2018, Applied / Methodological Track, for the paper titled “Interpretable optimal stopping” (co-authored with D. F. Ciocan)

Second Place, INFORMS Junior Faculty Interest Group (JFIG) Paper Competition 2017, for the paper titled "Optimization of tree ensembles" (single-authored)

Honorable Mention, CORS Student Paper Competition 2012, Open Category for the paper titled "Adaptive and robust radiation therapy optimization for lung cancer" (co-authored with T. C. Y. Chan)

NSERC Postgraduate Scholarship, Doctoral level (PGS-D) – September 2012 to August 2015

Value: CAD\$21,000 for three years

NSERC Canada Graduate Scholarship, Doctoral level (CGS-D) – *declined*

Value: CAD\$35,000 for three years

Declined to accept NSERC PGS-D abroad

Ontario Graduate Scholarship (OGS), Master's level – 2011 to 2012

Value: CAD\$10,000

Best Poster Award, Mechanical and Industrial Engineering Research Symposium – 2011

Awarded to the three best posters presented at the MIE Research Symposium; 56 posters were presented

NSERC Canada Graduate Scholarship, Master's level (CGS-M) – 2010 to 2011

Value: CAD\$17,500

Most prestigious Master's level research scholarship offered by NSERC

Centennial Thesis Award (University of Toronto) – 2010

Awarded annually to one student in each engineering discipline for excellence in his/her final year undergraduate thesis

NSERC Undergraduate Student Research Award (USRA)– May 2008 to August 2008

Project title: Total body irradiation optimization using intensity modulated radiation therapy

Project supervisor: Professor Dionne M. Aleman

Wallberg Undergraduate Scholarship (University of Toronto) – 2006, 2008

Awarded on the basis of academic standing; only two are awarded to students who have completed third year, and only four are awarded to students who have completed first year

University of Toronto Scholar Award – 2005, 2007

University of Toronto Faculty of Applied Science and Engineering Entrance Scholarship – 2005

Professional Activities

Associate editor for *Service Science*

Ad-hoc journal referee for *Operations Research*, *Management Science*, *Manufacturing & Services Operations Management*, *INFORMS Journal on Optimization*, *Networks*, *European Journal of Operational Research*, *Production and Operations Management*, *Mathematical Methods of Operations Research*, *INFORMS Journal on Computing*, *Naval Research Logistics*, *Omega*, *Journal of Aerospace Information Systems*, *IEEE Transactions on Cognitive Communications and Networking*, *Journal of Medical Systems*

Ad-hoc conference referee for *AAAI-2016*, *IPCO 2019*, *MSOM SIG 2019*, *AISTATS 2020*

Judge for MSOM Student Paper Competition (2017, 2018, 2019)

Judge for Elwood S. Buffa Doctoral Dissertation Award, Decision Sciences Institute (2019)

Organizer, SoCal OR/OM Day Workshop (2018)

PhD Admissions Committee, DOTM Area, UCLA Anderson (2017 - present)

Hiring Committee, DOTM Area, UCLA Anderson (Fall 2018 - present)

Advisory Board Member, Easton Technology Management Center, UCLA Anderson (2019 - present)

Representative, UCLA Legislative Assembly of the Academic Senate (2019 - 2020)

INFORMS, Member

Personal

Languages: English (fluent), Serbian (native), French (beginner)

Citizenship: Canadian, Serbian

Last updated: June 11, 2020