

MICHELE SAMORANI

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EDUCATION

University of Colorado Ph.D. in Operations and Information Management	<i>2007 - 2012</i>
University of Bologna, Italy B.Eng., M.Eng. in Computer Science	<i>2000 - 2003, 2003 - 2006</i>

WORK EXPERIENCE

Leavey School of Business, Santa Clara University <i>Program Director of the Master of Science in Information Systems (MSIS)</i>	2020 - Present
Leavey School of Business, Santa Clara University <i>Assistant Professor</i>	2016 - Present
Alberta School of Business, University of Alberta <i>Assistant Professor</i>	2012 - 2016

RESEARCH SUMMARY

My research combines machine learning and optimization techniques to build decision support systems that improve companies' business processes and information flow.

I strive to produce research of practical value and positive social impact. In collaboration with a health organization dedicated to Black women, I studied how machine learning leads to racial bias in medical appointment scheduling systems, and developed methods to overcome it (MSOM 2021); I collaborated with multiple nonprofit clinics to develop novel and more efficient appointment scheduling procedures (POM 2016, EJOR 2015 and 2019, ICIS 2019, DSS 2021); I designed and employed text mining procedures and visualization methods to study the evolution of Wikipedia articles (MISQ 2020); I helped a pharmaceutical company improve its drug discovery process (IJoC 2011). Other research of mine employs machine learning within metaheuristic procedures to tackle hard optimization problems that arise in a variety of domains ranging from financial analysis to circuit design (IJoC 2012, JoH 2019).

The interdisciplinary nature of the problems creates an audience for my research in multiple research fields; consequently, my papers are published in top journals across Information Systems, Operations Management, and Operations Research. Regardless of the specific outlet, my research is of analytical and computational nature, and grounded in data.

RESEARCH HIGHLIGHTS

25 refereed publications (14 journals, 10 conference proceedings, 1 book chapter) including top venues in Information Systems, Operations Management, and Operations Research (e.g., *MIS Quarterly*, *INFORMS Journal on Computing*, *Manufacturing & Service Operations Management*, *Production and Operations Management*).

Five papers in journals belonging to the UT Dallas [list](#), three of which belonging also to the Financial Times [list](#).

My research on machine learning and racial bias in healthcare scheduling was included in a United Nations report, presented at the UN Human Rights Council.

Research featured or mentioned by multiple media outlets (such as Forbes and WIRED).

Included by AACSB in the “2021 Innovations That Inspire” (one of only 24 projects selected among 890 AACSB accredited business schools)

One of only five academics invited in 2019 by the National Academies of Sciences, Medicine, and Engineering to advise the US Department of Veteran Affairs on their appointment scheduling system.

Two of my papers are used in doctoral seminars at other institutions.

Google Scholar Citation [Count](#) > 400

JOURNAL PUBLICATIONS

Samorani, M., S. Harris, L. Goler Blount, H. Lu, M.A. Santoro. 2021. Overbooked and Overlooked: Machine Learning and Racial Bias in Medical Appointment Scheduling. *Manufacturing & Service Operations Management* (Forthcoming).

- (1) Featured by [Forbes](#) and the [Santa Clara Magazine](#), mentioned by [WIRED](#). (2) Included in a United Nations [report](#) presented to the 44th Session of the UN Human Rights Council. One of only seven papers cited in that report about racial disparities in health care. (3) [Highlighted](#) by AACSB among the “2021 Innovations That Inspire.”

Harris, S.L., M. Samorani (the authors contributed equally, see statement in the paper). 2021. On selecting a probabilistic classifier for appointment no-show prediction. *Decision Support Systems*, 142, p.113472.

Lu, H., X. Chen, Q. Liu, M. Samorani, G. Song, Y. Yang. 2020. Stochastic Workflow Authorizations with Queueing Constraints, *IEEE Transactions on Dependable and Secure Computing*. The [#8 journal](#) in Computer Security according to Google Scholar.

Samorani, M., L.G. Blount. 2020. Machine Learning and Medical Appointment Scheduling: The Inequity of Waiting. *American Journal of Public Health* 110 (440-441). The [#1 journal](#) in Public Health according to Google scholar

Arazy, O., A. Lindberg, M. Rezaei, M. Samorani (the authors contributed equally, see statement in the paper). 2020. The Evolutionary Trajectories of Peer-Produced Artifacts: Group Composition, the Trajectories’ Exploration, and the Quality of Artifacts. *MIS Quarterly*, 44(4), pp. 2013-2053.

Samorani, M., A. Alptekinoglu, P. Messinger. 2019. Product Return Episodes in Retailing. *Service Science*, 11(4), pp. 263-278.

Soltani, M., M. Samorani, B. Kolfal. 2019. Appointment scheduling with multiple providers and stochastic service times. *European Journal of Operational Research*, 277(2), pp.667-683.

- (2019) Invited by the National Academies of Sciences, Medicine, and Engineering to present this paper to the US Department of Veteran Affairs. One of only five academics invited at that [National Academies Workshop](#)

Samorani, M., M., Y. Wang, Y. Wang, Z. Lv, F. Glover. 2019. Clustering-driven evolutionary algorithms: an application of path relinking to the quadratic unconstrained binary optimization problem. *Journal of Heuristics*, 25:629–642.

Rezaei, M., I. Cribben, M. Samorani, 2018. A clustering-based feature selection method for automatically generated relational attributes. *Annals of Operations Research*, pp.1-31.

Samorani, M., S. Ganguly. 2016. Optimal Sequencing of Unpunctual Patients in High-Service Level Clinics. *Production and Operations Management*, 25(2) 330-346.

Samorani, M., L. LaGanga. 2015. Outpatient Appointment Scheduling given Individual Day-Dependent No-Show Predictions. *European Journal of Operational Research*, 240(1) 245-257.

- (2019) Invited by the National Academies of Sciences, Medicine, and Engineering to present this paper to the US Department of Veteran Affairs. One of only five academics invited at that [National Academies Workshop](#)

Samorani, M., M. Laguna. 2012. Data-Mining-Driven Neighborhood Search, *INFORMS Journal on Computing*, 24(2) 210-227.

Samorani, M., M. Laguna, K.R. DeLisle, D. Weaver. 2011. A Randomized Exhaustive Propositionalization Approach for Molecule Classification. *INFORMS Journal on Computing*, 23(3) 331-345.

Better, M, F. Glover, M. Samorani. 2010. Classification by Vertical and Cutting Multi-Hyperplane Decision Tree Induction. *Decision Support Systems*, 48(3) 430-436.

REFEREED CONFERENCE PROCEEDINGS

Samorani, M., S, Harris. 2019. The Impact of Probabilistic Classifiers on Appointment Scheduling with No-Shows. *The 40th International Conference on Information Systems (ICIS)*. Munich, Germany. Historical acceptance rate 17%, 1st ranked Information Systems conference.

Samorani, M., M. Laguna. 2017. Mining High-Quality Solutions to Learn Effective and Interpretable Heuristics. Proceedings of *2017 INFORMS Workshop on Data Mining and Analytics (DMA 2017)*. C. Iyigun, R. Moghaddess, M. Samorani, eds.

Harris, S., M. Samorani. 2017. The Impact of No-Show Predictions on Appointment Scheduling. *Proceedings of 2017 INFORMS Workshop on Data Mining and Analytics (DMA 2017)*. C. Iyigun, R. Moghaddess, M. Samorani, eds.

Ahmed, F., M. Samorani, C. Bellinger, O. Zaiane. 2016. Advantage of Integration in Big Data: Feature Generation in Multi-Relational Databases for Imbalanced Learning. *IEEE International Conference on Big Data*. 19% acceptance rate.

Samorani, M., F. Ahmed, O. Zaiane. 2016. Automatic Generation of Relational Attributes: An Application to Product Returns. *IEEE International Conference on Big Data*. 19% acceptance rate.

Samorani, M. 2015. Automatically Generate a Flat Mining Table with Dataconda. *The International Conference of Data Mining (ICDM) Workshops*

Samorani, M. 2015. Dataconda: A Software Framework for Mining Relational Databases. *International Conference on Advances in Databases, Knowledge, and Data Applications (DBKDA)*, May 24 - 29, 2015 - Rome, Italy. Acceptance rate: 29%

Samorani, M. 2014. Automatic Generation of Relational Independent Variables. Proceedings of *2014 INFORMS Workshop on Data Mining and Analytics* (DMA 2014). D. Sundaramoorthi, H. Yang, eds.

Poursaeidi, M. H., M. Samorani, and O. E. Kundakcioglu. 2013. “Offshore Wind Farm Layout Optimization: What is the Hype?” in *Proceedings of the Industrial and Systems Engineering Research Conference*, ID: 952.

Samorani, M., L. LaGanga. A Stochastic Programming Approach to Improve Overbooking in Clinic Appointment Scheduling, *POMS Annual Meeting* 2011.

BOOK CHAPTERS

Samorani, M. 2013. The wind farm layout optimization problem. *Handbook of Wind Power Systems* (pp. 21-38). Springer Berlin Heidelberg. (Over 160 citations to date)

WORK IN PROGRESS

Implicit Racial Bias In Healthcare Scheduling Delays (with Nan Liu, Shannon Harris, and Haibing Lu). Target: *Manufacturing and Service Operations Management*.

The Role of Race and Socio-Economic Factors in Appointment No-Shows (with Shannon Harris and Paolo Roma). Target: *Management Science*.

A Software Framework for Matching PPE Supply and Demand (with Ram Bala, Rohit Jacob, and Shuhan He). Target: *INFORMS Journal on Computing*.

An ethical analysis of Machine Learning and Racial Bias in Healthcare (with Michael Santoro and Robert Shanklin). Target: *Journal of Business Ethics*.

AWARDS AND GRANTS

Leavey School of Business Research Grant, \$3,000, 2020

MSIS Faculty Research Summer Grant, 2020

Honorable Mention for the Best Non-Student Paper Award, INFORMS Data Mining Section, 2017

Leavey School of Business Teaching Award, 2017

POMS Appreciation Award, 2017

Xerox Faculty Fellowship, \$15,000, University of Alberta, 2016

Industry Grant Principal Investigator, \$20,000, 2014-2015

SAS Fellowship for a “Transformative Project”, \$5,000, University of Alberta, 2014

Nova Faculty Fellowship, \$12,000, University of Alberta, 2012-2013

Semi-finalist of the INFORMS Innovation in Analytics Award, 2012

Winner of the 2009 INFORMS Data Mining Best Student Paper Award

RESEARCH PRESENTATIONS

- University of California at Merced, September 4, 2020
- University of Alberta, Canada, July 26, 2019
- Workshop on “[Key Operational Characteristics and Functionalities of a State-of-the-Art Patient Scheduling System](#),” National Academies of Sciences, Medicine, and Engineering, Washington DC, May 16-17, 2019.
- Regular conference presentations at INFORMS, DSI, POMS, etc. (since 2008)

INTERNAL SERVICE

MSIS Program Director (2020 - present)

Our MSIS program has about 70 students. The curriculum has 26 units of core courses, 16 of electives, and 6 of experiential learning (practicum or capstone). During my tenure as program director, I revamped the [curriculum](#), managed the “assurance of learning” process for AACSB accreditation, and navigated the program through the Covid-19 pandemic.

Other Internal Service

- MSIS Program Co-director, 2019-2020
- Hiring committee for tenure-track positions in Information Systems and Analytics, 2017, 2018, 2019
- Part of the committee charged to redesign the curriculum for the MIS undergraduate program and the BA undergraduate program, 2018
- Judge of the SCU undergraduate hackathon “Broncohack,” 2018
- Part of Committee for the Undergraduate Department Award Selection, 2018

EXTERNAL SERVICE

Editorial Work

- Guest Editor for Special issue on Intensification, Diversification, and Learning in Metaheuristic Optimization, *Journal of Heuristics*, 2017-2018.
- Associate Editor in the area “Big Data & Business Analytics” of the *Journal of Modelling in Management*, 2017-present.
- Ad-hoc Associate Editor for *Information Technology and Management*
- Ad-hoc Reviewer (partial list from the last 5 years):
 - *MIS Quarterly*
 - *INFORMS Journal on Computing*
 - *Production and Operations Management*
 - *Expert Systems with Applications*
 - *Decision Sciences*
 - *Service Science*
 - *European Journal of Operational Research*
 - *IEEE Transactions on Circuits and Systems*

Conference Organization

Judge for the 2019 best paper award at the INFORMS Workshop on Data Mining & Decision Analytics Workshop co-chair, 2017 INFORMS Workshop on Data Mining & Analytics.

Track co-chair of the Healthcare scheduling track, POMS 2017.

Stream Organizer of the Heuristics/Metaheuristics Stream at the 2011 and 2015 INFORMS Computing Society Conferences.

Judge for the INFORMS Data Mining student paper award, 2010-2016.

Session organizer at several INFORMS Annual Meetings, including 2020 and 2021.

Session organizer at the DSI Annual Meeting, 2020.

Session organizer at the POMS Annual Meeting, 2017.

TEACHING EVALUATIONS

Santa Clara University

2016 - Present

- Systems Programming, undergraduate MIS core, avg. evaluation 4.69 out of 5.00
- Data Science Analysis with Python, graduate MSIS and MSBA core, MBA elective, average evaluation 4.65 out of 5.00
- Capstone and Practicum Projects, graduate MSIS and MSBA core: supervised seven projects with five students each. Average evaluation 4.89 out of 5.00

University of Alberta

2012 - 2016

- Operations Management, undergrad core, class size 100+, avg. evaluation: 4.52 out of 5.00
- Introd. to Business Analytics, undergraduate and MBA elective, avg. evaluation: 4.74 out of 5.00