



JAIS Special Issue on Data Science for Social Good

Special Issue Co-Editors

Ahmed Abbasi

Department of Information Technology, Analytics, and Operations
Mendoza College of Business
University of Notre Dame, USA
Email: aabbasi@nd.edu

Roger H.L. Chiang

Department of Operations, Business Analytics, and Information Systems
Carl H. Lindner College of Business
University of Cincinnati, USA
Email: roger.chiang@uc.edu

Jennifer Xu

Department of Computer Information Systems
McCallum School of Business
Bentley University, USA
Email: jxu@bentley.edu

Scope and Focus of the Special Issue

Data science is an interdisciplinary field that applies mathematics, statistics, machine learning, and data visualization techniques to extract insights and knowledge from data that are normally big and encompass both structured and unstructured formats. Jim Gray, a 1998 Turing Award winner, promoted data science as a new, fourth paradigm for scientific discovery in response to the large amounts of data generated by scientific experiments in many disciplines (Hey et al., 2009). In this vein, data science complements experimental, theoretical, and computational science as an emerging research paradigm for understanding nature and society (Bell et al., 2009). The inherently interdisciplinary nature of data science, and the fact that it is a catalyst for business transformation and technology disruption, presents many research opportunities for a diverse discipline such as Information Systems (IS). This has spurred a call for greater IS research on business data science (Saar-Tsechansky 2015). Similarly, there is a need for IS research on the development and evaluation of data science artifacts (e.g., models, methods, and systems) that address broader societal challenges. A lingering question remains: what societal challenges can IS-oriented data science research contribute towards – and how can we conduct such research to maximize impact and relevance?

It is generally accepted that the primary goal of scientific discovery and technological innovation are to improve the human condition and the overall well-being of society. As the world deals with unprecedented pandemics and grapples with painful centuries-old social justice inequities, the importance of data science for social good has once again come front and center. For example, the U.S. National Institute for Health's data science resource page lists many available datasets and computational resources (<https://datascience.nih.gov/covid-19-open-access-resources>). This data is being used to develop models and methods to diagnose likelihood of infection, detect outbreak hot spots, and forecast intensive care unit

bed capacities. Similarly, social justice projects are attempting to democratize data science in key contexts such as crime analytics. However, it must be pointed out that data science for social good (DSSG) is not merely about applying data science techniques to data sets of societal importance. As a recent McKinsey report noted, data science/AI work exploring social good use cases cannot rely solely on a “social-first” or “tech-first” approach, but rather, must consider the amalgamation of these two perspectives (Chui et al., 2018). The IS field has noted the importance of taking a more holistic approach to such research that encompasses a socio-technical lens (Abbasi et al., 2016) spanning context, people, process, and technology. Accordingly, for this special issue, some of the major themes include:

Novel Data Science Artifacts for Social Good

IT artifacts include constructs, models, methods, and instantiations (Hevner et al., 2004). Novelty lies at the intersection of artifact design as well as its application (Gregor and Hevner 2013). Whereas application domains like health and the environment have received some attention, many key areas remain underexplored (Chui et al., 2018). Examples include education, economic empowerment, security and justice, crises response, infrastructure, and hunger. For DSSG, the novel data science artifacts include new models, methods, and systems applied to interesting and timely social good use cases that enhance our knowledge and understanding of the state-of-the-art in meaningful ways.

Measuring Social Impact

Data science artifacts are often evaluated and validated based on how well they perform across a set of well-established performance metrics (e.g., accuracy and sensitivity). The importance of such metrics has been further amplified in recent years with the rise of data analytics competitions, crowd-sourcing platforms, and leaderboards. While such metrics are important, and in some respects, they constitute the “price of admission” for artifact design, they often fail to consider key downstream implications – humanistic outcomes and societal impact. This is what some IS scholars have described as “going the last research mile...using scientific knowledge and methods to address important unsolved classes of problems for real people with real stakes in the outcomes” (Nunamaker et al., 2015, p. 11). Research geared towards measuring social impact might include (but is not limited to) new methods, constructs, or case studies that enhance our understanding of how to quantify and assess the social impact of data science artifacts.

Data Science Ethics and Governance Considerations

Important data science considerations related to trust, explainability, bias, fairness, privacy, and ethical use are beginning to garner a fair amount of attention from policy makers, academia, and the business community – and for good reason. However, much work has taken a univariate tunnel-vision perspective that fails to consider the interplay between these factors. As one example, through immersive longitudinal field research, we know that DSSG projects examining the efficacy of interventions geared towards health disparate populations should consider the intersections between factors such as trust, bias, privacy, and fairness (Abbasi et al., 2018; Taylor et al., 2018). We welcome research that explores the complexity of ethical challenges and governance considerations related to the application of data science in interesting societally impactful contexts.

Topics of Interest

The DSSG follows a tradition of IS research that examines how the advancement of information technology and systems address societal challenges such as digital divide and social inclusion. Data science has a great potential to provide tremendous social benefits in the future. This special issue advocates the need for more IS research in studying DSSG, and encourages the creation and evaluation of

data science artifacts to examine and address societal challenges in a variety of contexts and domains. In addition, this special issue seeks to promote collaborations between IS researchers that are technically focused and those with more of a social/people focus. Our hope is that this special issue sparks in-depth examination about where data science capabilities can be applied to address societal challenges in ways that are unique, thought-provoking, and impactful.

This JAIS special issue welcomes original research for addressing societal challenges in various domains and areas, including, but not limited to, the following:

- Crises response
- Healthcare and welfare
- Public transportation and safety
- Education and employment
- Security and law enforcement
- Urban planning and development
- Environmental protection, clean energy, and sustainability
- Not-for-profit organizations and government agencies' services
- Ethnical and social biases embedded in datasets and analytics methods
- Social justice, disparities, inequality and poverty

Submission Process and Timelines

In the extended abstract and full paper submission, authors should clearly justify the novelty and significance of their work. We encourage prospective authors to read the recent JAIS editorial on “What’s in a Contribution?” to justify their research’s significant and novel contributions to the IS discipline regarding Data Science for Social Good (Leidner 2020). All submissions must be original and not be published or under review elsewhere. Papers should be submitted following the standard JAIS submission procedure (<http://aisel.aisnet.org/jais/>). All JAIS submission guidelines must be met. Although optional, authors are strongly encouraged to contact the co-editors with a 1-3 page extended abstract by November 15, 2020 to evaluate research fit with the special issue. The co-editors also plan to organize an online paper development workshop in the summer of 2021. Authors of invited to submit a revision for a second round of review will have an opportunity to present their work at this workshop. The exact date and format of this online workshop will be determined after the first round of review.

Submission/Review/Revision Timelines

Date	Event
November 15, 2020	1-3 page extended abstract submission
February 15, 2021	Full paper submission
June 15, 2021	Notification of first round review
October 15, 2021	Revised manuscript submission
January 15, 2022	Notification of second round review
April 15, 2022	Second revision submission
July 15, 2022	Notification of final decision

Special Issue Editorial Board

Alan Abrahams, Virginia Tech
 Victor Benjamin, Arizona State University
 Michael Chau, University of Hong Kong

Maria De'Arteaga, University of Texas at Austin
Monica Garfield, Bentley University
Tomer Geva, Tel-Aviv University
Steven Johnson, University of Virginia
Brent Kitchens, University of Virginia
John Lalor, University of Notre Dame
Karl Lang, Baruch University
Raymond Lau, City University of Hong Kong
Yang Lee, Northeastern University
Xiaobai (Bob) Li, University of Massachusetts at Lowell
Ee-Peng Lim, Singapore Management University
Xiao Liu, Arizona State University
Asil Oztekin, University of Massachusetts at Lowell
Jeff Proudfoot, Bentley University
Shawn Qu, University of Notre Dame
Sagar Samtani, Indiana University
Alan Wang, Virginia Tech
Chih-Ping Wei, National Taiwan University
Kang Zhao, University of Iowa
Wenjun Zhou, University of Tennessee

References

- Abbasi, A., Sarker, S., & Chiang, R. H. (2016). "Big Data Research in Information Systems: Toward an Inclusive Research Agenda," *Journal of the Association for Information Systems*, 17(2), i-xxxii.
- Abbasi, A., Li, J., Clifford, G., & Taylor, H. (2018). "Make "Fairness by Design" Part of Machine Learning," *Harvard Business Review*.
- Bell, G., Hey, T., & Szalay, A. (2009). "Beyond the Data Deluge," *Science*. (323:5919), 1297–1298.
- Chui M. et al. (2018). "Notes from the AI Frontier: Applying AI for Social Good," McKinsey Global Institute.
- Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). "Design Science in Information Systems Research," *MIS Quarterly*, 28(1), 75-105.
- Hey, T, Tansley, S., & Tolle, K. (2009). *The Fourth Paradigm: Data-Intensive Scientific Discovery*. Microsoft Research.
- Leidner, D. E. (2020). "What's in a Contributions?," *Journal of the Association for Information Systems*, 21(1), 238-245.
- Nunamaker Jr, J. F., Briggs, R. O., Derrick, D. C., & Schwabe, G. (2015). "The Last Research Mile: Achieving both Rigor and Relevance in Information Systems Research," *Journal of Management Information Systems*, 32(3), 10-47.
- Saar-Tsechansky, M. (2015). "Editor's comments: The Business of Business Data Science in IS journals," *MIS Quarterly*, 39(4), iii-vi.

Taylor, H. A., Henderson, F., Abbasi, A., & Clifford, G. (2018). "Cardiovascular Disease in African Americans: Innovative Community Engagement for Research Recruitment and Impact," *American Journal of Kidney Diseases*, 72(5), S43-S46.