Introduction to the Special Issue on AI Fairness, Trust, and Ethics

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Transactions on Human-Computer Interaction

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Abstract:

It is our pleasure to welcome you to this *AIS Transactions on Human Computer Interaction* special issue on artificial intelligence (AI) fairness, trust, and ethics. This special issue received research papers that unpacked the potential, challenges, impacts, and theoretical implications of AI. This special issue contains four papers that integrate research across diverse fields of study, such as social science, computer science, engineering, design, values, and other diverse topics related to AI fairness, trust, and ethics broadly conceptualized. This issue contains three of the four papers (along with a regular paper of the journal). The fourth or last paper of this special issue is forthcoming in March 2021. We hope that you enjoy these papers and, like us, look forward to similar research published in *AIS Transactions on Human Computer Interaction*.

Keywords: Artificial Intelligence; AI Bias, AI Fairness, AI Trust, AI Ethics, Algorithmic Fairness, Algorithmic Bias.

Fiona Nah was the accepting senior editor for this paper.

1   Introduction

It is our pleasure to welcome you to this *AIS Transactions on Human Computer Interaction* special issue on artificial intelligence (AI) fairness, trust, and ethics. AI is rapidly changing every aspect of our society; yet as we are now coming to realize, it is subject to many human prejudices (Hughes, Robert, Frady, & Arroyos, 2019; Robert, Gaurav, & Lütge, 2020; Shneiderman, 2020). This subjectivity is problematic because AI systems make millions of decisions without involving humans and that designers cannot comprehend (Robert, Pierce, Marquis, Kim, & Alahmad, 2020). Research on AI in the information systems (IS) field remains scarce. To address this gap in knowledge, the call of this special issue sought submissions that could improve our understanding about the impacts of AI in organizations and our broader society.

This special issue on AI fairness, trust, and ethics called for and received research papers that unpacked the potential, challenges, impacts, and theoretical implications of AI. This special issue integrates research across diverse fields of study, such as social science, computer science, engineering, design, values, and other diverse topics related to AI fairness, trust, and ethics broadly conceptualized. The papers in this special issue represent research from different perspectives that offer novel theoretical implications that span disciplines. Each paper helps to improve our understanding about the impacts of AI in organizations and in our broader society.

This special issue would not have been possible without the efforts of many. There would be no papers without the authors that produced them. The papers would go nowhere without the dedicated efforts of the special issue board members along with the anonymous reviewers brought on board from around the world to establish, via two rounds of review, accurate assessments of each paper's contribution.

2   Overview of Papers

This special issue of *AIS Transactions on Human Computer Interaction* contains four papers. The special issue attracted many paper submissions that spanned numerous emerging research topics from across the globe. Overseen by the special issue guest editors, Lionel P. Robert Jr., Gaurav Bansal, Nigel Melville, and Tom Stafford, the four papers for this special issue were selected after multiple rounds of revisions. We publish this special issue alongside one regular paper by Moqbel, Rahman, Cho, and Hewitt (2020). The fourth and last paper of the special issue will appear in the next issue in March 2021. In all, this issue comprises three of the four papers accepted for the special issue on AI fairness, trust, and ethics. We appreciate the willingness of the authors and reviewers in helping to make this special issue possible.

In the first paper, "On Implementing Ethical Principles in Design Science Research", Ivo Benke, Jasper Feine, John R. Venable, and Alexander Maedche (2020) present a design science research (DSR) process to address issues related to ethics in DSR. They build on and extend Myers and Venable's (2014) proposed six ethical principles for DSR. To do so, they explore how the DSR literature has contextualized and implemented the six ethical principles. Their results highlight the fact that DSR publications have not discussed the six ethical principles in depth. To better include ethical considerations in DSR, the authors outline two pathways toward ethical DSR. First, they suggest the need to articulate the next generation of ethical principles for DSR. Second, they propose extending DSR conceptualizations to include an ethical dimension by introducing the concept of ethical DSR (E-DSR) process models. In all, the paper directly addresses the issue of ethics in DSR.

In the second paper, "Trust in 'Trust-free' Digital Networks: How Inter-firm Algorithmic Relationships Embed the Cardinal Principles of Value Co-Creation", Arindam Das (2020) introduces the concept of an algorithmic relationship to explain why firms adapt smart contracts although they seem to lack transparency. Algorithmic relationships embed the concepts of smart contracts in inter-firm cooperation to help us better understand trust or trust-free relationships in digital networks. Algorithmic relationships leverage technologies such as blockchain and the Internet of things to offer new perspectives on trust in inter-firm cooperation. To explain why firms adapt smart contracts, the author presents an extant literature review on trust, inter-firm cooperation, business model innovation, and digital platforms. In doing so, the author highlights how various factors influence whether firms adopt smart contracts. The author even goes further and presents the drawbacks that may impede shared value creation. Overall, the paper provides a refreshing and novel view of trust in trust-free digital networks.

In the third paper, "Exploring the Intersection of the Digital Divide and Artificial Intelligence: A Hermeneutic Literature Review", Lemuria Carter, Dapeng Liu, and Caley Cantrell (2020) draw our attention to the emerging problems associated with the global AI digital divide. AI offers tremendous benefits to our global society but also can have unintentional adverse effects when it further exacerbates global inequality. The authors go beyond simply identifying the problem but also help to identify a path forward to address it. The authors first summarize current knowledge of the AI digital divide via a hermeneutic literature review. They then propose three theoretical frames: 1) conceptualizing the divide, 2) modeling the divide, and 3) analyzing the divide. Their theoretical frames provide the foundation for a socio-technical research agenda for addressing the AI digital divide. One can also use these theoretical frames to generate an ambitious and achievable research agenda for scholars. To that end, the paper offers both a novel and solid foundation for exploring the AI digital divide.

In the fourth paper, "Understanding the Effect of Task Complexity on Automation Potential and Opacity: Implications for Algorithmic Fairness", M. Vimalkumar, Agam Gupta, Divya Sharma, and Yogesh K. Dwivedi (forthcoming) draw on the notion of task complexity to better understand issues associated with using AI to automate tasks. Scholars and practitioners increasingly agree that the use of AI to automate tasks contributes to problems related to a lack of transparency and fairness. Yet, the role of task complexity remains relatively unexplored. The authors highlight the role of task complexity in both a lack of transparency and problems with task fairness. They draw on a typology of tasks based on task complexity to develop a theoretical framework. They also theoretically link task complexity to the potential to automate a task, its opacity, and its resulting unfairness from automation. Overall, the paper advances our understanding of AI transparency and task fairness through task complexity, providing design recommendations in the form of affordances to address both issues.

3   Conclusion

In closing, we hope that the range of papers presented in this special issue reflects our intent to be international, interdisciplinary, and inclusive in our understanding of AI. This special issue is the latest product of the efforts of AIS to validate and integrate the strong but emerging AI research happening within the broader IS research community (for authors, see You & Robert, 2018). We hope that you enjoy these papers and, like us, look forward to similar research published in *AIS Transactions on Human Computer Interaction*.

Acknowledgments

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Lionel P. Robert Jr. is an Associate Professor in the School of Information (UMSI) at the University of Michigan and an Association for Information Systems Distinguished Member. He completed his Ph.D. in Information Systems from Indiana University where he was a BAT Fellow and KPMG Scholar. He is the director of the Michigan Autonomous Vehicle Research Intergroup Collaboration (MAVRIC) and also a core faculty member of the University of Michigan Robotics Institute, Center for Hybrid Intelligence Systems and the National Center for Institutional Diversity all at the University of Michigan and the Center for Computer-Mediated Communication at Indiana University. He is currently on the editorial boards of *Association for Information Systems Transactions on Human Computer Interactions*, *Journal of the Association for Information Systems*, *Association for Computing Machinery Transactions on Social Computing,* and *Management Information Systems Quarterly*. He and his work have appeared in print, radio and/or television for ABC, CNN, CNBC, Michigan Radio, New York Times, and the Associated Press.

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