Computational Models for Social Good: Beyond Bias and Representation

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Abstract. This panel will bring a timely and overdue discussion to SBP-BRiMS on computational social and behavioral modeling for social good. What's more, we will host a discussion on what it means to critically approach social good in a way that moves beyond discussions of bias and representation. During this panel, panelists will introduce themselves and positions on topics related to social good within computational behavioral and social modeling, and (along with audience members) proceed to discuss sub-topics, queries, and provocations. Chris Dancy will moderate the discussion and ensure an opportunity for interactive experience for all of those in attendance.

Keywords: Computational social good · Behavioral modeling · Social modeling · Systems of oppression · Critical imagination

1 Introduction

The SBP-BRiMS community has long been at the forefront of research at the intersection of computation and the social world. This intersection plays out in a variety of ways with the community being deeply engaged in research that links computational methods with the social sciences. Examples include approaches that combine sociological theory with network science [1, 2], social and/or cognitive psychology with agent-based, computational simulation [3–5], and research linking machine learning with questions in political [6, 7] and health [8] sciences. Efforts within the community have also deeply engaged with core questions and problems in social policy, questions that span myriad computational and social scientific disciplines [9–12].

Recent years have brought yet another dimension to the intersection of computation and the social world that the SBP-BRiMS community, and others like it, have faced with increasing regularity. Broadly known as *computing (or data science) for social good* [13], this domain of research emphasizes the ways in which computation can be used to "do good" in the world. Examples of such research include efforts to use computation to diagnose and/or forecast COVID [14], and to improve traffic flow patterns to ease road congestion [15]. Such research generally takes for granted several notions:

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a) These tasks can be *solved* with computation.
b) Attempting to solve these tasks provides a net benefit to society.
c) The tasks being addressed will, if *solved*, produce "social good" in self-apparent ways.

The reality, however, is never quite so simple. Scholars in a variety of critical disciplines have emphasized challenges with efforts to perform "Computing for Social Good" (e.g., [16, 17]). With respect to a) above, myriad challenges, from data collection to the inherent difficulty of the task, can create a ceiling for predictive performance on tasks of societal relevance [18]. The result is the expenditure of significant amounts of money on computational tools that were never likely to work, money that could have been spent on low, or even no-tech solutions, that would have produced obvious benefits. With respect to b), there is significant evidence that many problems that have seen attention from computer scientists, including crime prediction [19] and prediction of who need medical care [20], are problems that even if solved will simply serve to reify and further exacerbate existing structural inequalities. What's more, many of these solutions have failed to address the contexts of systems of oppression and understand how such computational systems are likely to interact with institutions that further those systems (for a related discussion see [21]). And with respect to c), similarly, certain problems, such as the development of datasets to evaluate deep fake detection tools [22], have arguably created more problems than they have solved, even if couched in language that such models can ultimately further social good by creating tools that others would have developed anyway.

There are, of course, significant potentials for computation to help improve both our understanding of and ability to live within the social world. The goal of this panel is to engage the SBP-BRiMS community in a debate with experts in the field on how to ensure that efforts to create technology for social good actually do so, and perhaps most importantly, do so for **all**, and not just for those who currently most benefit from existing systems of oppression. The panel will cover at least the following specific questions:

1. What does it really mean for technology to be made for "social good," or "in the public interest"?
2. How might "social good" exclude those from certain communities?
3. How do we best navigate questions about whether or not to build technology *before we actually start to build it?*
4. How do we as an SBP-BRiMS community best advance core issues of social justice, in particular racial inequality?

The format of the panel will be such that it provides time for the panelists listed below to scaffold the discussion with critical perspectives on their experiences, personal and academic, at the intersections of race and technology (Dancy), and technology in the child welfare system (Joseph). It will also provide an array of perspectives, including critical humanist approaches (Castillo), from the intersection of computational modeling, cognitive science, and critical black studies (Dancy), from the computational social sciences (Joseph, and another panelist). After initial, brief statements from the panel participants, attendees will be asked to engage with the panel in a form of critical imagining

[23], where efforts are made to move beyond current boundaries in the field and community to imagine what it would take, currently feasible or not, to truly create technology that is for the social good.

2 Confirmed Participants

Christopher L. Dancy
Chris Dancy is an Associate Professor in Industrial & Manufacturing Engineering and in Computer Science & Engineering at the Pennsylvania State University, University Park. He currently investigates research questions exploring relations between computing systems, cognition, and *the Human*. Dr. Dancy engages with theories and methods from several disciplines, including computational cognitive science, AI, and black studies, to move towards answers to those research questions. His most recent work explores antiblackness in the design, development, and interaction with AI systems. He has served as a Program Committee Chair for SBP-BRiMS since 2018 and has also served as Chair of the Behavior Representation in Modeling and Simulation (BRiMS) Society in the past. Dancy will contribute to the panel through critical reflection and discussion of the ways antiblackness may influence ideas of computing for social good.

Kenneth Joseph
Kenneth Joseph is an Assistant Professor in Computer Science at the University at Buffalo. His research engages with questions at the intersection of sociology, social psychology, social work, and computer science. Recent efforts have focused on understanding how algorithmic biases emerge from structural inequality in social systems, with a specific focus on the American child welfare system. He is a contributing member of the SBP-BRiMS community, including co-organizing the doctoral consortium at the event over the past three years. His contribution to the panel will be a discussion about how qualitative and quantitative methods can be usefully combined to provide critical perspectives on the development of algorithms in high-stakes environments.

3 Invited Participants

David Castillo
David Castillo is a Professor of Romance Languages and Literatures at the University at Buffalo and the Director of the UB Humanities Institute. He also, in 2021, co-founded the Center for Information Integrity at the University at Buffalo, a multidisciplinary effort to study how misinformation spreads online and what might be done to counter that spread. David's expertise is in bringing a critical humanistic perspective, linking contemporary questions about mis- and disinformation on social media to the long trail these questions have wound over time and the ways they are intertwined with the evolution of literature throughout history.

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