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Ph.D. DISSERTATION DEFENSE

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Title:	Evaluating the Effectiveness of Causal Information for Informed Decision-Making in Healthcare
Chairperson:	Dr. Samantha Kleinberg, Department of Computer Science, Stevens Institute of Technology
Committee Members:	Dr. Ping Wang, Department of Computer Science, Stevens Institute of Technology Dr. Jonggi Hong, Department of Computer Science, Stevens Institute of Technology Dr. Onur Asan, Department of Systems and Enterprises, Stevens Institute of Technology Dr. Mark Ho, Department of Psychology, New York University

ABSTRACT

People often use unreliable sources such as social media to find health information and tend to overestimate their knowledge. As a result, they make many daily decisions based on inaccurate knowledge, which can create risks to their health outcomes. Throughout my research, I conducted a series of experiments testing the effectiveness of causal diagrams and causal information for decision-making support in healthcare. Simply showing causal outputs as they are may not lead to better decisions, since people's prior beliefs can significantly influence how they interpret and apply causal information. In this talk, we will discuss how causal diagrams can be represented in an accessible and actionable way for human use in the healthcare domain, and explore how people's beliefs contribute to their use of these diagrams. Next, we will examine the role of knowledge calibration by measuring both perceived and actual knowledge in the context of using causal diagrams. We will then go over the application of causal information in the form of text messages to promote physical activity in real-world settings. Finally, we will conclude by discussing how insights from these experiments can inform the development of interventions that are both human-centered and effective in supporting decision-making.