SUPROTEEM SARKAR

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I am applying to the NBER Digitization Tutorial to build on my research interests in the economics of digitization, engage with leading faculty, and meet with and learn from other students in the field. At the tutorial, I hope to build a more comprehensive knowledge of the state-of-the-art in the discipline and work toward conducting meaningful research in the space.

I am currently enrolled in the PhD program in Economics at Harvard, and will be completing my second-year course requirements this December. I also graduated with a Bachelor's in Computer Science and a Master's in Applied Mathematics from Harvard, and spent my summer months at Microsoft and Google conducting research on machine learning and its social scientific implications.

My research interests are centered around the economics of technology, and I have a series of completed and ongoing projects in the space. My previous work had a more algorithmic, technical flavor, and my more recent work focuses on classical economic questions, while building upon my technical and professional background.

In response to the ongoing growth of machine learning in research and practice, the more technical strand of my work aims to better understand the effects of machine learning's growth on science and policy. One ongoing project, Robust Classification of Financial Risk, studies the fragility of deep learning models used for financial applications, and proposes both methodological and practical changes that might make these models more robust in practice. Another, Universal Causal Evaluation Engine (*Proceedings of Machine Learning Research*, 2019), develops methods for increasing the consistency of machine learning-informed causal inference research. I have also worked with Jeannie Suk Gersen at Harvard Law School and Michael Brenner at Harvard to study risk assessment technologies in criminal justice from a law and economics perspective (Constitutional Dimensions of Predictive Algorithms in Criminal Justice, forthcoming in *Harvard Civil Rights-Civil Liberties Law Review*, 2019). Finally, in a project joint with Sendhil Mullainathan at Booth and Ziad Obermeyer at Berkeley, I study the welfare effects of machine learning-informed health policy, using information from the health impact of mammogram screening policy changes in Denmark.

Another major strand of my current research agenda focuses on the economics of innovation and technology. One project, joint with Scott Duke Kominers at HBS, examines

how the structure and content of patent applications evolve in response to external innovations and shocks to the regulatory environment. Another project, recently presented at Harvard's Industrial Organization workshop, uses natural language methods to document how the evolution of technical innovation affects product mixes and competition within industries. As a Graduate Student Affiliate at Harvard's Opportunity Insights lab, I am also studying how automation impacts jobs across the US under different labor environments. Throughout this strand of my research, I aim to understand how innovation and digitization change the way we think about common economic systems.

I strongly believe that taking part in the NBER Digitization Tutorial will be instrumental in helping me develop as a researcher in the field. The content presented at the conferences has a strong overlap with my interests and future research goals, and I am very enthusiastic about the opportunity to interact with and learn from other researchers in the discipline moving forward.

I am thankful for the support of a National Science Foundation Graduate Research Fellowship for some of the research discussed in this application.