Dear Selection Committee of the Winter Meeting of the NBER Economics of Digitization Group,

I am writing to apply to participate in the Economics of Digitization tutorial for economics graduate students. My name is David Holtz, and I am a fifth year PhD student in the Information Technology group at the MIT Sloan School of Management, where my advisor is Professor Sinan Aral. At a high level, my research focuses on questions relevant to the design and analysis of online marketplaces. More specifically, I am interested in measuring the impact of feedback-based reputation systems on market outcomes and market structure, assessing the viability of social-based alternatives to feedback-based reputation systems, understanding the impact that new technologies and algorithms will have on online platforms and marketplaces, and developing new methods that lead to more accurate causal inference in competitive marketplace environments (where SUTVA is often violated). I have been fortunate enough to attend the NBER graduate student digitization tutorial the past two years, and found the program immensely helpful. The tutorial gave me the opportunity to learn from leading scholars in the field of digitization, build a stronger intuition for how to identify exciting research questions in this area, and develop relationships with other graduate students interested in similar topics. Attending the tutorial again would be an excellent opportunity to continue developing my skills as a researcher and building relationships with like-minded academics, and I'd be thrilled to participate.

As a graduate student at MIT, a large portion of my coursework has focused on economics and econometrics. In the economics department, I have completed the introductory graduate microeconomics sequence (which includes coursework on microeconomic foundations, general equilibrium, game theory, and contract theory) and the introductory graduate econometrics sequence, as well as courses in behavioral economics, industrial organization, the economic theory of networks, and applied econometrics. Outside of the economics department, I have completed courses in machine learning, Bayesian inference, information theory, experiment design, applied network analysis, and the economics of digitization. This curriculum has enabled me to develop an expertise in my major (networks, industrial organization) and minor (causal inference) areas of focus. In the past year, I have been a participant at the 2019 NBER graduate student digitization tutorial, as well as the CMU Summer Workshop on Machine Learning. These programs have helped me translate my classroom education at MIT into the ability to conduct high-quality research.

I currently have a number of research projects in progress, almost all of which have the potential to serve as eventual dissertation chapters. Over the past three years, I have worked with Andrey Fradkin (an Assistant Professor of Marketing at BU Questrom) and Elena Grewal (former Head of Data Science at Airbnb) on a paper that leverages experiments conducted on Airbnb to identify factors that may lead to reduced informational content in online reviews. Last year, under the supervision of Diana MacLean and Professor Sinan Aral, I completed an observational study of Facebook buy and sell groups, focused on measuring the extent to which network structure establishes trust (and facilitates transactions) in informal online marketplaces. This work was presented at the 2017 International Conference on Information Systems. Over the past two years, I have been working with researchers at Airbnb on a project investigating the use of experiment analysis and design techniques for inference on networks to reduce test-control interference in online marketplace experiments. Early output from this work was presented at the 2016 Conference on Digital Experimentation, as well as the 2016 Workshop on Information Systems and Economics. I am also in the process of writing up the results of a large-scale field experiment I conducted on Facebook Marketplace, along with Professor Sinan Aral and P. Alex Dow. The experiment introduced feedback-based reputation into Facebook Marketplace. We aim to quantify the impact that the introduction of ratings had on marketplace growth and structure. I gave talks on the design of this experiment at the 2017 Conference on Digital Experimentation, as well as the 2017 Workshop on Information Systems and Economics. Finally, I am in the process of writing up a research project conducted in collaboration with Spotify, in which we aim to measure the effect of personalized content recommendations on the *type* of content that users consume.

As a PhD student in the final years of my program, I have no doubt that attending this program again would be enormously beneficial. I'm grateful for the opportunity to apply, and would be honored to attend. Thank you for your consideration.

Sincerely,
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