Please accept my application to participate in the NBER's Economics of Digitization tutorial in March 2023. I include the requested information below.

Contact Information

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Advisor: *Raviv Murciano-Goroff*, Assistant Professor, Boston University

Course of Graduate Study

PhD in Strategy & Innovation at Boston University (2020 on)

Major courses in Strategy & Innovation (5)

1. HBS 4561 "Empirical Studies of Innovation" at Harvard Business School — Spring 2022 with Shane Greenstein
2. MIT 15.357 "Economics of Ideas, Innovation & Entrepreneurship" at MIT — Fall 2021 with Pierre Azoulay & Scott Stern
3. HBS 4110 "Foundations of Strategy" at Harvard Business School — Fall 2021 with Dennis Yao
4. QST SI917 "Research Seminar in Technology Strategy and Innovation" at Boston University — Spring 2021 with Tim Simcoe & Rosemarie Ziedonis (and others)
5. MIT 15.576 "Research Seminar in Technology and Organizations: Social Perspectives" at MIT — Spring 2021 with Wanda Orlikowski

Minor courses in Economics (5) — BU doctoral-level economics courses including Microeconomic Theory 1 & 2, Introduction to Mathematical Economics, Advanced Statistics for Economists, and Advanced Econometrics

Methods courses (5) — BU doctoral-level business classes including Analytical Modeling for Business Research (theoretical IO, with Monic Sun), Machine Learning Seminar (with Nachi

Sahoo), Macro Organization Theory (with Siobhan O'Mahony), Field Studies Seminar (with Karen Golden-Biddle), Causal Inference for Management Research (with Tim Simcoe)

Research Interests

Keywords: *automation, digitization, skills, jobs, amateurs, crowdsourcing, intrinsic motivations, non-pecuniary incentives, gamification, distributed innovation*

My primary research area addresses how firms can leverage the intrinsic motivations of digital communities (e.g., online hobby groups, open-source communities, crowdsourcing platforms) for private gain, particularly when sourcing externally generated innovation (Chesbrough, 2003). I approach this topic in my main research project by empirically exploring when and how online communities excel at collectively solving complex problems. For this, I obtain quantitative data from online "speedrunner" communities (video game user communities) that self-organize to collaboratively solve complex *in-game* problems, and I examine relationships between community structure and problem-solving performance. Most specifically, this research asks whether communities of this sort (self-organized, problem-driven, online, and intrinsically motivated) deliver superior performance when pursuing secondary goals in addition to a shared primary goal. The current title is "The Value of Peripheral Goals for Problem Solving in User Communities," and it — alongside parallel projects in the same setting of gaming communities — is likely to constitute the material for my dissertation. My provisional dissertation committee for this work includes BU professors Siobhan O'Mahony, Raviv Murciano-Goroff, and Jeff Furman.

Communities of this mold flourish in the present era of digitization and internet-enabled connectivity, and their potential for tackling difficult problems in a distributed fashion is well documented (e.g., open-source projects and Wikipedia). It seems likely that the continuing digitization of work and life will expand opportunities for these impressive, "organic" collectives to emerge and shape the decisions of firms.

In a separate research stream, I look to study the impacts of technology on job design, especially as a consequence of automation or digitization. For example, where digitization enables managers to disassemble existing jobs into their constituent tasks — with traditional

(i.e., physical) constraints on job design relaxed — new efficiencies may emerge during reassembly. It seems likely that modular tasks made free to rearrange could instead be assigned based on intrinsic motivations, either by distributing tasks to employees based on their preferences (after considering skill requirements) or by engaging open crowds and volunteers (similarly to citizen science, Franzoni and Sauermann, 2014).

I approach this second topic relating technology and job design by assessing the impact of US minimum wage increases on the automatability of jobs within firms, drawing on measures of skill automatability from Brynjolfsson et al. (2018) and job vacancy data from Burning Glass Technologies. This research essentially asks how managers navigate the necessity of future redesign for jobs that use automatable skills and how this costly prospect influences their distribution of automatable work in the present. I use staggered minimum wage increases throughout the 2010s as an exogenous driver of job redesign. The current title is "The Effect of Minimum Wage Laws on Within-Firm Distributions of Automatable Work," and it has developed under the supervision of Raviv Murciano-Goroff. This stream more closely aligns with the 2023 tutorial's focus on macroeconomic consequences re: labor, and although my work does not involve AI technologies explicitly, the relevant literature is often shared (e.g., Acemoglu et al., 2019).

I would greatly appreciate the opportunity to develop and deepen my understanding of these topics at the 2023 NBER Digitization Tutorial. Thank you for your consideration.

References

Acemoglu, D., Autor, D., Hazell, J., & Restrepo, P. (2019). AI and Jobs: Evidence from Online Vacancies. *NBER Working Paper*, (October).

Brynjolfsson, E., Mitchell, T., & Rock, D. (2018). What Can Machines Learn and What Does It Mean for Occupations and the Economy? *AEA Papers and Proceedings*, *108*. https://doi.org/10.1257/pandp.20181019

Chesbrough, H. W. (2003). *Open Innovation The New Imperative for Creating and Profiting from Technology*.

Franzoni, C., & Sauermann, H. (2014). Crowd science: The organization of scientific research in open collaborative projects. *Research Policy*, *43*(1). https://doi.org/10.1016/j.respol.2013.07.005