Application Material

I am a third-year Ph.D. Candidate in Management of Organizations at the Haas School of Business, University of California, Berkeley. I am interested in studying the changing dynamics of novelty and knowledge generation in light of new digital technologies. In particular, I am researching how new information digitized in the form of *data* becomes a key input into the innovation production function. My research explores how data differ from other information goods, and how firms and innovators employ them to generate novel knowledge. I am especially keen on understanding organizational and individual-level dynamics behind the use of large and complex data, and the possible trade-offs that data-driven innovation entails.

Graduate study pursued

Before joining Haas, I got a BA and MSc in Economics from the University of Pisa (Italy) and an Advanced Diploma from Sant'Anna School in Pisa. My education was in general Economics, with an emphasis on advanced theoretical coursework (Microeconomics, Macroeconomics, Mathematical Statistics, Econometrics). My Master's thesis and my research assistantships were focused on understanding the impact of technological changes on firms and innovation, especially in historical contexts like the British First Industrial Revolution. In Fall 2017, I visited the Georgia Institute of Technology, where I carried out a semester-long project on the current development of "Industry 4.0" -- as the digitization of manufacturing we are currently witnessing is sometimes referred to.
At UC Berkeley, I completed two years of intense coursework mostly focused on three areas: organizations and innovation (major), labor economics (minor), and empirical and computational methods (minor). My overall GPA is 4.0 and the most relevant classes I took include: Applied Econometrics (thaught by Pat Kline and Chris Walter), Applied Machine Learning (Joshua Blumenstock), Labor Economics (David Card), Economics of Innovation (Lee Fleming), Topics in Economics of Innovation (Abhishek Nagaraj), Sociology of Organizations (Heather Haveman), and Macro-organizational Behaviour (Toby Stuart, Sameer Srivastava, Mathijs de Vaan). I crafted my graduate school coursework so that it exposed me to cutting-edge empirical methodologies and tools while exploring research in innovation and digitization through a variety of disciplinary lenses (Economics, Sociology, and Management).

A synopsis of my academic CV is as follows:

- Ph.D. Candidate, UC Berkeley, Haas School of Business (Aug. 2018 - ongoing) - *GPA: 4.0/4.0*
- Visiting Student, Georgia Institute of Technology (Fall 2017) - *hosted by Prof. John P. Walsh*
- MSc in Economics, University of Pisa (Oct. 2016 - Jul. 2018) - *110/110 summa cum laude et encomium*

- BA in Economics and Management, University of Pisa (Oct. 2013 - May 2016) - *110/110 summa cum laude*
- Diploma in Economic Sciences, Sant'Anna School of Advanced Studies in Pisa (Oct. 2013 - Jul. 2018) -*100/100 summa cum laude*

Ongoing dissertation research:

In my dissertation, I plan to investigate how digital technologies are changing innovation and knowledge generation in a variety of corporate and academic settings. The surge in availability of big data, the cheap diffusion of computational capabilities, and the development of software tools are ushering in a new era where digitization will change the way innovation unfolds. I am particularly interested in the first of these components, big data, which constitute an understudied key input for innovation in the digital economy. Data are a peculiar form of digitized information which has many facets worth exploring.
My current work studies how digitization is changing academic research. While new theories are constrained only by the limits of imagination, empirical research must contend with the practical realities of limited access to existing data and the costs of collecting new ones. This means that digital databases become the fundamental research tool of modern empirical science, we still lack a full account of the dynamics and mechanisms through which access to digital information in the form of data affect the rate and direction of research. On the one hand, democratizing access to research inputs has been shown to improve research output, but on the other, increased data availability could lead researchers to focus on uninteresting questions or crowd out new theory generation. And even if data have a positive impact on research output, it is unclear if this marginal research is higher quality and what types of researchers do (or do not) benefit from data access. I am researching these questions by analyzing the impact of confidential microdata on economic research. To identify the causal impact of increased data access, I exploit the gradual expansion of the Federal Research Data Center (FRDC) program launched by the U.S. Census Bureau in 1994. The FRDC program consists of several secure facilities across the U.S. where researchers can access large confidential databases. Importantly for my empirical strategy, researchers wishing to analyze confidential data have to be pre-approved by the Census Bureau and are required to perform their analyses exclusively in situ. We can therefore approximate the cost of accessing administrative data by examining whether an FRDC is operational in their home institution and exploit the gradual expansion of the number of FRDC locations across the U.S. as an identification strategy to isolate its impact. My preliminary results show large increases in local use of data following the opening of a data center, with the effect being driven by first-time users. In a subsequent analysis, I document that empirical researchers are the ones benefiting from the opening of a nearby Research Data Center. Compared to researchers engaged in theoretical research in the same university, the availability of data increases their likelihood of publishing in top general-interest economics journals. Overall, this preliminary work shows the heterogeneous impact of digitized information in the form of data on academic research, and its potential to shape the quality and nature of the research performed.

In my future projects, I plan to keep investigating these dynamics in corporate settings. Availability of large databases is on the rise, and while many observers and practitioners recognized their potential to drive firm innovation, singling out the distinct contribution of digital information embodied in data is not easy. The key empirical challenge is that data are an input for innovation whose standalone importance is extremely difficult to trace and measure separately from other components (software, algorithms, etc.). Possible research avenues that I am exploring right now are devising randomized experiments to causally identify the role played by data, or focusing on specific settings where it is possible to identify distinct "data shocks" (e.g. the release cancer genome mapping efforts).

Dissertation Committee Members:

Lee Fleming, Professor, Coleman Fung Institute for Engineering Leadership, UC Berkeley (co-chair)
Abhishek Nagaraj, Assistant Professor, UC-Berkeley Haas (co-chair)
Toby Stuart, Professor, UC-Berkeley Haas
Enrico Moretti, Professor, Department of Economics, UC Berkeley

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