NBER Digitization Tutorial
December 26, 2022

Dear Committee Members,

I am pleased to attach my application for the NBER Digitization Tutorial. You will find below a CV with my contact information, an overview of graduate studies to date and a description of my interests and current research projects. I will gladly provide any other supporting materials upon request.

You can contact me at my email (jboudou@hbs.edu).
Thank you for your consideration, and I look forward to hearing from you.

Sincerely,
Justine Boudou

JUSTINE BOUDOU

Harvard Business School
jboudou@hbs.edu

EDUCATION

Harvard Business School, Boston (USA) — 2020 to date
Ph.D. Student in Business Administration
Field: Technology & Operations Management (Innovation track)

HEC Paris, Jouy-en-Josas (France) — 2016 – 2019
MiM (Master in Management)

Delft University of Technology, Delft (The Netherlands) — 2017 – 2018
M.S. Management of Technology
(Exchange program during the last year of Master of the ENPC)

Ecole Nationale des Ponts et Chaussées, Paris (France) M.S. — 2014 – 2018
Engineering (specialization Economics & Finance)

WORK EXPERIENCE

Philips, Amsterdam (The Netherlands) — 2019 – 2020
Mergers & Acquisitions Analyst

Pierre Fabre, Paris (France) — 2016 (Summer)
Research Intern, Finance and Strategy department

Polytechnic University of Catalonia, Barcelona (Spain) — 2015 (Summer)
Research Intern, Environmental Engineering and Microbiology Group (GEMMA)

AWARDS

Best Master Thesis Award (HEC Paris)

RESEARCH

The involvement of Big Tech companies in the science of AI: brain drain or new paradigm for science? *(solo - in progress)*

Approaching the frontier: the impact of deep learning and AI on the composition and nature of the protein structure modeling field *(solo - in progress)*

Digitization in healthcare and the role of academic medical centers *(with Ariel Stern - in progress)*

Close to home: academic startups proximity to founders' knowledge and performance outcomes on the academic and entrepreneurial markets *(with Maria Roche - in progress)*

GRADUATE COURSEWORK

All coursework is completed and is at Harvard, except specified otherwise.

Economics

1. Microeconomic Theory I (Rahul Deb)
2. Microeconomic Theory II (Chris Avery and Dennis Yao)
3. Industrial Organization I (Ariel Pakes)
4. Labor Economics and Labor Market Institutions (Amanda Pallais)
5. Empirical Research in Labor and Public Economics (Winnie van Dijk)

Methods

1. Econometric Methods for Applied Research I (Gregory Bruich)
2. Econometric Methods for Applied Research II (Will Dobbie)
3. Causal Inference in Management Research (Tim Simcoe - BU)
4. Machine Learning and Big Data Analytics (Soroush Saghafian)
5. Machine Learning (David Parkes and Finale Doshi-Velez)

Innovation

1. Economics of Ideas and Innovation (Pierre Azoulay and Scott Stern - MIT)
2. Empirical studies of Innovation and Digitization (Shane Greenstein)
3. Economics of Ideas, Science and Innovation Online Course (Pierre Azoulay, Matt Clancy, Ina Ganguli, Ben Jones and Heidi Williams, organized by the Institute for Progress)

Technology Management

1. Empirical Technology & Operations Management (Antonio Moreno)

ESSAY

Since I began my doctoral studies two and a half years ago, I have been particularly interested in the labor consequences of artificial intelligence on the institution of Science. For this essay, I choose to briefly present two current independent projects of mine that deal with this topic.

One of them aims to study the sorting decision of Computer Science (CS) PhDs at graduation between Industry and Academia, and the consequences of this choice on earnings and scientific production. Private Tech firms such as Google, DeepMind, Meta or IBM have recently been heavily involved in the production of academic-type CS knowledge, publishing in the same prestigious conferences as Carnegie Mellon University, MIT or Stanford. This involvement does not seem to be without consequences for the academic system. In particular, the wage offered by these companies for research positions seems to have led to an important leakage of PhDs students from Academia to the industrial sector after graduation. While we do expect scientists to be paid more in the private sector as a compensation for a loss in research freedom (Stern 2004), it is not clear how this earning gap compares to the difference in research output. While Science may indeed "be privatized", PhDs joining Industry may also be more productive there than in the counterfactual case where they would have joined Academia: firms have access to large data/computational power that may make them more productive, and/or these individuals may just be better suited for the private sector. Considering heterogeneity and selection into treatment, I plan to compare earnings (private returns) and research output (public social returns) between Industry and Academia to assess whether individuals are joining the sector where they have the highest research output.

The second project I am working on deals with the Critical Assessment of Techniques for Protein Structure Prediction (CASP). The CASP is a biennial competition in which participants try to build the best model possible to predict the structure of proteins that are given as inputs by the organizers. Interestingly, since the advent of deep learning, the composition of the field has deeply changed: while the best ranked scientists used to be physicists or biologists, computer scientists have now taken the lead because their deep learning models are extremely powerful at predicting the structure of proteins. This also means that many researchers without a computational background and/or powerful computers must slightly redirect their research, for instance by researching topics that require less "engineering" and more "science", such as protein-protein interactions. With this project, I hope to gain a better understanding of how AI, and more particularly deep learning, impacts the direction of knowledge of other adjacent fields, such as computational biology.

With my dissertation being directly related to the impact of AI on labor, this tutorial is a unique opportunity for me to benefit from experts in the field and make progress on my work. It would also allow me to hear and benefit from other students and initiate fruitful collaborations as I move closer to graduation.

Thanks a lot for your consideration,

Sincerely,
Justine Boudou