Application for the NBER Digital Economics and AI Tutorial 2023

I. Contact Information

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Program: Wharton OID (incoming 3rd year PhD)

II. Coursework

In preparation for the NBER Digital Economics Tutorial, I have completed the first-year sequences in microeconomic theory and econometrics, establishing a strong foundation in theoretical and empirical analysis. To further enhance my research skills, I pursued additional coursework in numerical methods, machine learning, and applied econometrics. On top of these, I have proactively engaged in PhD-level field courses in empirical industrial organization, corporate finance theory, and innovation economics and strategy.

III. Research Interests and Ongoing Projects

My research interest is in technology innovation, with a focus on the business and economic impact of open-source technology. I aspire to explore the following questions:

1. **Open-source strategy (supply side):** why do firms make their technology open source? How can they enhance governance over open-source projects?
2. **Open-source software adoption (demand side)**: when should a firm use open-source software versus proprietary software? What competitive implications does the usage of open-source software bring about?
3. **Economic impact of open source:** How can we measure the economic impact of open-source software, considering its nature of being free?

Below is a summary of the research projects I am currently engaged in:

Deep Capital in Deep Learning with Prasanna (Sonny) Tambe and Daniel rock

- We show that firms' investment in AI is causally related to its investment in prior waves of digital technologies (e.g., big data, web). This mechanism may contribute to the current concentration of investments in AI.

Measure the human capital in open source technology

- This project focuses on the demand side of open source. The first step is to formulate a firm-level measure on its human capital in open source versus proprietary technology. With this measure, we delve into how it may link to various performance measures (e.g., market value, profit).

Value creation and value capture of the open-source strategy

- This research examines the classic tradeoff between value creation and value capture of open-source strategies. Although making a technology open source might increase adoption and attract external contributions, it could potentially harm profitability. We employ empirical data from the database market to explore this question.

Measure the economic welfare of open source

- Despite the increasing prevalence of open-source software, its economic impact remains challenging to quantify due to its free nature. This project attempts to evaluate the welfare effects of open source through a structural approach, utilizing the empirical context of the database market.