DISSERTATION PROPOSAL

Faith Feng

"Essays on Innovation and Entrepreneurship"

Thursday, November 29, 2018
3:00 pm
Tepper Quad 4243

In the first two chapters of my dissertation, I will discuss the industry of open source software development. Since 1990s, the world has seen much success in open source software development including Apache and Mozilla Firefox. While open source industry continues to bring great products into the society, it is also true that most of the projects in online open source platforms are small, inactive and receives little attention. In the first chapter, I analyze the data of development activities on GitHub from 2008 to 2018. I find that over 78% of projects has only one author and about 74% of projects has less than 10 contributions (commits). In addition, conditional on project fixed effect, projects with more contributors are more popular, has higher probability to be released and takes less time to release.

The second chapter, motivated by the first chapter, asks the following questions: why would individual developers contribute to small projects rather than big ones? Are there any potential ways to reduce the dispersion of individual contribution? I will examine the above questions from the perspective of developer project choice under searching. Specifically, developers choose the projects based on projects' current age, popularity, number of contributors, number of code revisions (commits), ownership (by individual or organization) as well as their past contribution in the project. I hypothesize that, controlling for project age and quality, individual developers' incentive to maximize their relative contribution as well as high search and match cost could explain developers' preference of small projects. Intuitively, a developer would prefer to choose a small project (including starting their own small project) if being a core developer in a smaller project is valued more than being a periphery developer in a large project to developers, or if the cost for searching a well-matched project is high. To analyze the above hypotheses, I will build a portfolio selection model with sequential searching, and estimate the model using development data within the Python community on GitHub. Then I will conduct counterfactual exercise when search cost is reduced and when developers only care about their contribution in their most successful project instead of the sum of all projects.

The third chapter is a joint work with Professor Miller on venture capital investment. Venture capital industry has been an important force in driving innovation and entrepreneurship in the past few decades by investing in promising start-ups. In recent years, there has been a decline in the number of IPOs in US. Here we attempt to examine the decline in IPO within venture capital industry. In this project, we will build a stylized model to characterize how venture capitalists choose their start-up investment portfolio, and how they influence the choice of start-up exit (IPO, merger and acquisition, close down).