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Draft of Background and Related Work

Background and Related Work

This work focuses on the interactions between startups and venture capital (VC) firms to try and uncover latent patterns. The interaction of interest here is the flow of money, both between startups and between startups and the VC firms. No knowledge of finance is necessary to understand this or any previous work, but it is important to understand what VC firms do for startups.

The different financial players in a company's lifetime include angel investors, seed stage investors, growth stage investors, growth equity firms, and private equity firms. VC firms typically are involved as seed stage and growth stage investors. When startups raise money, they tend to go through multiple rounds to do so, only raising money in the next round if they have successfully met their goals from the previous round. In addition to funds, VC firms also provide important advice, as most venture capitalists were startup founders themselves. The company Slack is a Series F startup with 9 rounds of funding, totaling in $539.95M. On the other hand, Handshake is a Series A startup with 3 rounds of funding, which amounts to $22M.

It is also important to understand what this work and other works describe as a marketspace. A marketspace is an area of technology that a startup is in. This could be the ride-sharing space, which includes companies like Lyft and Uber, or the communications space, including companies like Slack, WhatsApp, and HipChat. We could even lump Facebook into the latter space. While the definitions of these spaces is subjective and not entirely discrete on the edges, this ambiguity is acceptable given that it does not hinder the analysis of broader patterns.

A first area of previous work is in how to organize market data. Most other works have used a network approach to create graphs that represent markets. "Mining market data: A network

approach" uses stock market data to create graphs of interactions of stocks *for the same company* to understand change over a time. Note, that each graph then represents a single company. This particular study was focused on how to visually represent change in a company of interest, finding that this network approach was successful in doing so. Another related study called "Clustering and information in correlation based financial networks" also creates financial networks based on stocks, but includes financial interactions between companies, as well. Clearly, network-representations of markets have been done before and have been proven useful.

Another important area of prior work is in the analysis of macro-trends in the technology and startup world. Works in this category include PwC Strategy&'s "2016 Technology Industry Trends" report. Using a combination of qualitative features and quantitative features including relative growth and profitability of different companies, the report identifies high-growth marketspaces (like the very broad sharing economy) as important areas to watch out for. It is important to note that this report does not take into account relationships between different entities.

The final type of related work is prediction studies. It would be very useful if we could predict when a company goes public or when one company acquires another, and this is what these studies seek to do. "A Supervised Approach to Predict Company Acquisition With Factual and Topic Features Using Profiles and New Articles on TechCrunch" is an example of one such study. By scraping TechCrunch articles and profiles, the study picks out important features that might be able to predict M&A. While some of the features are relational (like noting that a founder who has made three startups who got acquired just started another company), there is no structural representation of these relationships in this study.

Thus, this paper will be unique in that it seeks to use quantitative information to explicitly create a relational representation to identify marketspaces.