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Education

Ph.D. in Economics, Massachusetts Institute of Technology (MIT), 2017-2023 (expected)

Majors: Industrial Organization, Theory
Minors: Organizational Economics, Econometrics.

Advisors: Glenn Ellison, Stephen Morris, Tobias Salz.

Research interests

I am primarily interested in Industrial Organization and Microeconomic Theory. My current research is motivated by the implications of new technological platforms on how people interact and how markets perform. In a theoretical network project, I model the diffusion of information in settings like social platforms, where the network is rich and individuals interact frequently on multiple short-lived topics. I explain how individuals can robustly learn the reliability of information from their links over time and evaluate the long-run quality of information aggregation in such settings. I am also interested in extending this model to capture richer preferences, such as biases or coordination, and study optimal policy designs, both theoretically and empirically. In projects joint with Adam Harris, I study the market institutions of the US truckload freight industry. In recent years, an important and unsettled question of this industry is whether platforms that provide real-time matchings of supply and demand, and real-time pricing will eventually replace traditional long-term contracts as the dominant institution. Towards answering this question, we study the nature of long-term relationships between shippers (demand) and carriers (supply), and seek to quantify long-run benefits that are absent in a centralized spot market. Topics that I would like to explore in the near future include, for example, recommender systems, markets for information, and the market power of giant technological companies.

Working papers

"Empiricist Learning Rules on Social Networks: Convergence and Quality of Information Aggregation"

Abstract: On social platforms like Facebook or Twitter, individuals are part of rich networks and they interact frequently on multiple, relatively short-lived topics. Could they learn from past interactions with their neighbors to aggregate information from them better in future periods, despite having limited knowledge of these neighbors' information sources and connections? I propose a novel learning model on social networks that captures such settings. Each period features a new draw of nature and multiple rounds for information to arrive, get aggregated and diffuse through network links. Local observability and local knowledge of the underlying environment are assumed. In contrast to most models of learning on networks, the repetitive nature of interactions across periods in my model allows a separation between learning about the environment and aggregating information about the current state. I show that the class of empiricist learnign rules, which focus on relevant elements of the underlying environment, achieve convergence of learning on all networks. In the long run, individuals play as well as if they know the underlying environment perfectly. On clique trees, these rules further achieve strong efficieny in information aggregation. Various challenges to efficiency in general circumstances are explained.

Work in progress

"Relational Contracts in the US Truckload Freight Industry" (with Adam Harris)

Abstract: We provide evidence on relational contracting in an important spatial setting: the US truckload freight industry. In this industry, the demand side (shippers) and the supply side (carriers) engage in repeated interactions under contracts that fix prices but otherwise do not legally obligate the two sides to behave cooperatively. In light of a simple model of repeated interactions, we find evidence that shippers use dynamic incentives to deter carriers from short-term opportunism. Higher level of carriers' cooperation is shown to sustain on relationships with characteristics suggestive of higher level of future surplus, such as high frequency and consistency of interactions. We further explore aspects of the incentive contracts between shippers and carriers that reflect special features of this setting, including the prevalence of multi-market contact and the fundamental role of supply-side network planning.

"An Efficiency Analysis of the US Truckload Freight Industry" (with Adam Harris)

Project summary: While new platforms that utilize real-time pricing and sophisticated matching algorithms (such as Uber and Lyft), have been successful in capturing the market for ride hail service, companies with a similar vision in the truckload freight industry (such as Uber Freight and Convoy) have not made significant inroads. In the latter, long-term contracts between shippers and carriers account for 90% of transported volume and spot markets account for the remaining 10%. While one-off pairings between shippers and carriers by new platforms might be more cost-efficient, there are benefits that only arise from or can be realized by repeated interactions. We seek to structurally recover these long-run benefits, which would form the basis for our welfare analysis. Our approach is to model the interactions between shippers and carries as repeated games where high spot rates present short-term opportunism. The estimation would exploit a transaction-level data set on firms' interactions under long-term contracts and lane-level spot data.