

Challenges in Analyzing Two-sided Market and Its Application on Ride-sourcing Platform

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Abstract: In this talk, we will introduce a general analytical framework for large scale data obtained from two-sided markets, especially ride-sourcing platforms like DiDi. This framework integrates classical methods including Experiment Design, Causal Inference and Reinforcement Learning, with modern machine learning methods, such as Graph Convolutional Models, Deep Learning, Transfer Learning and Generative Adversarial Network. We aim to develop fast and efficient approaches to address five major challenges for ride-sharing platform, ranging from demand-supply forecasting, demand-supply diagnosis, MDP-based policy optimization, A-B testing, to business operation simulation. Each challenge requires substantial methodological developments and inspires many researchers from both industry and academia to participate in this endeavor. Based on our preliminary results for the policy optimization challenge, we received the Daniel Wagner Prize for Excellent in Operations Research Practice in 2019. All the research accomplishments presented in this talk are joint work by a group of researchers at Didi Chuxing and our international collaborators.