



Séminaire du CIRRELT

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THE MERITS OF SHARING A RIDE

Abstract: The culture of sharing instead of ownership is sharply increasing in individuals behaviors. Particularly in transportation, concepts of sharing a ride in either carpooling or ridesharing have been recently adopted. An efficient optimization approach to match passengers in real-time is the core of any ridesharing system. In this paper, we model ridesharing as an online matching problem on general graphs such that passengers do not drive private cars and use shared taxis. We propose an optimization algorithm to solve it. The outlined algorithm calculates the optimal waiting time when a passenger arrives. This leads to a matching with minimal overall overheads while maximizing the number of partnerships. To evaluate the behavior of our algorithm, we used NYC taxi real-life data set. Results represent a substantial reduction in overall overheads.

Biography: Jia Yuan Yu is currently an associate professor in the Concordia Institute of Information Systems Engineering. His interests include data science and decision theory (machine learning, statistics, control, game theory, operations research), as well as applications to smart cities and Internet-connected devices. His recent research results are used by companies in computer vision (www.indus.ai), automated manufacturing (www.capbeast.com), and recommendation systems (www.chicmarie.com). Previously, he developed solutions for a wide range of problems such as congestion and pollution management, demand-response in smart grids, ride-sharing, and crowdsourced event-detection. For instance, he worked on deploying a large-scale real-time decision-support system for end-users in the city of Dublin and the German Ministry of Civil Protection. This system received the Outstanding Public Project Award from the Intelligent Transport Systems society of Ireland. He has previously worked at IBM Research, the Dublin City University, the Ecole Normale Supérieure Paris, Stanford University, and Intel Research. Jia Yuan obtained his PhD in electrical engineering from McGill University in 2010.

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