MIT Industrial Liaison Program Faculty Knowledgebase Report

The MIT Mobility Initiative #3

October 28, 2020 10:00 am - 12:00 pm

10:00am

From 2 Wheels to 4: Design and Optimization of Shared Transportation Platforms
Daniel Freund
Assistant Professor, Operations Management
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Daniel Freund is an Assistant Professor of Operations Management at the MIT Sloan School of Management.

His research focuses on complex decision-making problems in the sharing economy. During his PhD he developed the analytical methods used by bike-sharing systems like Citi Bike, Ford Go Bike, and Boston Blue Bikes to inform their rebalancing, thus enabling thousands of incremental bike rides every day. Prior to joining MIT, Daniel spent a year as a Research Fellow at Lyft Marketplace Labs where he developed new algorithms and market mechanisms for the ride sharing industry.

He received the 2018 George B. Dantzig Dissertation Award, the 2018 Daniel H. Wagner Prize for Excellence in Operations Research, and a Best Paper Award at the 2018 ACM SIGCAS Conference. He was also a finalist in the 2017 George Nicholson student paper competition as well as the 2018 POM Applied Research Challenge.

He holds a BSc in mathematics from the University of Warwick (UK), as well as an MS and a PhD in applied mathematics from Cornell University, where he was advised by Prof. David B. Shmoys.

The 2010s witnessed the rise of new transportation platforms like bike-sharing, ride-hailing, and scooter-sharing. Each of these platform designs has its own idiosyncrasies and operational challenges. For example, (only) users of station-based bike-sharing systems experience two-sided stock-outs (when stations are empty & when they are full), and (only) drivers in ride-hailing systems need to trade off current and future dynamic prices in their decision-making. In this talk I will survey 4 fully implemented projects, 2 from ride-hailing and 2 from bike-sharing, that tackled such specific issues in order to improve platform operations.

11:00am

Research Perspectives on Last-Mile Logistics
Matthias Winkenbach

Director, MIT Megacity Logistics Lab
Research Scientist
MIT Center for Transportation and Logistics

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Matthias Winkenbach is the Director of the MIT Megacity Logistics Lab and a Research Associate at the MIT Center for Transportation & Logistics. His current research focuses on multi-tier distribution network design in the context of urban logistics and last-mile delivery, urban freight policy and infrastructure design, as well as data analytics and visualization in an urban logistics context. Dr. Winkenbach received his Ph.D. in Logistics and his Masters in Business with specializations in Finance and Economics at WHU – Otto Beisheim School of Management in Germany. He also studied at NYU Stern School of Business in New York as well as at the École des Hautes Études Commerciales (HEC) in Montréal, Canada. His doctoral studies focused on the optimal design of multi-tier urban delivery networks with mixed fleets. His work was closely linked to a research project with the French national postal operator La Poste.

During and after his doctoral studies, he spent several months at the MIT Center for Transportation & Logistics as a Visiting Scholar. Dr. Winkenbach's previous professional work includes working with Volkswagen in South Africa on local sourcing and cost optimization, with Deutsche Telekom in Germany on co-investment models for network infrastructure expansions, with McKinsey & Company in the United States, and in Germany on organizational redesign in the automotive industry and on innovative delivery models in the postal and express logistics sector, as well as various other projects in the mining, shipbuilding, consulting and logistics industries.

Dr. Winkenbach won the Science Award for Supply Chain Management of the German Logistics Association (BVL) in 2014, was amongst the finalists for the 2015 Daniel H. Wagner Prize for Excellence in Operations Research Practice, and recently published academic papers in Transportation Science, and Interfaces, as well as some practitioner oriented pieces in the Wall Street Journal and the Sloan Management Review.
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In his talk, Dr. Matthias Winkenbach, director of the MIT Megacity Logistics Lab and the MIT CAVE Lab, will be providing an overview of the last-mile logistics research that his group is conducting with numerous global industry partners. He will touch upon some of the key trends that are transforming the last-mile logistics industry and urban mobility as a whole. Further, he will give insights into how companies are responding to the pressures of urbanization, e-commerce growth, and newly emerging technologies through more efficient network design, innovative delivery models, and the use of data analytics.