Efficiency, Safety and Connectivity in Taxi Networks

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Abstract  Taxicabs play a major role for big metropolitan residents’ daily commute. For example, in New York City, over 100 taxicab companies operate more than 13,000 taxicabs, providing daily ridership of 660,000 passengers, which accounts for more than 25% of all paying passengers and 45% of all fares paid. Despite its important, the efficiency, safety and connectivity of taxicabs are by far satisfactory. For instance, nearly 40% of total taxicab mileage, a total of 314 million miles per year, is spent searching for passengers without fare. In this work, we present our recent research on how to make a taxicab network more efficient, safer and provide better connectivity. Specifically, we will overview projects related to driving monitoring and regulation, advanced technologies to efficiently dispatch taxi network with reduced cursing miles, car pooling systems to reduce total mileage while satisfying all ridership demands, and vehicular networking technologies to improve network connectivity.