A fractionally owned autonomous vehicle fleet sizing problem

We study an autonomous transport service for population where users buy future time slots in which they are guaranteed service. The problem is solved using a bilevel fleet sizing-vehicle routing-time slot pricing model, sensitive to users’ activity scheduling decisions in the lower level. The work integrates the preferences of population its impacts on the design of an optimum operative system. The values of willingness to pay and the reservation of vehicles among users depends on the fleet size and routing/scheduling results obtained from the upper level model, where spatial temporal distribution of the demand for ride by users impacts the solution to fleet sizing problem.

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Dr. Mahdieh Allahviranloo is an Assistant Professor of Civil Engineering at the City College of New York. Her research focuses on understating travel behavior and analyzing activity patterns. Through her research, she has applied a variety of advanced machine learning, data mining techniques, optimization models and econometrics models to recognize travel behaviors and priorities of individuals regarding activity selection and scheduling, resulting in dozens of publications and presentations in highly accredited journals and conferences. She is the recipient of several national awards such as Dwight Eisenhower Fellowship, Helene M. Overly award and best paper awards in well-known transportation conferences.