

Research Title:

**An Integrated Framework for Analyzing Traffic Incidents
and Optimizing Service Vehicle Deployment and Dispatch**

Primary Investigator:

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Urban areas worldwide struggle with escalating traffic congestion, a critical issue impacting transportation, the economy, the environment, and quality of life. Notably, over half of this congestion results from traffic incidents. Our proposed research aims to address this challenge by developing an integrated framework for analysing traffic incidents and optimizing the deployment and dispatch of service vehicles. The framework will utilize data fusion techniques to integrate information from various sources and map the distribution of incidents across the city at different times of the day. This data will then be used to feed to optimization models tailored to determine the patrolling areas and idling locations of a service and rescue vehicle fleet. The objective is to enhance incident detection probability and minimize response times effectively. This research will be carried out collaboratively by AUTOlabs, a research group within Tel Aviv University specializing in analytics and operations research for innovative transport systems, and Sigam6, a private company with extensive experience in data analysis-based transportation projects. The greater Jerusalem area will serve as a case study for this research, benefiting from the support and guidance of the Jerusalem municipality, the Jerusalem Traffic Management Center, and the Jerusalem Transportation Master Plan Team.