

Monitoring Public Transportation in Developing Countries Using Automatic Vehicle Location System: A Case Study

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Abstract : Automatic Vehicle Location systems (AVL) have been used worldwide for more than twenty years and have showed great success in public transportation management and monitoring. Cairo public bus service suffers from several problems such as unscheduled stops, unscheduled route deviations, and inaccurate schedules, which have negative impacts on service reliability. This research aims to study those problems for a selected bus route in Cairo using a prototype AVL system. Experimental trips were run on the selected route; and the locations of unscheduled stops, regions of unscheduled deviations, along with other trip time and speed data were collected. Data was analyzed to demonstrate the reliability of passengers on the unscheduled stops compared to the scheduled ones. Trip time was also modeled to assess the unscheduled stops' impact on trip time, and to check the accuracy of the applied scheduled trip time. Moreover, frequency and length of the unscheduled route deviations, as well as their impact on the bus stops, were illustrated. Solutions were proposed for the bus service deficiencies using the AVL system. Finally, recommendations were proposed for further research.

Keywords : automatic vehicle location, public transportation, unscheduled stops, unscheduled route deviations, inaccurate schedule

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