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## REAL TIME DATA MANAGEMENT FOR ESTIMATING PROBABILITIES OF INCIDENTS AND NEAR MISSES

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Abstract. Advances in real-time data collection, data storage and computational systems have led to development of algorithms for transport administrators and engineers that improve traffic safety and reduce cost of road operations. Despite these advances, problems in effectively integrating real-time data acquisition, processing, modelling and road-use strategies at complex intersections and motorways remain. These are related to increasing system performance in identification, analysis, detection and prediction of traffic state in real time. This research develops dynamic models to estimate the probability of road incidents, such as crashes and conflicts, and incident-prone conditions based on real-time data. The models support integration of anticipatory information and fee-based road use strategies in traveller information and management. Development includes macroscopic/microscopic probabilistic models, neural networks, and vector autoregressions tested via machine vision at EU and US sites.

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