

Title:

Traffic Incident Detection from Road Camera Networks

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Abstract:

Road networks often experience incidents and events that disrupt the normal flow of vehicles. Examples include traffic congestions, accidents, or a tree or overpass falling and causing a roadblock. In this research we develop algorithms that process images from a road camera network and signal an anomalous traffic situation. We present the recursive Kernel-based Online Anomaly Detection (KOAD) algorithm and apply it to anomaly detection in a Transports Quebec camera network. The KOAD algorithm has been extended from our earlier online anomaly detection algorithm based on Kernel Recursive Least Squares, and shown to produce quick detection with high accuracy and low false alarm rates. We also investigate relationships between the *region of normality* identified by our KOAD algorithm and the concept of minimum volume sets, and apply the block-based One-Class Neighbour Machine algorithm developed by Muñoz and Moguerza.