

COUNTERACTING TRAFFIC CONGESTION USING INTELLIGENT DRIVER FEEDBACK

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ABSTRACT

Traffic congestion is a daily occurrence in urban highway networks worldwide. It is not possible, however, for society to build its way out of congestion; rather, smarter roads and vehicles are needed. While the development of a smarter transportation system is underway, full implementation is years or decades from now. Yet, some of the sensing technology needed for smarter vehicles is already widely deployed in the form of smart phones. This thesis develops a novel method for recognizing traffic congestion using an artificially intelligent heuristic that could be implemented in a smart phone application or embedded system. Its goal is to provide intelligent feedback to a driver or autonomous vehicle control system to counteract stop-and-go traffic, a defining feature of urban highway congestion. Evaluation of the method indicates that a specific condition during stop-and-go traffic can be recognized accurately. A driver or control system acting upon feedback provided by the artificially intelligent system can improve traffic flow on the roadway by 1% to 3.5% over the course of the test duration.