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Title of paper **A travel time prediction method based on pattern matching technique**

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A TRAVEL TIME PREDICTION METHOD BASED ON PATTERN MATCHING TECHNIQUE

Shamas ul Islam Bajwa, Edward Chung, Masao Kuwahara

ABSTRACT

This paper discusses an algorithm developed for predicting travel time in near future. The benefits of the travel time information provision have been documented in the literature, ranging from spatio-temporal dispersal of traffic and less stressful driving to utilization of alternative modes of travel. Majority of present travel time information systems use instantaneous travel time i.e. summing of travel time information, derived from velocity measurements at different sections of road simultaneously. Instantaneous travel time information requires less computational effort but accuracy decreases with the onset of congestion. The pattern matching technique used in this research is based on the assumption that traffic scenarios similar to present traffic condition may have occurred before. Present traffic pattern is defined using velocity and occupancy measurements from traffic detectors along the length of road up to one hour before the present time. Instead of using simple patterns, weighted patterns are used for defining traffic situations. Spatial and temporal weightings are applied in order of importance of the data in affecting the near future travel time. A database of historical traffic situations is stored for searching the closest matched patterns and minimum squared difference is used as indicator of the closest matched patterns from historical database. Instead of selecting one most similar pattern, five patterns are selected so that sudden changes in travel time prediction can be avoided. Travel time information extracted from closest matched patterns is further modified by keeping track of the latest completed trip travel time on the prediction target day. The algorithm is applied to Tokyo Metropolitan Expressway from Yoga to Tanimachi known as Route No. 3. The results reported in this paper indicate that pattern matching technique is capable of predicting travel time with a high degree of accuracy (90 to 95 percent). This research clearly demonstrates the feasibility of using pattern matching technique for travel time prediction using traffic detector data.
