Title: Development of a Real Time Crash Risk Model Based on Microscopic Traffic Data

Abstract:
In the research, a real time crash risk model will be developed using microscopic traffic data. Unlike the conventional approaches which employ field-aggregated data over long periods of time, this proposed research is based on microscopic real-time data (obtained from a previous project funded by Caltrans). Binary logistic regression models will be developed to identify the relationship between various traffic flow factors and the probability of traffic disturbances. An alternative approach employing a multi-layer artificial neural network will also be investigated to characterize different crash types. The results will provide insights into various microscopic traffic flow variables that could be used as crash precursors. Also, based on the findings of this preliminary study, a full grant proposal will be prepared and submitted to Federal and/or state agencies. Our ultimate goal is to develop a metric that is expected to provide a much improved real-time indicator of the instantaneous safety of highway traffic, for both analysis and real-time warning purposes.