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# A COMPARISON OF THE PERFORMANCE OF ANN AND SVM FOR THE PREDICTION OF TRAFFIC ACCIDENT DURATION

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**Abstract:** The prediction of traffic accident duration is great significant for rapid disposal of traffic accidents, especially for fast rescue of traffic accidents and removing traffic safety hazards. In this paper, two methods, which are based on artificial neural network (ANN) and support vector machine (SVM), are adopted for the accident duration prediction. The proposed method is demonstrated by a case study using data on approximately 235 accidents that occurred on freeways located between Dalian and Shenyang, from 2012 to 2014. The mean absolute error (MAE), the root mean square error (RMSE) and the mean absolute percentage error (MAPE) are used to evaluate the performances of the two measures. The conclusions are as follows: Both ANN and SVM models had the ability to predict traffic accident duration within acceptable limits. The ANN model gets a better result for long duration incident cases. The comprehensive performance of the SVM model is better than the ANN model for the traffic accident duration prediction.

Key words: *prediction, freeway accidents duration, artificial neural networks, Support Vector Machines*

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## 1. Introduction

### 1.1 Backgrounds

With the increasing of the highway mileage and vehicle quantity, the incidence of traffic accident also increases in our country these years. The traffic congestion caused by traffic accidents has brought a series of unfavorable results to people's lives. Moreover, this phenomenon is becoming more and more serious, and it has become a severity societal problem which has attached our attention. When an

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