The probability of estimating a traffic conflict happening in real-time primarily depends on comparing traffic conditions just before a collision with traffic conditions during normal operation. Most studies however utilize aggregated traffic data, and traffic conflicts are detected using traffic flow variables as input data. These methods are limited to comparing traffic conditions at certain time intervals, and do not produce real-time results.

The developed approach utilizes historical time series data of traffic conditions at normal situations on a segment of the road to estimate traffic conflicts and accurately predict collision time. The approach is based on real-time differences in traffic conditions using a support vector machine with a radial basis function (RBF) kernel and a nearest neighbor (ENN) classifier. The approach is tested using real-time traffic data collected from a rural road in Germany. The results show that the developed approach can accurately predict collision time and reduce the potential for accidents.

INTRODUCTION

The limitations mentioned above are overcome in this paper by considering highly disaggregated real-time data obtained from traffic sensors on a rural road in Germany.

METHODOLOGY

The data utilized in this research is a time series dataset of traffic conditions at normal situations on a segment of the road. The traffic conditions are measured using traffic sensors, and the data is transformed into a time series dataset of traffic conditions for each minute. The traffic conditions are then used to develop a support vector machine with a radial basis function (RBF) kernel and a nearest neighbor (ENN) classifier.

DATA COLLECTION & PROCESSING

The data utilized in this research is a time series dataset of traffic conditions at normal situations on a segment of the road. The traffic conditions are measured using traffic sensors, and the data is transformed into a time series dataset of traffic conditions for each minute. The traffic conditions are then used to develop a support vector machine with a radial basis function (RBF) kernel and a nearest neighbor (ENN) classifier.

CLASSIFICATION RESULTS

The performance of the classifiers is assessed using the following metrics:

- Recall
- False Alarm Rate

The results show that the developed approach can accurately predict collision time and reduce the potential for accidents.