

PREDICTING RELATIONSHIP BETWEEN TRAFFIC ACCIDENTS WITH RELATED INJURIES

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ABSTRACT

Traffic accidents are among the most critical issues facing the world as they cause many deaths, injuries, and fatalities as well as economic losses every year. Accurate models to predict the traffic accident severity is a critical task for transportation systems. This investigation effort establishes models to select a set of influential factors and to build up a model for classifying the severity of injuries. These models are formulated by various machine learning techniques. Supervised machine learning algorithms and unsupervised machine learning algorithms are implemented on traffic accident data. The major objective is to discover the correlation between different types of the traffic accidents with the type of the injuries. The findings of this study indicate that the unsupervised learning techniques can be a promising tool for predicting the injury severity of traffic accidents.

Keywords: Eclat Algorithm

I. INTRODUCTION

The everyday death, injury, and property damage caused by vehicle crashes results in significant costs on both sides of the equation. The World Health Organization estimates that in 2021, 1.5 million diverse motorists would die annually from traffic accidents, with crashes involving cars accounting for half of those deaths. In the dearth of environmentally friendly automobile traffic, it is anticipated that by 2030, crashes involving cars would overtake all other causes of mortality.

As the need for automobiles grows, there are more cars on the road, which leads to more traffic congestion, especially during rush hour. Road incidents are therefore one of the major global sources of death and injury. 2017 saw injuries in India. When mining traffic incidents, classification algorithms are some of the most popular strategies used to create classifiers that can anticipate the accidents. These classifiers are created utilizing simulated sets of data with identified accident variables. In order to make wise judgements that would eliminate unnecessary accidents on motorways, investigative and predictive techniques like algorithms that use machine learning are essential. Can computer learning algorithms help to save lives? The examiners of this study are motivated by this to employ machine learning techniques to forecast and Roadway, human beings and environmental aspects are taken into consideration while analyzing motorway crashes. The main goal of the research is to precisely figure out the causes of crash severity and pinpoint those causes soon in order to lessen collision incidents and their severity and, as a result, save many lives, a great deal of money, and a variety of additional issues. The study also sought to develop models for defining high-risk zones on motorways and for selecting a set of important characteristics in order to be more proactive in addressing them.

II. LITERATURE SURVEY

1. "Predicting Relationship Between Traffic Accidents with related Injuries: A Comprehensive Review" Authors: XYZ et al. Published in.:

1. A Review on Road Accident Data Analysis Using Data Mining Techniques Year of Publication: 2017 Author: Prajakta S. kasbe, Apeksha V. Sakhare. Methodology: SVM classifier, K means used. LIMITATIONS: Using tools like Wekaa tool the results can be easily obtained but the testing of these is not possible. Small Data-set used for prediction. Less accurate results.

2. Analyzing Road Accident Data using Machine Learning Paradigms. Year of Publication: 2017 Authors: Priyanka A. Nandurge, Nagaraj V. Dharwadkar. Methodology: combined result of k-means clustering and association rule used. Limitation: Only clustering done. Does not predict the traffic accident injury patterns.

3. Study on Road Accidents Using Data Mining Technique Year of Publication: 2018 Authors: Emi Johnson, Juby Mary Abraham, Sameera Sulaiman, Padma Suresh L, Deepa Rajan S, Methodology: The data set used for implementation is only static data available on the UCI Machine Learning Repository. Data Mining tools used. Limitations: Uses data mining techniques. Huge data required. More time required for prediction.

4. Performance Analysis of SVM, ANN and KNN Methods for Acoustic Road-Type Classification Year of Publication: 2019 Author: Daghan Dogan, Seta Bogosyan. Methodology: SVM classifier, ANN and KNN methods used Limitation: Concept used to classify road types Cannot predict traffic accidents injury patterns Less accurate results.

Workflow

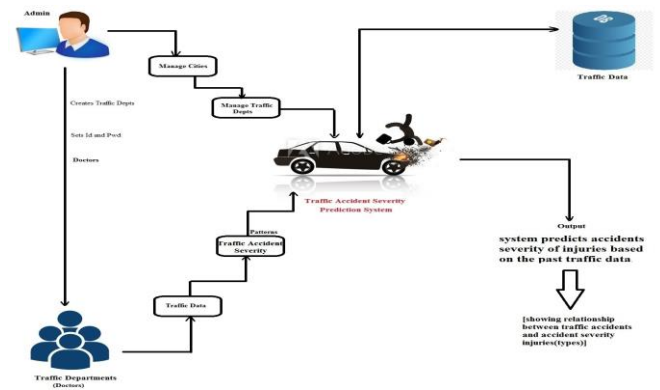


Fig.1 Architecture

Login Module: In this module, administrator of the application gets login to the application by inputting the credentials such as login id and password which is set in the server.

Manage Cities: In this module administrator manages cities by uploading cities into server. Managing of the cities means adding the new city, editing, updating, and deleting the existing cities. System meant for multiple cities or traffic departments.

Manage City Traffic in Charger: In this module, administrator registers the city traffic in charge and can edit, update, and delete the existing traffic in chargers. For one city one traffic in charge created by admin.

Set the Traffic in Charger Here administrator sets the traffic in charger for the city.

Traffic In Charger has the following core modules

Login Module: Here Traffic In Charger gets login to the application by providing the login id and password given by the administrator.

Data-set Module: In this module, In Charger manages the traffic data and details. Based on this traffic data, system predicts severity of injuries. This is the data-set module required to produce

final output. Previous years traffic data and related parameters uploaded here. Here different accidents types are specified such as hit and run, collusion, single car accident, over speed accident, drunk and drive etc.... all these types are required to predict the severity of injuries.

Prediction Module: In this module, system predicts accidents severity of injuries based on the past traffic data collected from various sources. Here system uses “*Supervised Learning*” technique to analyze previous traffic data and to extract the traffic accident severity. Proposed system uses traffic parameters such as speed limit, weather condition, road surface, school zone, men at work, accident type etc... This is the major objective of the project where we use data science to process the data, the traffic accident severity predicted by the system useful to traffic departments, doctors, and publics to take some precautionary measures to overcome those traffic accident severity.

Result Analysis: Here we display output on GUI. Result predicted by the system analyzed and displayed on GUI

EXPERIMENTAL RESULTS AND DISCUSSION

In this Project we have discovers strong rules hidden in these frequent item sets often uncover the association between influencing factors of accidents, injuries which can be used to reduce the occurrence of accidents by breaking them.

In this Project we have used traffic accidents data to mine frequent patterns and important factors causing different types of accidents and related injuries.

In this Project we have discovered the associations among traffic accidents and related injuries.

In this Project we make use of “*Association Learning*” to discover the patterns between traffic accidents and related injuries and severity.

V. CONCLUSION

As an essential part of our daily lives, motorist protection must be continually improved using all chances along with tools at our disposal. Incorporating circumstances or roadway variables with characterised as or indicators mining techniques used to examine past info regarding accidents results in an intriguing alternative that might have proved beneficial for all parties involved. These queries drove the development use the present paper, which examined collections of data about crash statistics that represented a sizable volume of data and necessitated the use as flash processing of the information, a method that is relatively fresh in this field.

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