Real Time Crash Prediction using Machine Learning Algorithm

P. Manikanda Prabu[1], S. Venkatesh[2], M. Sayed Ibrahim[3], S. Sathiyan[4], B. S. Viswanathan[5]
Assistant Professor, Department of Science and Computer Engineering[1]
Students, Department of Science and Computer Engineering[2,3,4,5]
Anjalai Ammal Mahalingam Engineering College, Kovilvenni, Tiruvarur, Tamil Nadu, India

Abstract: *Road traffic accidents (RTAs) have a significant impact on individuals, their families and the nation. Without knowledgeable action, road traffic injuries are said to be the seventh leading cause of death. With the exponentially increasing number of vehicles, road safety is a matter of huge concern. Road accidents kill 1.2 million people every year. It causes loss of lives and economical damage, due to which is a serious concern which needs to be solved We have used machine learning algorithms to predict the severity of an accident occurring at a particular location and time. Factors like speed limit, age, weather, vehicle type, light conditions and day of the week have been used as parameters for training the model. We have created a web app for user input and output display and a notification is sent to the police to take preventive measures. The model will run the with the input data and predicts the severity of an accident occurring at the respective location of the user. This model will play an important role in planning and management of traffic and would help us reduce a lot of road accidents in the future.*

Keywords: Accident prediction, Data mining, Adaptive Booster algorithm, Data Analysis

REFERENCES

[1] https://www.statista.com/topics/5982/road-accidents-in-india/

[2] Srivastava AN, Zane-Ulman B. (2005). Discovering recurring anomalies in text reports regarding complex space systems. In Aerospace Conference, IEEE. IEEE 3853-3862.

[3] Ghazizadeh M, McDonald AD, Lee JD. (2014). Text mining to decipher free-response consumer complaints: Insights from the nhtsa vehicle owner's complaint database. Human Factors 56(6): 1189-1203. http://dx.doi.org/10.1504/IJFCM.2017.089439.

[4] Chen ZY, Chen CC. (2015). Identifying the stances of topic persons using a model-based expectationmaximization method. J. Inf. Sci. Eng 31(2): 573-595. http://dx.doi.org/10.1504/IJASM.2015.068609.

[5] Williams T, Betak J, Findley B. (2016). Text mining analysis of railroad accident investigation reports. In 2016 Joint Rail Conference. American Society of Mechanical Engineers V001T06A009-V001T06A009. http://dx.doi.org/10.14299/ijser.2013.01.

[6] Suganya, E. and S. Vijayarani. "Analysis of road accidents in India using data mining classification algorithms." 2017 International Conference on Inventive Computing and Informatics (ICICI) (2017): 1122-1126.

[7] Sarkar S, Pateshwari V, Maiti J. (2017). Predictive model for incident occurrences in steel plant in India. In ICCCNT 2017, IEEE, pp. 1-5. http://dx.doi.org/10.14299/ijser.2013.01.

[8] Stewart M, Liu W, Cardell-Oliver R, Griffin M. (2017). An interactive web-based toolset for knowledge discovery from short text log data. In International Conference on Advanced Data Mining and Applications. Springer, pp. 853-858. http://dx.doi.org/10.1007/978-3- 319-69179-4_61.

[9] Zheng CT, Liu C, Wong HS. (2018). Corpus based topic diffusion for short text clustering. Neurocomputing 275: 2444-2458. http://dx.doi.org/10.1504/IJIT.2018.090859.

[10] ArunPrasath, N and Muthusamy Punithavalli. "A review on road accident detection using data mining techniques." International Journal of Advanced Research in Computer Science 9 (2018): 881-885.

[11] George Yannis, Anastasios Dragomanovits, Alexandra Laiou, Thomas Richter, Stephan Ruhl, Francesca La Torre, Lorenzo Domenichini, Daniel Graham, Niovi Karathodorou, Haojie Li (2016). "Use of accident prediction models in road safety management – an international inquiry". Transportation Research Procedia 14, pp. 4257 – 4266.

[12] Anand, J. V. "A Methodology of Atmospheric Deterioration Forecasting and Evaluation through Data Mining and Business Intelligence." Journal of Ubiquitous Computing and Communication Technologies (UCCT) 2, no. 02 (2020): 79-87.

[13] Prayag Tiwari, Sachin Kumar, Denis Kalitin (2017). "Road-User Specific Analysis of Traffic Accident Using Data Mining Techniques". International Conference on Computational Intelligence, Communications, and Business Analytics. 10.1007/978- 981-10-6430-2_31.

[14] Kaur, G. and Er. Harpreet Kaur. "Prediction of the cause of accident and accident prone location on roads using data mining techniques." 2017 8th International Conference on Computing, Communication and Networking Technologies (ICCCNT) (2017): 1-7.

[15] Irina Makarova, Ksenia Shubenkova, Eduard Mukhametdinov, and Anton Pashkevich, "Modeling as a Method to Improve Road Safety During Mass Events", Transportation Research Procedia 20 (2017) 43.