

Prediction of Best Traffic Route using Supervised Classification Machine Learning



Palvai Sai Kumar Reddy, S.Christy

Abstract: As of now, street transport foundation neglecting to adapt up to the exponential increment in vehicular populace. To registering the quickest driving courses and mishaps within the sight of fluctuating traffic conditions is a basic issue in current route frameworks. To forestall this issue is to examine the vehicle office dataset with AI strategy for finding the best street choice without mishap estimating by forecast consequences of best exactness counts. The examination of dataset by administered AI technique(SMLT) to catch a few data resembles, variable distinguishing proof, uni-variate investigation, bi-variate and multi-variate investigation, missing worth medicines and dissect the information approval, information cleaning/planning and information perception will be done on the whole given dataset. Moreover, to think about and examine the presentation of different AI calculations from the given vehicle office dataset with assessment of GUI based UI air quality forecast by given properties.

Keywords: Dataset, Machine learning-Classification method, python, GUI results.

I. INTRODUCTION

AI is to anticipate the future from past information. AI (ML) is a kind of man-made consciousness (AI) that gives PCs the capacity to learn without being expressly modified. AI centers around the improvement of Computer Programs that can change when displayed to new data and the essentials of Machine Learning, execution of a fundamental AI figuring using python. Technique of getting ready and gauge incorporates usage of explicit estimations. It feed the planning data to a computation, and the count uses this arrangement data to give conjectures on another test data. Artificial intelligence can be commonly disengaged in to three arrangements. There are directed adapting, solo learning and fortress learning. Overseen learning program is both given the data and the contrasting checking with learn data must be named by an individual as of now. Independent learning is no names. It provided for the learning computation. This computation needs to comprehend the bundling of the data. Finally, Reinforcement adjusting intensely connects with its condition and it gets positive or negative analysis to improve its introduction.

Information researchers utilize a wide range of sorts of AI calculations to find designs in python that lead to noteworthy bits of knowledge. At a significant level, these various calculations can be characterized into two gatherings dependent on the way they "learn" about information to make expectations: administered and solo learning. Characterization is the way toward anticipating the class of given information focuses.

Classes are in some cases called as targets/names or classifications. Characterization prescient displaying is the assignment of approximating a mapping capacity from input variables(x) to discrete yield variables(y). In AI and bits of knowledge, portrayal is a coordinated learning approach in which the PC program gains from the data input given to it and a short time later uses this making sense of how to assemble new discernment. This educational assortment may simply be bi-class (like perceiving whether the individual is male or female or that the mail is spam or non-spam) or it may be multi-class too. A few instances of arrangement issues are: discourse acknowledgment, penmanship acknowledgment, bio metric ID, report order and so on.

II. RELATED WORK

The issue of recognizing factors that effect the reality of disasters has been comprehensively considered in the composition, yet for the most part for setback including vehicles [3]. A couple of works abused key backslide to choose the effect of each factor on disaster earnestness [4]–[8]. These examinations are revolved around the assessment of the odd extents, that is the surveyed coefficients of the key model, to separate the association between each exploratory variable and the needy variable. Be that as it may, these models are not used to anticipate the sort of mishap, in this way, no data is given on the precision. Likewise to our methodology, yet with regards to car collisions, an information divulgence process was proposed in [9] to pick noteworthy factors in a database, which means to recognize extraordinary disasters. For this endeavor, they contemplated decision trees, Bayesian frameworks and support vector machines, declaring tantamount precision (70–80%). In [10] connection examination is somewhat applied to a database of minor accident occurred in Florida, using five variables (light condition, atmosphere, traffic-way characteristics, secluded/brought together roadway and crash seriousness). A way to deal with identify auto collisions at convergences from recordings is depicted in [11], in view of the extraction of a few highlights, for example, quickening, position, territory and course of the moving vehicle.

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* Correspondence Author

Palvai Sai Kumar Reddy*, Department of Information Technology, Saveetha School of Engineering, SIMATS, Chennai- 602105. saikumarreddypalvai@gmail.com,

S.Christy, Department of Information Technology, Saveetha School of Engineering, SIMATS, Chennai- 602105. christys.sse@saveetha.com,

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Other than the previously mentioned investigations, that break down factors impacting mishaps, as of late a couple of works have been recommended that endeavor to abuse AI frameworks to arrange mishaps or driver practices into classifications.

For instance, an investigation of Powered Two Wheelers (PTW) dangerous practices has been done by [12] utilizing five AI calculations: concealed Markov models, Gaussian mix models, support vector machines, sporadic Forests and K-nearest neighbor computation.

The approach mishandles data from the accelerometers, whirligigs and vehicle speed sensors to orchestrate five key driving practices (turn right, turn left, aberrant, straight and stop)

III. PROPOSED SYSTEM

I have used the Ensemble learning that to get accurate output. Ensemble learning helps improve machine learning results by combining several models. This approach allows the production of better predictive performance compared to a single model and it is the art of combining diverse set of learners (individual models) together to improvise on the stability and predictive power of the model. In the world of Statistics and Machine Learning, Ensemble learning techniques attempt to make the performance of the predictive models better by improving their accuracy. Ensemble Learning is a process using which multiple machine learning models (such as classifiers) are strategically constructed to solve a particular problem.

1. Better accuracy (low error)
2. Higher consistency (Avoids overfitting)
3. Reduces bias and variance errors
4. Single model overfits
5. Results worth the extra training
6. It can be used for classification as well as regression

A. DATA COLLECTION:

The educational file assembled for foreseeing given data is part into Training set and Test set. All around, 7:3 extents are applied to part the Training set and Test set. The Data Model which was made using Random Forest, determined, Decision tree computations, K-Nearest Neighbor (KNN) and Support vector classifier (SVC) are applied on the Training set and reliant on the test result precision, Test set desire is done.

B. PREPROCESSING:

The data which was accumulated may contain missing characteristics that may provoke anomaly. To build better results data ought to be preprocessed so as to improve the profitability of the computation. The exemptions must be evacuated and moreover factor change ought to be done.

C. STRUCTURE OF GUI

A Graphical User Interface (GUI) is a pictorial interface to a program. An OK GUI can make programs more straightforward to use by giving them an anticipated appearance and with regular controls like pushbuttons, list boxes, sliders, menus, and so forth. In this work, a MATLAB GUI is made using an instrument called direct, the GUI Development Environment. This instrument

empowers a product architect to plan the GUI, picking and changing the GUI sections to be set in it. Ordinary customers can show appearances they are experiencing and get a desire from the structure.

IV. RESULTS AND DISCUSSION

1. Collection of data:

Practically 95% tweets are extricated from Twitter. The loss of 5% is because of misty tweets. Vague tweets incorporate uproarious tweets and immaterial tweets.

2. Processing the data:

The data is classified based on location and a dataset is made ready for analytics. Date, day, month, holiday or not and 24-hour data are included. A python code is used and applied text mining process.



Fig 1. random forest

3. Analysing the data:

Sentimental analysis of the collected tweets: Naïve Bayes algorithm is used for sentiment analysis

Table 1. analysis of traffic

s.no	Data	Results
1	Koyembedu to central traffic is heavy	Negative
2	Poonamalle to Thandalam traffic is Slow	Positive
3	Porur to vadapalini Traffic is normal	Positive

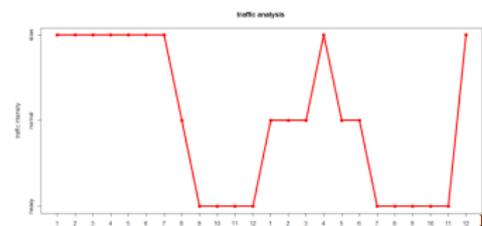


Fig.2 24 hours traffic data

V. CONCLUSION

Over all, the led tests recommend that it is conceivable to assemble a helpful and solid keen framework for the seriousness characterization of mishaps including two-wheeled vehicles, by abusing features that can be reasonably obtained by



sensors or other on-board devices, and by grasping a non-straight AI system. These discoveries could be fascinating when expecting to actualize a security gadget for fueled vehicles.

The eCall gadget permits to help the drivers in a convenient way. This is obviously a pivotal need, on the grounds that the prior the mishap seriousness is perceived, the previous the emergency treatment can be given. The advancement of another eCall gadget for a motorbike may consider the foundation of existing or new sensors to accumulate appropriate information that licenses to therefore perceive the reality of an incident and, consequently, to normally give an eCall. Later on, we intend to apply the examination to datasets gathered in different nations, to survey whether there are important contrasts as far as mishap elements.

REFERENCES

1. Road Safety: Data Show Improvements in 2017 But Renewed Efforts are Needed for Further Substantial Progress, Eur. Commission, Paris, France, Apr. 2018.
2. E. Commission. (Jun. 2010). Memo/10/343. [Online]. Available: http://europa.eu/rapid/press_release_MEMO-10-343_en.html
3. J. Zhang, F.-Y. Wang, K. Wang, W.-H. Lin, X. Xu, and C. Chen, "Datadriven intelligent transportation systems: A survey," *IEEE Trans. Intell. Transp. Syst.*, vol. 12, no. 4, pp. 1624–1639, Dec. 2011.
4. A. S. Al-Ghamdi, "Using logistic regression to estimate the influence of accident factors on accident severity," *Accident Anal. Prevention*, vol. 34, no. 6, pp. 729–741, 2002. [5] M. Bédard, G. H. Guyatt, M. J. Stones, and J. P. Hirdes, "The independent contribution of driver, crash, and vehicle characteristics to driver fatalities," *Accident Anal. Prevention*, vol. 34, no. 6, pp. 717–727, 2002.
5. C.-W. Pai, "Motorcyclist injury severity in angle crashes at T-junctions: Identifying significant factors and analysing what made motorists fail to yield to motorcycles," *Saf. Sci.*, vol. 47, no. 8, pp. 1097–1106, 2009.
6. F. Valent, F. Schiava, C. Savonitto, T. Gallo, S. Brusaferrero, and F. Barbone, "Risk factors for fatal road traffic accidents in Udine, Italy," *Accident Anal. Prevention*, vol. 34, no. 1, pp. 71–84, 2002.
7. C.-W. Pai and W. Saleh, "Modelling motorcyclist injury severity by various crash types at T-junctions in the U.K.," *Saf. Sci.*, vol. 46, no. 8, pp. 1234–1247, 2008.
8. M. Fogue, P. Garrido, F. J. Martinez, J.-C. Cano, C. T. Calafate, and P. Manzoni, "A system for automatic notification and severity estimation of automotive accidents," *IEEE Trans. Mobile Comput.*, vol. 13, no. 5, pp. 948–963, May 2014.
9. A. Pande and M. Abdel-Aty, "Market basket analysis of crash data from large jurisdictions and its potential as a decision support tool," *Saf. Sci.*, vol. 47, no. 1, pp. 145–154, 2009.
10. Mahesh Babu, K., Rene Beulah, J. Air quality prediction based on supervised machine learning methods, *IJITEE* vol.8, 2019.
11. Prasad, R., Anjali, P., Adil, S., Deepa, "prediction using logistic regression algorithm using machine learning", *IJATE*, vol. 8, 2019.
12. Dhamodaran, S., Lakshmi, M. "Ensampling data prediction using sparse data in mobile intelligent system", *IJIMT*, vol.13, 2019.
13. Vinodhini, R., Haripriya, D. Autocollision prediction and signalling system, *International Journal of Pharmacy and Technology*, vol. 8, 2016.
14. Gupta, A., Nagalakshmi, T.J. Stock price prediction using linear regression in machine learning", *IJITEE*, vol.8, 2019.
15. Mahesh Babu, K., Rene Beulah, "J. Air quality prediction based on supervised machine learning methods", *IJITEE*, vol.8, 2019.
16. Selvi, H., Saravanan, M.S. "A Study of dyslexia using different machine learning algorithm with data mining techniques", *IJET*, VOL.7, 2018.
17. Kushal, K.V., Kumar, R., "Mobile advertisement system in data mining", *IJPT*, VOL.8, 2016.
18. Chen CHEN, " Analysis and Forecast of Traffic Accident Big Data", Tunnel Traffic Engineering Design Office, Yunnan Province Transportation Planning and Design Institute, Kunming, China 522253113.
19. Amira A El Tayeb, Vikas Pareek, and Abdelaziz Araar. "Applying association rules mining algorithms for traffic accidents in dubai". *International Journal of Soft Computing and Engineering*, 2015.

AUTHOR'S PROFILE



Palvai Sai Kumar Reddy, is an UG Final Year Student in the Department of Information Technology at Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Chennai.



Dr. S. Christy, M.Tech., Ph.D., is one of our valuable faculty members. She has well over 13 years of teaching experience. Her main interest includes Research in information & Communication Technology, Data mining, Big Data Analytics and Human-Computer interaction. She has also been awarded Silver Medal in M.Tech. Degree Examination. She has published two subject books for Engineering Students namely "Fundamentals of Computing and C programming" and "Computer Programming", and published many Papers in International Journals, out of which some papers are Scopus Indexed. She has the experience of working as software developer for ITC Ltd. Worked as external examiner for ANNA University, M.G.R. University and Bharath University.