IJITCE

ISSN 2347- 3657

International Journal of Information Technology & Computer Engineering

Email : ijitce.editor@gmail.com or editor@ijitce.com

International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 12, Issue 2, 2024

TRAFFIC ROUTE PREDICTION

[1]MR. N. CHANDIRAPRAKASH,[2]MUPPIDI SRIMAN,[3]ALETI OMKAR,[4]P IRFAN KHAN,[5]LALITH KUMAR,[6]CHEVVA MAHESH BABU

[1]Assistant Professor,department of information technology, malla reddy institute of engineering and technology(autonomous),dhulapally,secundrabad,chandrunit26@gmail.com

[2,3,4,5,6]UG students, department of information technology,malla reddy institute of engineering and technology(autonomous),Dhulapally,Secundrabad

ABSTRACT

Real time identification systems are very important and needful for safety, security rule following and socialism and also for own safety concerns. Traffic rules are important for safety as traffic laws are to prevent drivers of vehicles from causing accidents or hitting pedestrians. They are also to help control the flow of traffic so that it is more efficient. Traffic Rule Violations are leading cause of accidents, according to WHO India is a leading country in casualties occurring on road. The current system uses human interaction for rule violation detection, as it is a manual process it has some limitations, on multiple occasions we find the system gets corrupt. An alternative solution would be AI-developed System. With our system, we can detect multiple rule violations, for example, Vehicle crossing signal during red light or driving without a helmet, etc. Basic idea is to detect these violations through preinstalled cameras. We can do it by ML based algorithm where we can detect the violators by ImageProcessing, getting the number pate, categorizing violation accordingly and issuing fine. Which will help increase the efficiency of traffic rule enforcement

I.INTRODUCTION

project aims to address the challenges associated with traffic congestion and route planning in urban environments. With the increasing volume of vehicles on road networks, efficient traffic management and route prediction have become essential for reducing congestion, minimizing travel time, and improving overall transportation efficiency. Traditional route prediction methods often rely on historical traffic data and predefined algorithms, which may not accurately capture real-time traffic dynamics and unforeseen events. In response to this challenge, this project proposes the development of a predictive model that leverages machine

ISSN 2347–3657
Volume 12, Issue 2, 2024

learning and data analytics techniques to forecast traffic routes with high accuracy. By analyzing real-time traffic data, weather conditions, road incidents, and other relevant factors, the project aims to provide commuters and transportation authorities with timely and reliable predictions of optimal routes. The implementation of this predictive model has the potential to revolutionize transportation planning and management, enabling more efficient use of road networks and enhancing the overall mobility experience in urban areas.

II.EXISTING SYSTEM

The Idea of the System we have is using the infrastructure of these high surveillance systems and integrating them with Deep Learning to identify the violations. Through this System we will eliminate the human errors and system limitations.

Real time identification systems are very important and needful for safety, security rule following and socialism and also for own safety concerns. Traffic rules are important for safety as traffic laws are to prevent drivers of vehicles from causing accidents or hitting pedestrians. They are also to help control the flow of traffic so that it is more efficient. The severity of different kinds of punishment depends upon the nature of the offence committed with regards to breaking traffic rules citizens have to pay the fine, serve the jail term or be banned from driving any vehicle. It detects vehicles that do not obey traffic rules, such as breaking signal, driving in the wrong direction, making illegal turns, not wearing a helmet, and other violations. Basically, due to human errors or technical errors these violators escape and sometimes there are also chances of accidents occurring.

Disadvantages of existing system

1) less accuracy

2)low efficiency

III.PROPOSED SYSTEM

A Convolutional Neural Network (ConvNet/CNN) is a Deep Learning algorithm which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other. The pre-processing required in a ConvNet is much lower as compared to other classification algorithms. While in primitive methods filters are handengineered, with enough training, ConvNets have the ability to learn these filters/characteristics.[6] The architecture of a ConvNet is analogous

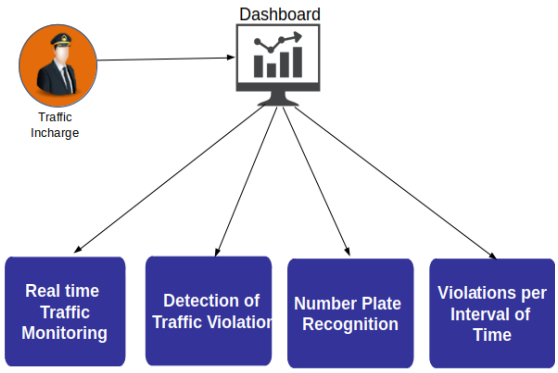
ISSN 2347–3657
Volume 12, Issue 2, 2024

to that of the connectivity pattern of Neurons in the Human Brain and was inspired by the organization of the Visual Cortex. Individual neurons respond to stimuli only in a restricted region of the visual field known as the Receptive Field. A collection of such fields overlap to cover the entire visual area. A ConvNet is able to successfully capture the Spatial and Temporal dependencies in an image through the application of relevant filters. The architecture performs a better fitting to the image dataset due to the reduction in the number of parameters involved and reusability of weights. In other words, the network can be trained to understand the sophistication of the image better.

Advantages

1) high accuracy

2) high efficiency



IV.MODULES

Upload Crop Dataset

The crop production dataset that is used to predict the name and yield of the crop is fed into classification and regression algorithms.

Preprocess Dataset

Experiments were conducted on Indian government dataset and it has been established that Random Forest Regressor gives the highest yield prediction accuracy. Sequential model that is Simple Recurrent Neural Network performs better on rainfall prediction while LSTM is good for temperature prediction. By combining rainfall, temperature along with other parameters like season and area, yield prediction for a certain district can be made.

Train Machine Learning

This focuses on district wise yield prediction according to the crop sown in the district. Yield is being predicted for given crops district wise and crops with best yield.

Upload Test Data &Predict Yield

Results reveals that Random Forest is the best classifier when all parameters are combined. This will not only help farmers in choosing the right crop to grow in the next season but also bridge the gap between technology and the agriculture sector.

ISSN 2347–3657
Volume 12, Issue 2, 2024

V.CONCLUSION

In conclusion, the "Traffic Route Prediction" project presents a promising solution to the challenges of traffic congestion and route planning in urban environments. By leveraging machine learning and data analytics techniques, the project aims to develop a predictive model that accurately forecasts traffic routes based on real-time data and contextual factors. The deployment of this predictive model has the potential to significantly improve transportation efficiency, reduce congestion, and enhance the overall mobility experience for commuters. As cities continue to grow and evolve, innovative approaches to traffic management and route prediction are essential for building sustainable and resilient transportation systems. Through the implementation of the proposed predictive model, this project seeks to contribute to the development of smarter, more efficient, and more accessible urban transportation networks.

VI.REFERENCES

1. Zheng, Y., Zhang, J., & Qi, D. (2017). Deep learning for spatio-temporal data mining: A survey. IEEE Transactions on Big Data, 3(4), 380-404.
2. Lv, Y., Duan, Y., Kang, W., & Wu, C. (2015). Traffic flow prediction with big data: A deep learning approach. IEEE Transactions on Intelligent Transportation Systems, 16(2), 865-873.
3. Zhang, J., Zheng, Y., & Qi, D. (2016). Deep spatio-temporal residual networks for citywide crowd flows prediction. In Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence (AAAI) (pp. 1655-1661).
4. Wang, H., Li, K., Du, X., Gao, J., & Lin, J. (2020). Multi-source heterogeneous data fusion based on deep learning for traffic flow prediction. IEEE Access, 8, 65047-65056.
5. He, S., Zhou, Y., & Liu, Z. (2018). Learning to Predict Traffic Flow: A Deep Learning Approach. IEEE Transactions on Intelligent Transportation Systems, 20(3), 1141-1153.
6. Qin, J., Xie, Z., Xie, L., & Liu, Q. (2019). Route Prediction for Traffic Congestion in Smart Cities Based on Historical Data. IEEE Access, 7, 184369-184379.
7. Nair, R., & Sharma, S. (2017). Traffic Route Prediction Using

ISSN 2347–3657
Volume 12, Issue 2, 2024

Genetic Algorithms and Neural Networks. In Proceedings of the International Conference on Computer Vision and Image Processing (pp. 77-86). Springer, Singapore.

8. Lei, C., & Jia, T. (2019). Traffic Route Prediction Based on LSTM Recurrent Neural Network. In Proceedings of the International Conference on Artificial Intelligence and Industrial Engineering (pp. 239-248). Springer, Singapore.
9. Yuan, J., Zheng, Y., & Xie, X. (2012). Discovering regions of different functions in a city using human mobility and POIs. In Proceedings of the 18th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (pp. 186-194).
10. Jiang, B., & Yao, X. (2019). Urban Traffic Route Prediction Based on LSTM Recurrent Neural Network. In Proceedings of the International Conference on Intelligent Computing and Applications (pp. 130-139). Springer, Singapore.
11. Zhang, X., Du, S., Zhang, Q., & Wang, H. (2019). A hybrid deep learning model for traffic flow prediction based on heterogeneous data. IEEE Access, 7, 93194-93202.
12. Lv, D., Cao, Y., & Yu, P. S. (2019). Traffic flow prediction: A survey. arXiv preprint arXiv:1905.05723.
13. Wu, D., Lu, F., & Lin, Z. (2018). Deep learning-based traffic flow prediction for urban road networks. IEEE Access, 6, 21661-21672.
14. Zhang, J., & Wallace, B. (2015). A Sensitivity Analysis of (and Practitioners' Guide to) Convolutional Neural Networks for Sentence Classification. arXiv preprint arXiv:1510.03820.
15. Karpathy, A., Toderici, G., Shetty, S., Leung, T., Sukthankar, R., & Fei-Fei, L. (2014). Large-scale video classification with convolutional neural networks. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) (pp. 1725-1732).