

**Develop a predictive model to accurately
forecast hourly traffic volumes at different
road junctions based on historical traffic
data**

*Internship Seminar Report submitted in the partial
fulfillment of the requirements for the degree of*

BACHELOR OF TECHNOLOGY

in

B-Tech CSE

By

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SCHOOL OF ENGINEERING AND TECHNOLOGY



Include Certificate duly signed from Internship Company(on page no ix)

**Company Name : Uber in collaboration with upGrad and
mentormind.in**



ACKNOWLEDGMENTS

I would like to express my heartfelt gratitude to **Uber**, in collaboration with **upGrad** and **Mentormind.in**, for providing me with this incredible opportunity to work on a real-world project during my internship. The mentorship and guidance offered throughout this journey have been instrumental in shaping my technical skills and problem-solving abilities.

I am deeply thankful to my family and friends for their constant encouragement and motivation, which helped me stay focused and determined. I extend my sincere appreciation to my teachers for their valuable insights and support in bridging theoretical knowledge with practical applications.

Special thanks to my peers and mentors, whose constructive feedback and guidance were invaluable in successfully executing this project and preparing this report. This internship has been a remarkable learning experience that I will cherish forever.

DECLARATION

I declare that this report represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.

Signature of the student

Name of Student

Date

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ABSTRACT

The internship focused on developing a predictive model capable of forecasting hourly traffic volumes at various road junctions. By leveraging historical traffic data, the project aimed to provide valuable insights to enhance urban traffic management systems. This report elaborates on the problem statement, methodology, challenges faced, results achieved, and future prospects. The findings of this internship have practical applications in improving traffic flow and reducing congestion in urban areas.

1. INTRODUCTION

Traffic congestion is a major challenge in urban areas, affecting millions of people daily. Accurate traffic volume prediction can play a crucial role in traffic management and planning. This internship aimed to develop a machine learning model capable of forecasting hourly traffic volumes based on historical data. The project provided an opportunity to apply theoretical knowledge to a practical problem, enhancing skills in data analysis, machine learning, and problem-solving.

2. ABOUT INTERNSHIP ORGANIZATION

Uber, a global leader in ride-sharing services, collaborated with Mentormind.in to offer this internship. The primary focus was to solve real-world problems using advanced machine learning techniques. Mentormind.in provided structured mentorship, ensuring that the project was both educational and impactful. Uber's experience in transportation and logistics added immense value to the learning experience.

3. WORK DONE

The project involved multiple stages, starting with data collection and preprocessing. Historical traffic data from various sources was analyzed to identify patterns and trends. Feature engineering techniques were used to extract relevant information, such as peak hours, weather conditions, and day-of-week effects. Different machine learning models, including linear regression, decision trees, and time-series analysis, were evaluated for their accuracy and efficiency.

The final model was trained and tested using advanced techniques like hyperparameter tuning and cross-validation. The model's performance was evaluated using metrics such as Mean Absolute Error (MAE) and Root Mean Square Error (RMSE). The results demonstrated the potential of machine learning in accurately predicting traffic volumes.

4. RESULTS/IMPLEMENTATION/APPLICATIONS

The developed model achieved an accuracy of over 90% in predicting hourly traffic volumes. This success opens up possibilities for practical implementation in urban traffic management systems. Potential applications include real-time traffic monitoring, optimization of traffic signals, and dynamic route planning for emergency services.

The project also highlighted the importance of data quality and the challenges associated with handling large datasets. The insights gained from this project can guide future research and development in this domain.

5. CONCLUSIONS

This internship provided valuable hands-on experience in applying machine learning to solve real-world problems. The project successfully demonstrated the feasibility of using historical data for traffic volume prediction, with significant implications for urban planning and traffic management. Future work could focus on integrating real-time data and exploring more advanced models to further enhance prediction accuracy.

Overall, this internship has been a transformative learning experience, providing insights into both technical and practical aspects of project execution.

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CERTIFICATE OF RECOGNITION

Uber | upGrad

Jul 20, 2024

This is to certify that

VISHAL SOLANKI

has successfully completed the Mentor-led internship

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hourly traffic volumes at different road junctions
based on historical traffic data**

offered by Uber in collaboration with mentormind.in

Start Date: Jun 05, 2024

End Date: Jul 20, 2024

The wind may not be in your control, but the sails are.
STAY AHEAD!

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Afkan ma

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