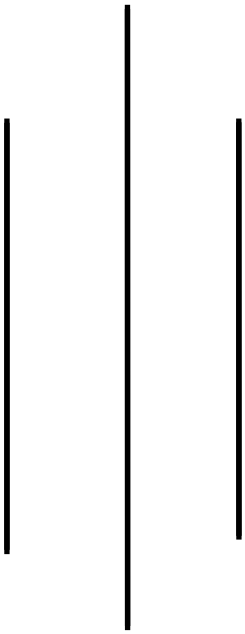
SYNOPSIS ON "**Traffic Prediction And Signal Control**"
TEXAS COLLEGE OF MANAGEMENT AND IT
FINAL YEAR PROJECT



COMPUTER SCIENCE AND MULTIMEDIA
DEPARTMENT OF INFORMATION TECHNOLOGY
LINCOLN UNIVERSITY COLLEGE
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Table of Contents

1. Introduction:

Traffic Prediction and Signal Control project focuses on reducing traffic congestion through traffic monitoring and dynamic traffic light control. This collects and analyze traffic data and by Using predictive analytics and machine learning models, This system dynamically adjusts traffic light timings to optimize traffic flow and respond to unexpected incidents

2. Problem Statement:

Urban areas are increasingly facing severe traffic congestion, leading to significant delays, increased fuel consumption, and higher emissions. Traditional traffic light systems, with fixed timings, are unable to adapt to real-time traffic conditions. Unpredictable incidents such as accidents or sudden surges in traffic volume further complicate traffic management, resulting in inefficiencies.

3. Objective:

The main objective of the project is to develop a comprehensive traffic management system that:

- To predict traffic based on historic traffic data.
- To create dynamic traffic light control algorithms that adjust timings based on real-time and historical traffic data.
- To detect incidents, optimizing traffic flow and enhancing safety.

4. Scope of the Project:

Who will use?:

- City traffic management authorities
- Urban planners
- Normal people and drivers indirectly benefit from improved traffic flow

Where to access?:

- Traffic management centers
- web applications for real-time traffic updates and analytics.

Where to use?:

- Busy traffic corridors and highway

5. Working Methodology:

Agile methodology is chosen due to its iterative and flexible nature, allowing for continuous adaptation to evolving requirements and real-time data insights. This approach promotes collaboration and facilitates incremental delivery, which is crucial for a project involving complex machine learning models and dynamic traffic control.

6. Implementation:

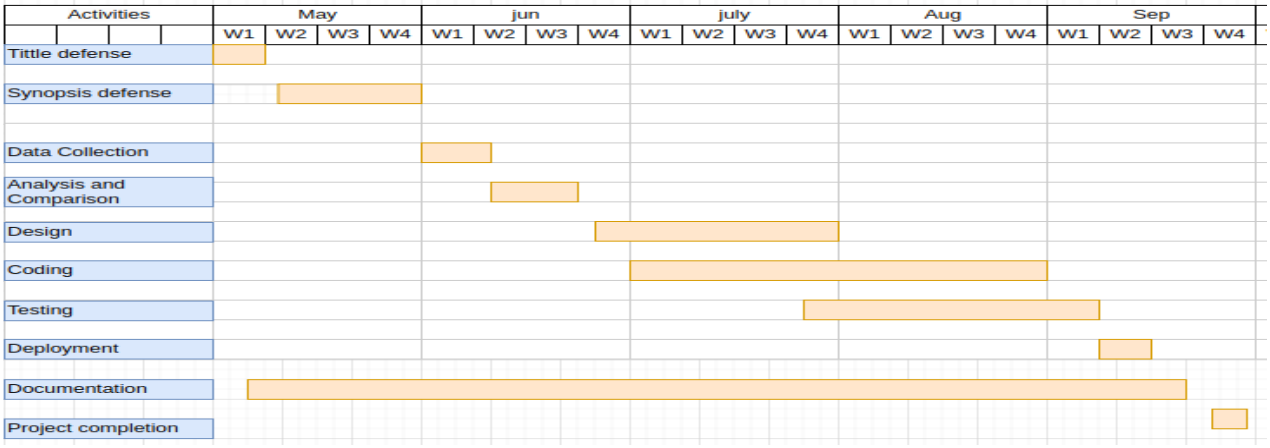
- Frontend (Software):
  Traffic Monitoring Interface using simple HTML and CSS.

- Backend (Software):
  Python for data analysis and Flask for backend.
  Implementing using TensorFlow or PyTorch.

- Hardware (Devices):
  Cameras For real-time traffic data collection.
  High-performance servers or cloud services like Google colab for data processing and model training.

7. Timeline

The project begins with the Title Defense in the first week of May, followed by the Synopsis Defense in the second and third weeks. Data Collection starts in the last week of May and continues through the second week of June. Analysis and Comparison take place during the last two weeks of June, leading into the Design phase, which runs from the first week of July to the second week of August. Coding overlaps slightly with Design, beginning in the third week of July and concluding in the last week of August. Testing follows from the second to the fourth weeks of August. Deployment is scheduled for the first week of September. Throughout the entire project, from May to the end of September, Documentation is an ongoing activity. The project concludes in the final week of September with Project Completion.



8. Data source:

The dataset will be sourced from Kaggle for traffic prediction, encompassing extensive traffic data collected from various sensors and monitoring systems in urban environments. This dataset includes features such as timestamps, traffic volume, weather conditions, and potentially relevant geographical information.

Data source link : https://www.kaggle.com/search?q=traffic+prediction

9. Conclusion:

Traffic Prediction and Signal Control project addresses the pressing issue of urban traffic congestion by employing real-time monitoring and advanced machine learning techniques. By creating a dynamic traffic control system, the project promises to deliver smoother traffic flow and reduced environmental impact, marking a significant step toward smarter and more sustainable urban mobility solutions.