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Vellore Institute of Technology

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School of Computer Science Engineering and Information Systems

Department of Computer Applications

Fall Semester –2025-26

PMCA698J – Internship -I / Dissertation -I

0th Review

Register Number	24MCA0169
Student Name	Priom Dutta
Internship / Dissertation Domain	NLP and LLM
Internship / Dissertation Title	LLM-Based Predictive Modeling for Traffic Flow Optimization Using Real-Time Social Media Data
Abstract (Mini-200 Words)	<p>The situation of traffic jam, road accident and random flow of vehicle become more and more serious in urban area, thus the management of traffic jam has been a critical problem now. Traditional traffic prediction and route planning methods are based on static infrastructures like sensors, GPS devices and historical traffic flow data. Although these systems provide structured, quantitative data, they fail to respond rapidly to unplanned occurrences such as accidents, public events, or road closures, impacting the actual traffic flow tremendously.</p> <p>In the meantime, social media platforms have sprung up as valuable public information resources, where travellers often post real-time information warning of road closures, delays and accidents. Although being unstructured and noisy this data offers the possibility to learn from the extensive contextual information of the road which, when being used appropriately, can help to enhance traditional ways of traffic prediction. But it is not easy to extract useful signals from informal text when engaging challenges in relevance filtering, entity recognition and event classification.</p>

	Motivated by this query understanding task, in this study, we propose a method to use Large Language Models (LLMs) to predict what information in the social media posts is associated with traffic. Using natural language processing, the system attempts to predict traffic-related incidents with greater context, recognizing events and making sense of textual clues about traffic. The outcome is a hybrid method that straddles linguistic intelligence and predictive modeling and yields not just more flexible, but also knowledge driven traffic flow optimization.
Keywords	Traffic flow optimization, LLM, NLP, Social Media, Incident Prediction
Company Name & Address (For Off-campus students only)	Not Applicable
External Memtor details (For Off-campus students only)	Not Applicable
Aprroval Status (for Guide)	YES / NO
Meeting date & Time	2025-07-16 10:00-10.15 AM
Student-Guide Interaction	<ul style="list-style-type: none"> • Finalized the dissertation title in consultation with the guide • Received guidance to study appropriate methodologies related to LLM-based traffic flow prediction and social media analysis. • Instructed to explore and review relevant reference papers to understand existing approaches and strengthen the literature foundation. • Guide approved the use of Large Language Models (LLMs) as the core component of the proposed dissertation framework.
Guide Name	Dr. Tapan Kumar Das
Guide Signature	
Approval Date	

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