

Intelligent Traffic Management System for the Development of Smart Cities in Sri Lanka

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Abstract

Traffic congestion in Sri Lanka is a pressing issue that leads to wasted time, financial burdens, and disruption of personal schedules. The inadequate road infrastructure, underutilization of various travel information sources, and transportation systems coupled with the increasing number of vehicles contribute to this problem. Despite the presence of two international airports, a railway system, and waterways for transportation, the populace predominantly relies on the road network, leading to consequential challenges such as traffic accidents, property damage, and environmental pollution. The objective of this research is to put forth and assess a smart system for managing traffic known as the Intelligent Traffic Management System (ITMS). This system utilizes technological progressions like Artificial Intelligence (AI), cloud computing, the Internet of Things, and data analytics to enhance traffic management and control. The objective is to optimize traffic flow, reduce wait times, alleviate congestion, minimize travel expenses, and mitigate air pollution levels. The proposed system employs machine learning algorithms to forecast optimal routes based on traffic patterns, vehicle classification, frequency of accidents, and weather conditions. The development and implementation of the ITMS demonstrate the potential of AI-driven solutions in addressing traffic-related problems and improving daily commuting experiences. In conclusion, integrating AI technologies into the ITMS presents a promising approach to mitigating traffic congestion challenges in Sri Lanka. By forecasting optimal routes and incorporating data-driven decision-making, the ITMS offers a solution to improve traffic management and alleviate the negative effects of congestion.

Keywords: *Traffic congestion, Intelligent Traffic Management System, Artificial Intelligence*