UNIVERSITI TEKNOLOGI MARA

ENHANCED BASEMENT PARKING MANAGEMENT SYSTEM (EBPMS)

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ABSTRACT

With urbanization on the ascent, the interest for productive stopping arrangements is steadily developing. This exploration presents an innovative Enhanced Basement Parking Management System (EBPMS) that use Infrared (IR) sensors and Ultrasonic sensors for shrewd parking spot the board. The EBPMS, in contrast to conventional systems, places an emphasis on vehicle detection accuracy, distance measurement accuracy, and energy-efficient lighting control accuracy. Exact car recognition is ensured by IR sensors placed strategically at the entry and exit of each parking spot, and optimal space utilisation is achieved by the measurement of vehicle distances by ultrasonic sensors. To promote energy saving, the system has an advanced LED lighting control system that dynamically modifies illumination based on the presence of vehicles. The dynamic LED illumination, accurate parking advice, sensor-based space optimisation, and user-focused mobile application are essential elements of the Enhanced Basement Parking Management System. The EBPMS provides a strong and affordable solution that improves the whole parking experience by doing away with the requirement for IoT. By addressing urban parking issues without depending on intricate IoT infrastructure, the EBPMS implementation offers a simple yet clever solution for effective basement parking management. This initiative offers simplicity, precision, and sustainability in urban infrastructure, marking a significant leap in parking technology.

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INTRODUCTION

1.1 Research Background

Nowadays, there are various innovations in parking system management either domestically or abroad. A Enhanced Basement Parking Management System (EBPMS) has been designed to solve parking issues efficiently and to apply technical solutions to improve various aspects of people's problems. The sensors, and other various technologies, is critical in today developing globe for designing and building flawless concepts and technologies. Sensors has grown to make both people and work smarter and easier.

In this project, we introduce the solution to all the problems that people need to face when they experience at the basement car park. We reduce the human effort and provide a more secure and fast working stations. Now people do not have to waste their fuel, time, and money in searching for the parking spaces [1]. They can easily find the nearest available parking space through the light intensity. They do not have to go and check every parking station for searching empty parking slots. Every parking slot, we also provide the camera to monitor the signalize to the people about their car condition during their parking experience.

Nowadays, finding a parking spot in an urban location during peak hours is particularly challenging owing to a scarcity of parking places. Because of this, traffic congestion is caused by drivers who are stopped in parking area. Both money and time are wasted as a result. To arrange for advance booking based on requirements, we need information about available parking spaces.

To that end, we created a prototype of a vehicle parking management system utilising the Internet of Things. Large parking lots are needed for airports or multiplexes, making manual system maintenance challenging. The main problem with parking automobiles is that poor parking can lead to harm to other cars. Owners of damaged parking spaces get irate and unsatisfied with parking management as a result.