VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELAGAVI - 590 018

SMART PARKING SYSTEM

Submitted as Subject Assignment Work for

MICROCONTROLLER AND EMBEDDED SYSTEM (21CS43)

BY

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ALVA'S
Education Foundation

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY MOODBIDRI-574225, KARNATAKA

2022 – 202

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY MIJAR, MOODBIDRI D.K. -574225 KARNATAKA

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This is to certify that, assignment work for the subject "**Microcontroller and Embedded System (21CS43)**" has been successfully completed and report submitted by **SUMITH K S (4AL21CS164),** during the academic year 2022– 2023. It is certified that all corrections/suggestions indicated presentation session have been incorporated in the report and scored 9 Marks out of 10 and deposited in the departmental library.

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SMART PARKING SYSTEM

Introduction

The growing urbanization and the increasing number of vehicles on the road have led to significant challenges in managing parking spaces efficiently. Traditional parking systems often result in congestion, wasted time, and increased pollution. To address these issues, smart parking systems have emerged as a transformative solution, leveraging advanced technologies to streamline and optimize parking operations. This report provides an overview of smart parking systems, their key components, and benefits.

Smart parking systems go beyond the limitations of traditional methods by utilizing various cutting-edge components. Sensors, such as ultrasonic sensors, infrared sensors, or cameras, are strategically installed to monitor parking space occupancy in real-time. The data collected from these sensors is communicated through a network, enabling drivers to access real-time parking availability information remotely through user-friendly mobile applications or websites. This technology not only empowers drivers to quickly locate available parking spots but also contributes to reducing traffic congestion and greenhouse gas emissions. The benefits of smart parking systems are far-reaching. By providing real-time parking availability information and optimizing space utilization, they enhance the overall user experience, saving drivers time and effort in finding suitable parking spaces. Furthermore, these systems align with sustainability initiatives by encouraging eco-friendly transportation through the provision of electric vehicle charging stations and promoting reduced fuel consumption. A smart car parking system gives a visual output indicating an available parking space rather than driving aimlessly. The driver looks up to the row of LED lights and their colour to deduct a result of determining the parking space availability. The two main colours used are red and yellow stating occupied and free respectively. These lights are placed at the ceiling of each parking space and the driver looks up and follows the set of LEDs and searches for a Yellow one. These lights are controlled automatically with sensors and the feedback is provided through the colour of the LED when a vehicle is detected. This system not only makes accessibility easy but also manages the congestion of vehicles avoiding long search and wait times. A smart car parking system gives a visual output indicating an available parking space rather than driving aimlessly. The driver looks up to the row of LED lights and their colour to deduct a result of determining the parking space