Smart Parking Network Modal

Project Advisor:

Abu Bakar (Internal Advisor)

Ali Hamza (External Advisor)

Project Manager

Fahad Maqbool

Project Team

Team Lead:

Bilal Arshad (BCSF16E38)

Team Member:

Muhammad Usama (BCSF16E024)

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Introduction

1.1 Abstract:

In the present era car parking is a serious issue and need to control it at workplace. This challenge is as a result of sharp increase in numbers of automobiles of staff in front of department. There is not automatic system to control the car parking management at university. In this regard, we propose an automatic and real-time system for automated car parking for university staff. Eventually, proposed system would be implemented by the use of internet of things (IOTs). IOT refers as physical thing that is connected to internet or exchanging information or data between internet and physical device. Node MCU is a microcontroller used in IOT. By detecting and processing the information from parking lots, smart parking system allows users to obtain real-time parking information and alleviates parking contentions in front of department.

Our design goals of the smart parking systems include: simplify the operations of parking systems, increase user satisfaction, and alleviate parking congestion in front of departments.

This system allows us to register user with its unique vehicles number and relevant department. RFID will be placed at the windshield of the car, when car come at main entrance then RFID reader take data from RFID tag and check from database. If vehicle exist then barrier will be open for particular vehicle otherwise it remained closed. At parking gate there will be LCD that show how many slots are free, Again RFID reader takes data and check either it's a staff vehicle or student vehicle. Parking area will be show on screen where you have to park vehicle either in student area or staff area.

1.2 Project Goals:

The main goal of this study is to overcome the parking congestion in the front of departments. Because staff vehicles are increasing day by day in our university. Furthermore, we are going to design a new smart parking system which will assist to staff to find parking spaces. In addition, an important goal is to reduce the time for parking and reduce energy consumption. In this regard, separate parking area will be allocated for staff in which IOT modules will work automatically.

1.3 Project objectives:

1. To develop a user friendly automated car parking system which reduce the manpower and reduce parking congestion in front of departments.
2. To provide parking space in limited area.
3. Separate parking for both student and staff.
4. To evaluate and manage the challenges in smart parking system.

CHAPTER 2. FEASIBILITY ANALYSIS

2.1 Technical Feasibility

Node MCU will be used in our project that will be connected to the PC. We write our algorithm and then code into Node MCU. Node MCU contain of multiple input and output slots. The user first registers his car to the admin. The Admin add his car information. RFID tags will be allocated to each staff vehicle in which data stored. At main entrance and parking gate data will be checked via RFID tags from database. LCD will be used to show slots status and in which area we have to park our vehicle. Infrared

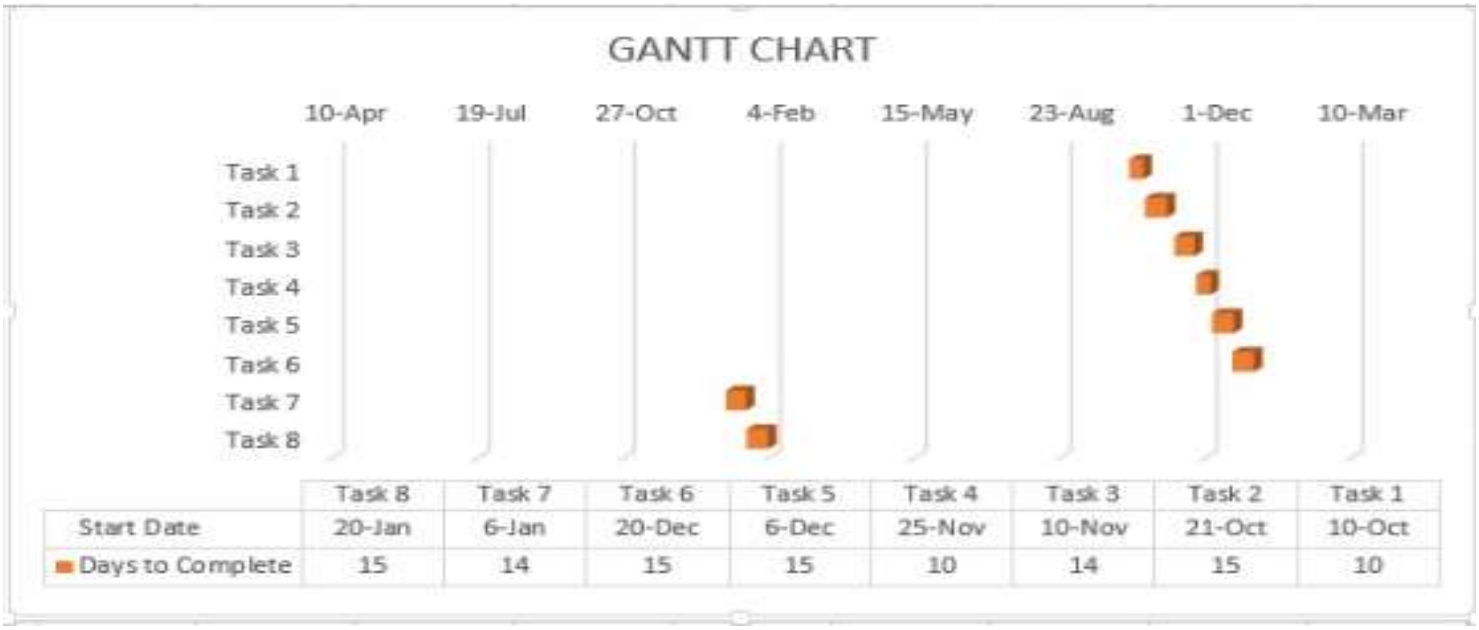
sensor will be used to sense vehicle in parking area. Barrier will be open for particular vehicle.

2.2 Economic Feasibility:

We have to purchase the RFID tags, RFID antenna, RFID Reader, Node MCU, Servo motors, Small LCD, Multiple infrared sensors and different color of lights. Our estimated budget will be 13000 RS for this project.

Devices used in project	**Cost of devices**	
RFID modules	3000	
Node MCU	2500	
Servo Motors	2200	
Small LCD	300	
Infrared Sensors	2400	
Prototyping	1500	
Wire Expenses	1000	
	Total	12900

2.3 Time Feasibility



	Task 8	Task 7	Task 6	Task 5	Task 4	Task 3	Task 2	Task 1
Start Date	20-Jan	6-Jan	20-Dec	6-Dec	25-Nov	10-Nov	21-Oct	10-Oct
Days to Complete	15	14	15	15	10	14	15	10

2.4 Legal Feasibility:

This project is totally under the laws of Pakistan. We are not doing such type of activities which violate laws of Pakistan.

References:

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2. Shaheen, S.A., C.J. Rodier and A.M. Eaken, 2005. Smart parking management field test: A bay area rapid transit (bart) district parking demonstration. http://pubs.its.ucdavis.edu/download_pdf.php?id=44.

3. Lopez Sastre, R.J., P. Gil Jimenez, F.J. Acevedo and S. Maldonado Bascon, 2007. Computer algebra algorithms applied to computer vision in a parking management system. Proceedings of the International Symposium on Industrial Electronics, June 4-7, 2007, Vigo, pp: 1675-1680.
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