MUTHAYAMMAL ENGINEERING COLLEGE

An Autonomous Institution,
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IBM (Nalaiya Thiran) Project Ideas 2022

SATHEESHKUMAR (MECR19EC089)

1) Develop an IoT enabled Android application to give realtime parking space available on the campus

The application would ensure optimum use of resources, it would help save time and also be far more efficient than the traditional way of finding the parking slots on the streets. At the same time, it would also reduce unnecessary chaos and traffic on the campus.

How should the application work?

Whenever a person wants to find a parking space on the campus, he has to login to the application using his user id and password, a request message will then be sent to the server. The server will send back a response with the available parking details, real-time mapped directions and real-time parking space to allocate parking according to the size of the vehicle. The application would be smart enough to identify whether the car is heading towards the same parking space or not. If not, the application would re-route the same car to another nearest available parking space.

Challenges

The above mentioned will be applicable to those vehicles that have logged in to the system and used the navigating system. But we also need to consider those vehicles which have not logged in and are manually finding parking space and heading towards the same parking slot. Can you solve this problem? Develop a smart efficient application system to solve the problem related to real-time parking space.

2) Smart Street Light Metering System

Design a Street Light Metering System for monitoring the power usage. It should calculate the number of units consumed during a day, month and year. Bill should be generated automatically and alert messages will be sent on high power consumption.

How should the application work?

The system will register the name of the area, pin code, number of light poles, units consumed and number of poles which are in working condition and it will store that information to the database. The system will also store the count of faulty bulbs and it will send a notification to the department to replace them. The system should have smart light dimming module, which will use the following approaches: The first is based on visibility i.e. if the visibility is low, the intensity of light should be maximized. The second approach is to dim the light for the streets automatically when no movement is detected and it will automatically increase the intensity of light. The system should convey the usage of power accurately to the concerned department and should automatically calculate the bill by storing monthly unit consumption. The system should store electricity consumption not only daily but also yearly and it should represent electricity consumption graphically for past 15 days. If power consumption goes beyond a threshold level, which is the average power consumed in the last 15 days, then the system will generate an alert message to lower the consumption.

3) Multimodal Attendance System

Implement a student's attendance in monitoring system using Fingerprint Identification /Radio Frequency Identification Tags etc. The system should automatically mark and notify the attendance of the students to the respective stakeholders of the organization.

How should the application work by using fingerprint identification?

This application will store student's biometric information along with the details like name, roll number, residential address, phone number, parents' names and phone number, and date of birth into the school's database/cloud. First, the teacher should mark his/her biometric attendance to unlock the system. Once the system has been unlocked, students will mark their fingerprint attendance. This

data will be compared with the stored entries. The system should automatically send an SMS to parents on observing the ward's absence. The teacher should then mark his/her biometric attendance to lock the system. (You can develop your own attendance system using your ideas, but do give a second thought to the above specifications.)

Challenges:
In what cases can your system fail? Can it be cracked? How can you make it robust?

4) Smart Security System for a Smart University!

will the security office keep a record of all the objects on the campus at any point in time? If any damage occurs to that object, how can it be notified to security immediately? The system should detect any sorts of emergency like fire or earthquake on the campus and the security should get an alert that there is some kind of emergency and immediate action is required. Way to track any movement around the river side slope to make sure student safety during the night. There are generic Internet of Things (IoT) modules designed to connect devices to the internet and control them through cloud software. You are expected to develop economically suitable wireless IoT systems to solve these problems.

Challenges

There are different kinds of objects present on the campus and there are also humans that move around. Which technology can be used to track them? How can you make your system generic so that its scope can be expanded? Can this be linked with the CCTV surveillance so that all the cameras in that area focused on the distressed spot for example the river side slope; Can you link sensors around the campus covering the whole university to avoid any blind spots? Can we develop such a system, which can identify priorities or multitask events?

5) Water Management System

From the underground storage tank, water is pumped using motors to overhead water tanks, which are placed at the highest elevated floor of the building for optimum pressure. The system should also continuously monitor the soil moisture along with rain predictions to water the landscapes in the campus.

How can the system work?

The system should check water quality whether it is drinkable or brackish i.e. it should check PH-level, oxygen level, etc. It should check water level of over-head as well as lower-head tanks and control the pumping of water as per the required limit of the over-head tank. The system should also give real time water volume of both the tanks, through the android application. Watering system mobile app should display type of soil, which is being taken, how much water is needed, and its moisture level. It should check weather forecast online and act accordingly, verifying if the forecast was appropriate or not.