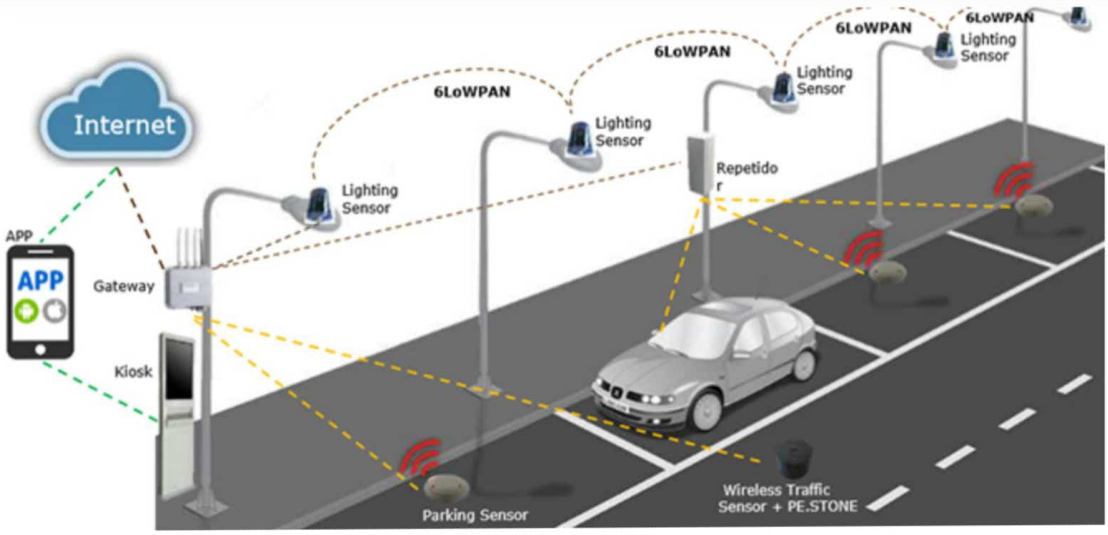
SMART PARKING SYSTEM



Outline :

- What is **smart Parking System.**
- System Unit.
- Main features.
- Coordinator
- Software Application
- Problems
- Future Work
- Conclusion.

What is smart Parking System

Smart parking system is an integrated system to organize cars in public parks.

The system will be used for every slot in park.

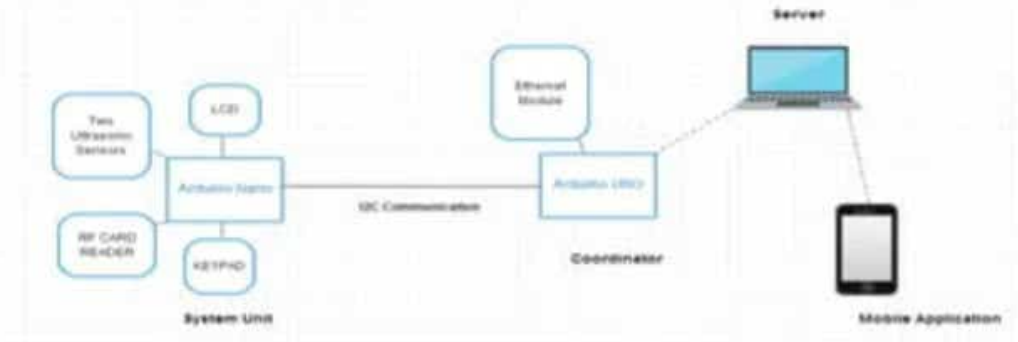
The motivation of this project is to help drivers. And make the payment way easier.

What is smart Parking System

Our projects consist of two sides, the first one is the main unit, and this unit will be located in every spot in the parking lot.

These units will be connected with our second, the coordinator.

So every coordinator will control the information from and to the units connected with it.



System Unit

The system will detect the existence of a car in the slot using sensors.

the system will use RF(Radio Frequency) reader for automatic payment.

The system also will use a display and a keypad for the interaction with the user, like interaction for entering information about the time needed. Or interaction for payment if the user forget the card.

Main features

Car detection.

Check In to the system using phone number.

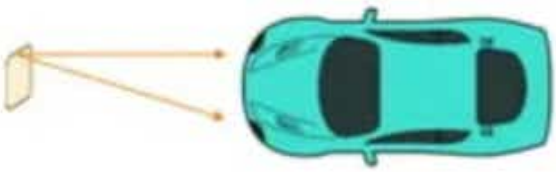
Automatic payment using phone number.

Check Out using phone number.

Car detection.

The detection of a car is done by using the ultrasonic sensor. We use two ultrasonic sensor for detection.

We have to take in mind that the system will not consider a moving body as a car, so one sensor will not be enough, we have to detect the existence of the car from different points and distances.



State of the System

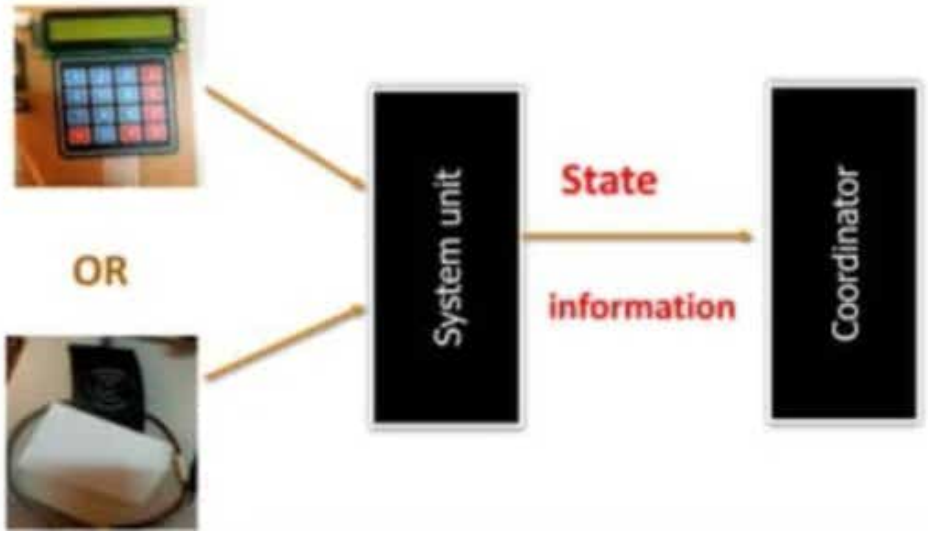
There is three main states in the system after a car detected.

The check in state, payment and checkout state.

The user will use the keypad and LCD in every state. there's more than way that the user can choose, either by phone or by RF card reader or by entering the card number.

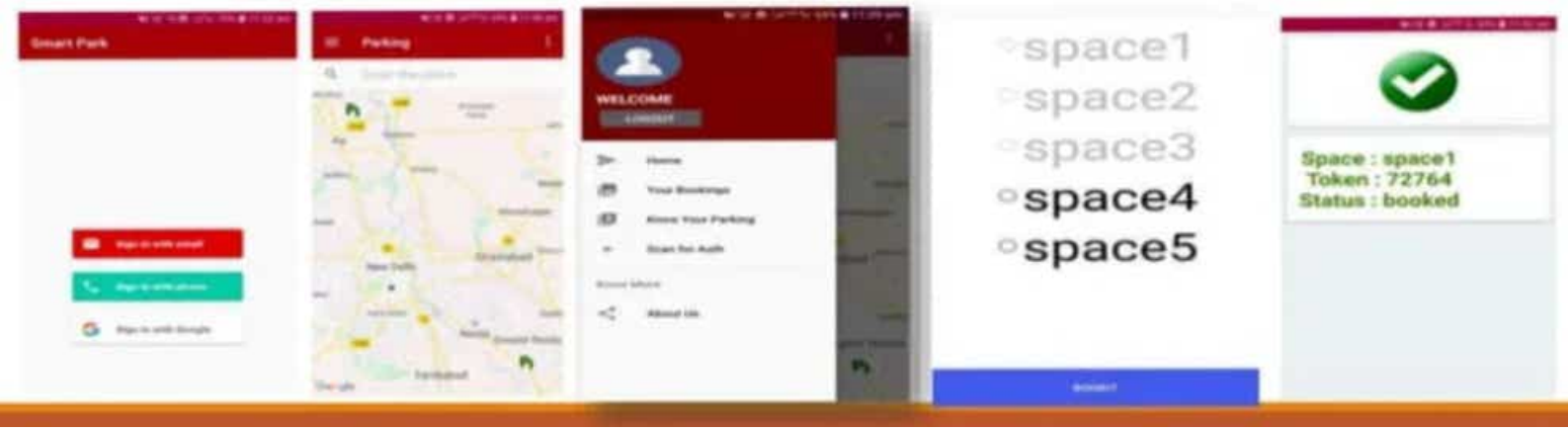
State of the System

State can be: Check in, pay, Check out



Software Application

- The software application can be used by the drivers to check in , pay and check out.
- The user will register in the system,
- add the needed information like the phone number and the RF number.



Problems

Which sensor to use:

- After comparing to other sensors available, the ultrasonic sensor is the most accurate one, the IR sensor is not very accurate also doesn't work fine outside in the sunlight, and the available IR sensors had a range less than the ultrasonic sensors.

Detection a car not a moving object:

- This is solved by using more than one ultrasonic sensor to detect from different points and distances.
- Also by using delay and multiple readings to ensure that there is a car.

Future Work

1. We can add a GPS module to store the location for every unit.
2. Adding other ultrasonic sensor would be more efficient.
3. Also we can implement other ways for the payment. For example connect the payment with the bank account for the user.
4. And to make our project more useful in our countries, we could integrate our system with the ordinary way of payment.

THANK YOU