Iot PHASE 2 PROJECT

TOPIC: SMART PARKING

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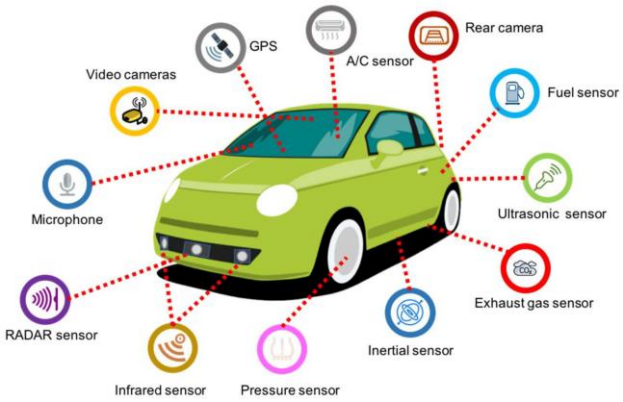
Sections of the device and their functions:

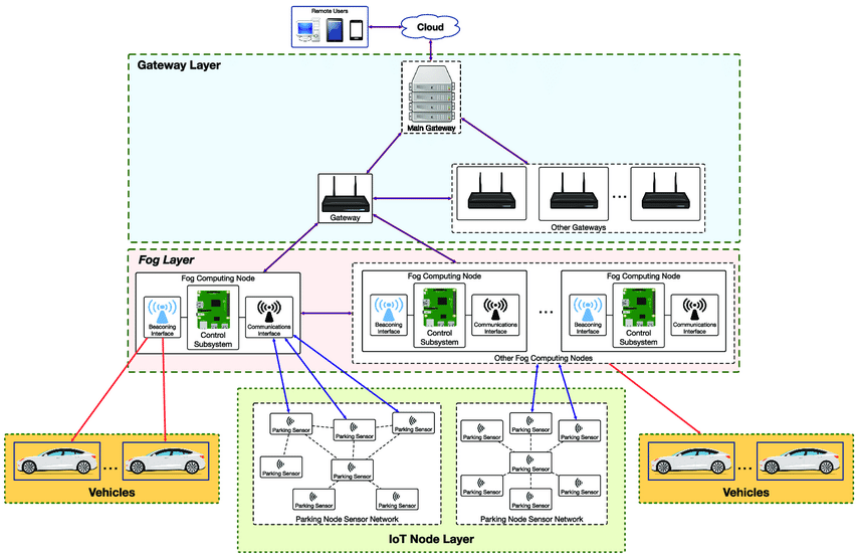
- Microcontroller: The microcontroller reads the data from the sensors and determines the status of the parking spot. It then sets the LED indicator accordingly. It also communicates with the cloud server to send and receive data.

- Sensors: The sensors detect the presence of a vehicle in a parking spot. The microcontroller then uses this data to determine the status of the parking spot.



- LED indicator: The LED indicator is used to show the status of the parking spot. If the parking spot is occupied, the LED indicator will be red. If the parking spot is vacant, the LED indicator will be green.

- Communication module: The communication module is used to communicate with the cloud server. The microcontroller can send data to the cloud server to report the status of the parking spot. The microcontroller can also receive data from the central server to update its configuration or to receive commands.



- Other components: In addition to the above components, some smart parking devices may also include other components such as a display, a battery, and a solar panel. The display can be used to show the status of the parking spot or to provide other information such as the time and date. The battery is used to power the device when there is no external power source available. The solar panel can be used to charge the battery, which can help to extend the operating time of the device.

Steps in flow chart showing the working of smart parking device:

Step 1: Start

Step 2: Read sensor data

Step 3: Determine parking spot status (occupied or vacant)

Step 4: Set LED indicator accordingly

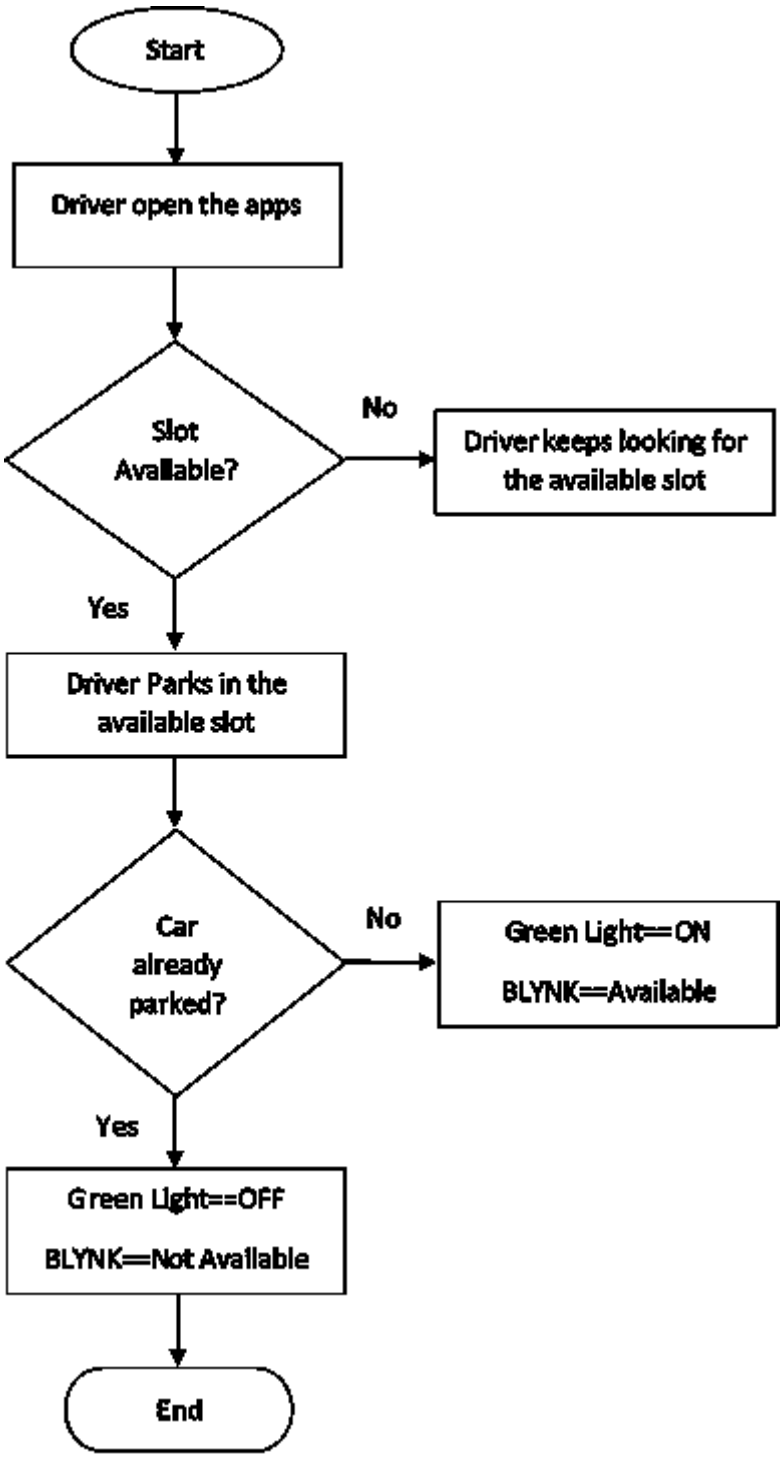
Step 5: Send data to cloud server

Step 6: Receive data from cloud server (if necessary)

Step 7: Update configuration (if necessary)

Step 8: Go to step 1

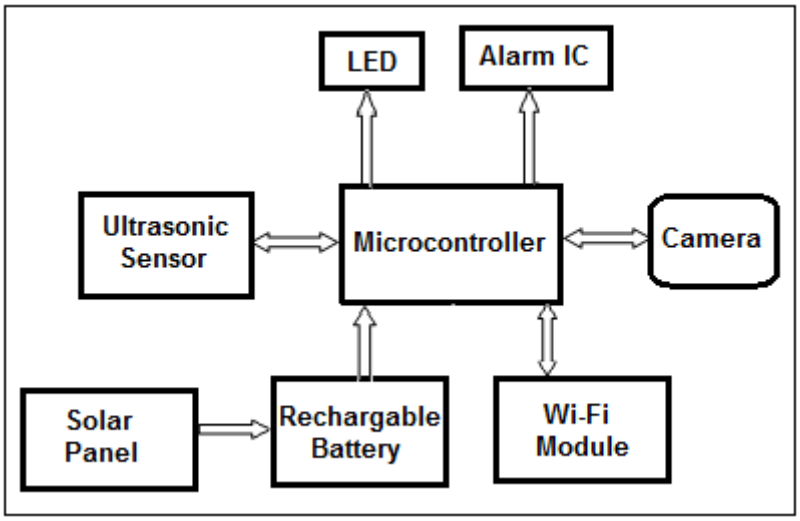
Step 9: End



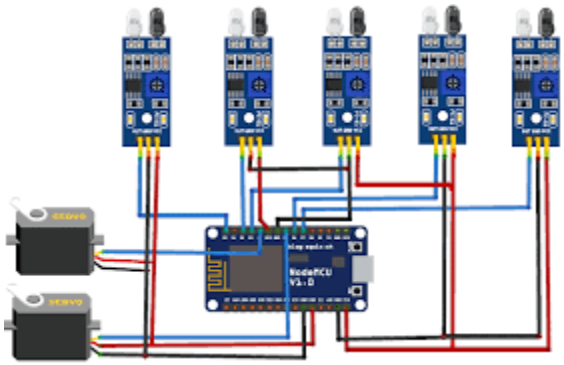
Block diagram and its description:

- Cloud server: The cloud server is the central hub of the system. It stores data from the IoT devices, such as parking spot availability and occupancy rates. The cloud server also provides the smart parking app with access to this data

- Sensors: The sensors detect the presence of vehicles in the parking lot. The most common type of sensor used in IoT smart parking systems is the ultrasonic sensor. Other types of sensors that can be used include infrared sensors, magnetic sensors, and video cameras.
- IoT devices: The IoT devices are installed in the parking lot. They are responsible for collecting data from the sensors and sending it to the cloud server. The IoT devices also receive commands from the cloud server, such as commands to open or close the gates to the parking spots.
- Actuators: The actuators are responsible for carrying out the commands received from the cloud server. The most common type of actuator used in IoT smart parking systems is the gate motor. Other types of actuators that can be used include traffic lights and displays.



Circuit Diagram:



Advantages of Smart Parking:

- Reduced traffic congestion: By helping drivers to find parking spots more easily, IoT smart parking systems can help to reduce traffic congestion.
- Increased parking availability: IoT smart parking systems can help to increase parking availability by providing real-time information about parking spot availability.
- Reduced parking costs: IoT smart parking systems can help to reduce parking costs by allowing drivers to pay for parking using their smartphones.
- Improved parking efficiency: IoT smart parking systems can help to improve parking efficiency by providing data that can be used to optimize parking management.