Automated Parking Garage

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Project concept (paragraph)

We are planning to create a parking system using image processing through camera, ir sensors and servo motor. Camera will detect cars entering the parking lot. It will read the license plate and cross verify through records if it has been booked by the user. If the user has booked for the parking, the door will open. There is software UI created to book the open slots in the parking garage that would be stored in AWS, with time and total cost for parking. A UI is also created to show the live stream of cars entering and exiting the parking lot as well as to show empty lots at the gate. When the car enters, there are IR sensors that would show where the car has been parked and assign the parking slot as full which will update the database. The video streaming would also be stored in AWS.

List of project elements vs. required elements

Some sort of IoT style sensor use (simulated or actual) - **Camera, IR Sensor(simulated), servo motor**
Use of three different communication protocols - **USB, TCP, ADC**
Use of message queueing - **Using AWS**
Use of a REST-based API - **Using AWS**
Use of a Qt UI and an HTML-based UI - **QT Designer software based UI**
Use of AWS: At a minimum an IoT Thing, Lambda, a cloud-based data store, and API Gateway - **Storing Image in the database**
Your system can use hardware (such as Raspberry Pi SBCs, sensors, and controls) or it can be completely virtual using pseudo-sensors and other simulated devices or combinations of both. I will provide any hardware you need, but you will need to outline what those needs are in the proposal - **2 X Jetson Nano**

Block Diagram: