Premises Security System

Name: Nathan Cusack
Email: G00338306@gmit.ie
Github: Github.com/NatCusack

Operation

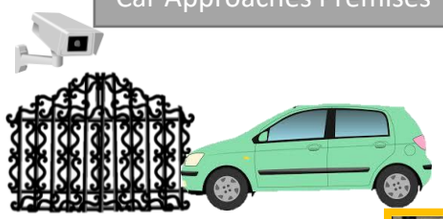
- Ultrasonic Sensor detects approaching car
- A picture is captured and scanned for Licence plate
- The plate is then check against the database
- If approved the gate opens, else an email is sent to the owner

Functionality of ALPR

ALPR uses computer vision to extract a string from a licence plate. There are a number steps:

- Pre-processing – the image is filtered and processed for easier object detection
- Object detection – The image is scanned using a trained model for a licence plate
- Optical Character Recognition – In this step the picture is scanned for characters that are parsed to a string

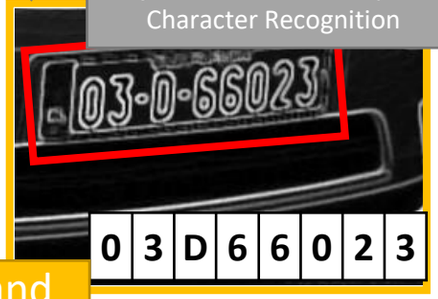
Car Approaches Premises



Input

Pre-Processing

Object Detection and Optical Character Recognition



Website

Premises Security System

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Welcome to Premises Security System

Plate	Accuracy	Date	Access
141CE2315	83.56	13/02/2020	GRANTED
191D3592	84.72	11/02/2020	GRANTED
07L801	68.31	11/02/2020	DENIED
131G3590	91.52	10/02/2020	GRANTED
171CE2751	43.67	08/02/2020	INACCURATE

Technologies used

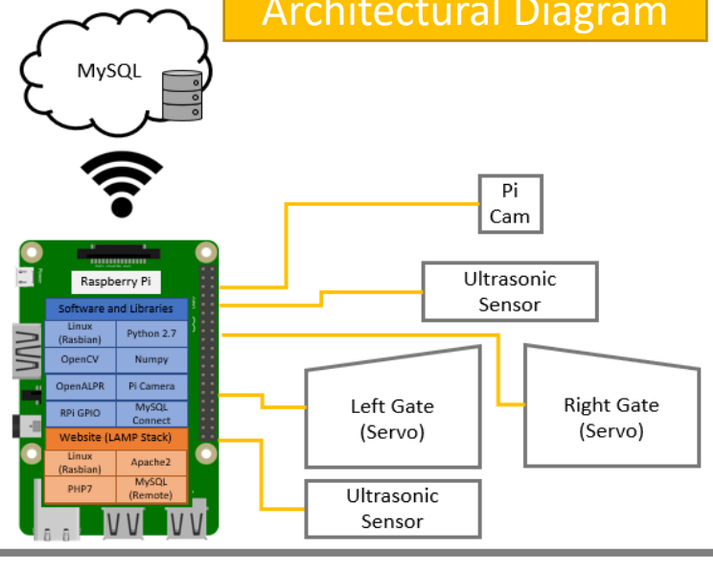
Software

- Python
- Bash
- Apache2 Web Server
- Html/CSS/JavaScript
- Structured Query Language
- PHP
- Computer Aided Design (CAD)

Hardware

- Raspberry Pi
- Pi Camera
- Ultrasonic Sensors
- Servo Motors
- 3D Printer

Architectural Diagram



Conclusion and Future work

All features of my project worked well together. Time spent researching really benefited the progression of the project. There are still a number of features I would like to tweak and add in the future such as:

- Mobile App Integration
- Livestream from camera over cloud
- Increase ALPR accuracy