

Requirements

Name	CR	ER	Verification Method
Abnormal Cases	The machine can deal with the unclear image	The system will store pictures and display them via the internet when the license plate cannot be read.	Inspection
Cameras	There will be cameras to take pictures of vehicles.	The system will record cars coming from both directions on the roadway.	Test
Car Speed	The device needs to be able to tell when a car passes.	The system will identify cars moving at a speed of 15 mph 90% of the time	Test
Connectivity	The device needs to be able to send pictures to a server.	The system will output a summary of the cars seen, a representative image for each car, and a collection of images for cars that can not be identified via the internet when the camera sub-system is at least 100' away from th	Test
Identify License Plate	When the photo contains a clear license plate image, the license plate number can be recognized and recorded.	The system will identify at least 90% of license plates with no more than 1 character wrong.	Test
Informing the Client	System will send an email with the data.	The system will send an email at a rate specified by the user, containing the recent summary of cars and links to any unidentified pictures.	Inspection
Power Supply	The device needs to last at least a month without charging.	The device will be solar powered with a large battery pack. The solar power will augment the length of the battery which will last at least one month before needing to be pulled out and recharged. Part of this will be to include	Test
Size	The device should fit in a standard mailbox.	The device must be less than 19 inches long by 6½ inches wide by 8½ inches high.	Test

Test Process	*Test Pass Condition*	*Evidence Link*
<ol style="list-style-type: none"> 1. Through software system, put in an unclear photo which classified as unrecognizable license plate photos. 2. The image will store into the worse case document. 3. Then summarize report and update it to the user at night, in order to tell the user to check. 	Feed picture directly into processing and verify it is stored and report at the setting time.	
<ol style="list-style-type: none"> 1) Install system in a one lane alley. 2) Wait for 20 minutes and count cars coming from either direction while system is also running. 3) Upload data to server. 4) Compare manually counted cars to the number of cars uploaded in the data. 	If the number of cars in the data matches the number of cars counted, test passes.	
<ol style="list-style-type: none"> 1) Wire sensor with an LED. 2) Approach the sensor with a car going at 15mph 3) Check to see if LED comes on. 4) Make no motion in front of sensor for ~3 minutes. 5) Check to see if LED comes on. 	If LED light comes on during step 3 and does not come on during step 5, passes test.	
<ol style="list-style-type: none"> 1) Put some pictures on an SD card connected to the wifi hardware. 2) Attempt to send the pictures to the server. 3) Check server on a computer to see if pictures were sent. 	If we can verify that 100% of the pictures we placed on the SD card were successfully sent to the server, test passes.	
<ol style="list-style-type: none"> 1) Several photos with clear license plate numbers are sent to the recognition system for detection. 2) Check whether they can be recognized. 3) The output results are compared with the actual license plate number by naked eyes. 4) Multiple measurements ensure as high a success rate as possible. 	The license plate number stored in the network is exactly the same as that of the actual vehicle. Test several times more to ensure the accuracy control at a high level.	https://platerecognizer.com/
<ol style="list-style-type: none"> 1) First, a license plate data is stored in the database. 2) By clicking the get data button, the user can receive an email containing the data. 3) Then put a blurred photo is stored in the database. 4) By clicking the get data button, users can receive an email containing data, photos and timestamps. 5) Set the time to every hour and the system will automatically send mail to the user. 6) Save some data again within this hour. 7) An hour later, you can receive an email containing all the stored data. 	When you click the get data button, all data in the database can be successfully generated and sent to the user. Users can see the complete email. When users set up to automatically get the mail, they can receive the inform	https://pocoproject.org/
<ol style="list-style-type: none"> 1) Develop a power budget to ideally figure out the total power consumption and how long till a recharge needs to occur. 2) test the total consumption of a large battery pack for a day without installing solar energy. 3) test the total consumption of battery pack with installing solar energy for one day with good sunlight. 4) test the total consumption of battery pack with installing solar energy for one day with bad sunlight such as rainy. 5) calculate the total large battery electric quantity we need for 30 days and minus the total large battery electric quantity 	If the total sunlight day require for no more than 15 days, the solar power system succeed.	
<ol style="list-style-type: none"> 1) Use a ruler to measure the length, width and height of the device structure 2) Insert the system in the mailbox to test the stability and the final size 	The size must be less or equal than 19 inches long by 6 inches wide by 8 inches high and it can put in the mailbox stably.	