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Smart Security System

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ABSTRACT

"SECURITY" is one of the most important necessity of our life. This project is based on the OCR "Optical character recognition" technology. In this project, the car number plates will be scanned using the OCR. For the Car number plates reading we will be making our own image processing application in visual basic .net" VB.net". The scanned numbers will be then compared with the pre-defined numbers and then display the car owner information and open and close the entrance accordingly using the electronic lock. On the hardware side, the Arduino Uno will be used for controlling the door lock. The Arduino will do serial communication with the computer/laptop application.

Optical Character Recognition (which is also known as the optical character reader, OCR) is the technology used for reading/scanning the text images, or any sheet or paper on which the text is written. In this project, we will be using the same concept. We will be using a camera to scan the number plate in real-time and then we will compare the scanned number with the predefined numbers stored in the program.

INTRODUCTION

Smart system security is system which provide smart work without human effort. A smart security system means you can customise, monitor, and manage your security systems anywhere, at any time, from your mobile phone,laptop etc. Essentially, it gives control of your security back to you and makes it convenient and accessible to you, whenever you want to check in. One of the reasons why security systems are critical is to protect your home and your family. Security systems protect the members of your family from burglars and intruders. In typical situations, the mere presence of a security system would ward off burglars and intruders.

A smart system in the field of Information Technology is with respect to the Internet of Things(IoT)that maybe, in simple words, either controlled by humans in order to achieve something smart or autonomously programmed in order to solve some of the emerging problems due to the rapid technological advances.

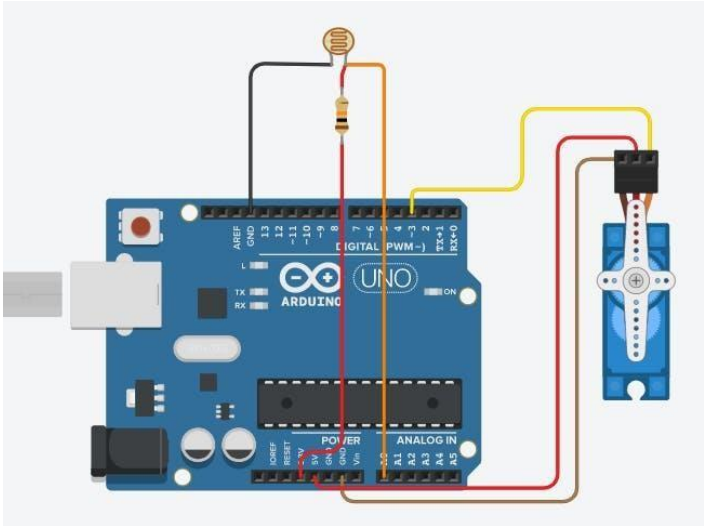
Proposed Work

1) Optical character Recognition
2) Door unlocked

Optical Character recognition is that the 1st step; here we'd like to notice the optical character from a picture. Primarily there's a problem like detect the multiple character and recognize in a picture. We use serial platform so that every character plate come in serial wise.
Other second approach is for Image processing ,which help in to scan the number plate.Which help of vb.net which is developed through visual Basic 2010 express. The scanned numbers will be then compared with the pre-defined numbers and then display the car owner information and open and close the entrance accordingly.

Door unlocked-

Door unlocked, it means that Door unlocked with help of arduino and a servo motor.
When the plate recognition completed servo motor will start move at 90degree upward for a minute then again reverse back to the initial position.



An OCR system depends mainly, on the extraction of features and discrimination/classification of these features (based on patterns). Handwritten OCR have received increasing attention as a subfield of OCR. It is further categorized into offline system [7], [8] and online system [9] based on input data. The offline system is a static system in which input data is in the form of scanned images while in online systems nature of input is more dynamic and is based on the movement of pen tip having certain velocity, projection angle, position and locus point. Therefore, an online system is considered more complex and advance, as it resolves the overlapping problem of input data that is present in the offline system.
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Dataset

We collect our own dataset . The dataset is in two forms ie with mask and without mask .

NumberPlate

Not Valid number plate

Technology Used-

a) Tensor Flow

TensorFlow, an interface for expressing machine learning algorithms, is utilized for implementing ML systems into fabrication over a bunch of areas of computer science, including sentiment analysis, voice

recognition, geographic information extraction, computer vision, text summarization, information retrieval, computational drug discovery and flaw detection to pursue research .

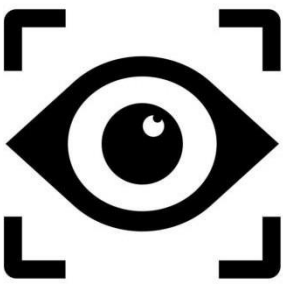
b) Arduino Uno

Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects. This board can be interfaced with other Arduino boards, Arduino shields, Raspberry Pi boards and can control relays, LEDs, servos, and motors as an output

c) Open CV

Open CV (Open source computer Vision Library), an open source computer vision and ml software library, is used to differentiate and acknowledge faces, acknowledge objects, cluster movements.

By using it, one can process images and videos to identify objects, faces, or even handwriting of a human. When it integrated with various libraries, such as NumPy, python is capable of processing the OpenCV array structure for analysis. To Identify image pattern and its various features we use vector space and perform mathematical operations on these features.



Working

First we check a person has valid plate number or not. If person have a valid number plate then by the help of servo motor we open the gate . If a person did not valid number plate then gate is not open and it deny his entry

Literature

So many papers are studied regarding the Smart Security System. However a couple of papers are targeted regarding Smart Security System According Optical character recognition (OCR) is a system that converts input text into machine-encoded format [1]. Today, OCR is helping not only in digitizing the handwritten medieval manuscripts [2], but also helps in converting the typewritten documents into digital form [3]. This has made the retrieval of the required information easier as one doesn't have to go through the piles of documents and files to search the required information. Organizations are satisfying the needs of digital preservation of historic data [4], law documents [5], educational persistence [6] etc.

Servomotor works on the principle of servomechanism. A servo system mainly consists of three components namely a controlled device, an output sensor and a feedback system. With respect to a servomotor implementing servomechanism is nothing but an automatic closed loop control system

CONCLUSIONS AND FUTURE WORK

As we have seen in literature section that lots of work have been done in the field of Home Security but yet there are something which is not touched. In any of the security system there must be coordination among all the system for proper functioning. Security is the issue which is needed in the time of emergency, hence the system must be connected with those who could help in the time of emergency. A lot of work has done in this field and many more is required to make the shelter of individual safe from any fraudulent or any mis-happening. Smart Work is more priority so that based on it. Our future project is on Smart House with messaging service with Android App. Full Home Security consist of all type of sensor with full Automation All the device which required power supply ,we will provide power supply with solar grid install on roof with rechargeable battery.This effect the electric bill.

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