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Implementing Real Time Application of Vehicle Theft Detection and Protection

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ABSTRACT: Car theft has become a major concern for car owners worldwide. In this paper, we present an antitheft car lock system that uses NodeMCU and lot with machine learning face detection to detect unauthorized access to the car. The system uses a camera to capture images of the person trying to gain access to the car, and a machine learning model to identify the person's face. If the face is not recognized, the system sends an alert to the car owner's smartphone via lot. Additionally, the system delivers an electric shock to the thief to prevent further attempts to steal the car. The proposed system is a reliable, secure, and effective solution for preventing car theft.

I.INTRODUCTION

Car theft is a global problem, and traditional lock systems are not always effective against thieves. The use of technology, such as machine learning face detection and NodeMCU, has increased in recent years to combat this issue. This paper proposes an anti-theft car lock system that detects unauthorized access and delivers an electric shock to deter thieves. Image processing, a type of signal processing, is used to extract information from images. It involves importing, analyzing, and altering images to refine and display the retrieved data. Analog and digital image processing are the two techniques used to process images. Digital processing allows for easier manipulation of images using computers, and the retrieved data is pre-processed, refined, and displayed using this technology. Engineering and computing disciplines are the core research fields involved in image processing, making it one of the newest technologies.

II.OBJECTIVES

Arduino is an open source, computer hardware and software company, project, and user community that designs and manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open source hardware and software.

1. training and testing the data of the face which is Stored, such that it can detect the owner's face precisely.

2. the signal is then transmitted to ordinary you know by USB cable, the sensor senses the face and then the signal is transmitted, turn on the engine here using thePC fan, which represents the simulation of the engine.

3. if the face is recognised the engine will get turned on, it is not recognised the alarm will get M turned on, all this data is being monitored by using iot blynk.

4. can monitor the live data, by using this mobile with the blynk applicationMachine.

III.LITERATURE REVIEW

[1] In this paper, they have focussed on the security of vehicles. The setup consists of a mix of software and hardware. In software, I will be using an android application, and in hardware, a board B+ model, a jaw or a gripper and other hardware devices. This whole system will allow you to connect with your vehicle from anytime, anywhere and confirm it's security. A vehicle is usually the most expensive and important asset next to a home, so this system enables you to keep this asset at your fingertips using wireless technology. Think of it as a wireless leash to your car.

[2] This system focuses on detecting objects or its instances of a certain class (such as humans, flowers, animals) in digital images and videos. There are various applications of object detection that have been well researched including face detection, character recognition, and vehicle calculator. Object detection can be used for various purposes including retrieval and surveillance. In this study, various basic concepts used in object detection while making use of OpenCV library of python 2.7, improving the efficiency and accuracy of object detection are presented.

[3] This system is concerned with the design and implementation of a security system that uses GSM technology to prevent automotive theft. We will demonstrate a paradigm of a real-time anti-theft security system that can be easily constructed by car owners all around the world in this project. A GSM service and a microcontroller are used in this scenario. The password is input as a security option, and if it is approved, the door is unlocked. Face recognition is an instant security feature that analyses the driver's face to a pre- defined database and starts the ignition procedure if they match. In the event that the foregoing process fails, a smart SMS will be sent to the authorized individual.

[4] The system which is designed, ensures the security of our vehicle. It mainly uses two resources, firstly, an android app and secondly, a device, which will be installed in our vehicles. We would be able to control our vehicle using the app. The functions made in the app will communicate with the device in the vehicle, to control it . But, in order for this system to work, our android phone and the device, should have an internet connection. Thus, as we are using an internet connection for communication, this system has an unlimited range, means we can control our vehicle from any part of the world, as compared to present days, where we use a key to connect to our vehicle from a distance, but that has a limited range.

[5] Most current methods rely on very well-designed features for this new 3D modality. We introduce a model based on a combination of convolutional and recursive neural networks (CNN and RNN) for learning features and classifying RGB-D images. The CNN layer learns low-level translationally invariant features which are then given as inputs to multiple, fixedtree RNNs in order to compose higher order features. RNN scan be seen as combining convolution and pooling into one efficient, hierarchical operation. Our main result is that even RNNs with random weights compose powerful features. Our model obtains state of the art performance on a standard RGB-D object data set while being more accurate and faster during training and testing than comparable architectures such as two-layer.

IV.METHODOLOGY PROPOSED
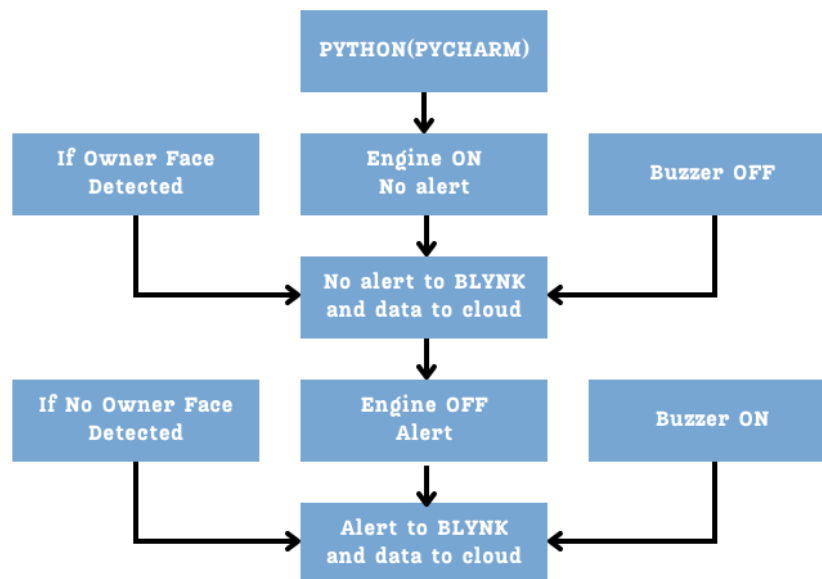
Methodology Diagram

Understanding dlib's facial landmark detection: The pre-trained facial landmark detector inside the dlibs library is used to estimate the location of 68 (x,y)-coordinates that map to facial structures on the face.These annotations are part of the 68 point iBUG 300-W dataset which the dlibs facial landmark predictor was trained on.It's important to note that other flavors of facial landmark detectors exist, including the 194 point model that can be trained on the HELEN dataset.

Regardless of which dataset is used, the same dlibs framework can be leveraged to train a shape predictor on the input training data, this is useful if you would like to train facial landmark detectors or custom shape predictors of your own.OpenCV is a huge open-source library for computer vision, machine learning, and image processing.

OpenCV supports a wide variety of programming languages like Python, C++, Java, etc. It can process images and videos to identify objects, faces, or even the handwriting of a human. When it is integrated with various libraries, such as NumPy which is a highly optimized library for numerical operations, then the number of weapons increases in your Arsenal i.e. whatever operations one can do in NumPy can be combined with OpenCV. This OpenCV tutorial will help you learn the Image-processing from Basics to Advance, like operations on Images, Videos using a huge set of OpenCV-programs and projects. Gary Bradsky invented OpenCV in 1999 and soon the first release came in 2000.

This library is based on optimized C / C++ and supports Java and Python along with C++ through an interface. The library has more than 2500 optimized algorithms, including an extensive collection of computer vision and machine learning algorithms, both classic and state-of-the-art. Using OpenCV it becomes easy to do complex tasks such as identify actions in videos, track camera movements, track moving objects, extract 3D object models, generate 3D point clouds from stereo cameras, stitch images together to generate an entire scene with a high resolution image and many more
.
Python is a user friendly language and easy to work with but this advantage comes with a cost of speed, as Python is slower to languages such as C or C++. So we extend Python with C/C++, which allows us to write computationally intensive code in C/C++ and create Python wrappers that can be used as Python modules. Doing this, the code is fast, as it is written in original C/C++ code (since it is the actual C++ code working in the background) and also, it is easier to code in

Python than C/C++. OpenCV-Python is a Python wrapper for the original OpenCV C++ implementation.Facial recognition is part of the computer vision techniques, and when I am talking about computer vision, what does that stand for, and how

is that related to our life .Let's a take real-time example,Our generation is quite familiar with Social media platforms, and we all share our memories with our virtual friends.

But did you ever think when you upload some new photos in those social media sites, how they give you the suggestion to tag your friends automatically without any extra efforts? Here comes the computer vision technology in the scenario

V.CONCLUSION AND FUTURE WORK

This proposed framework reduces the current high number of vehicle thefts. It is quite dependable when compared to traditional automotive frameworks. Because of the outside lightning circumstances, face recognition has a significant chance of being questionable. which has a minimal impact on the external world. Using an OpenCV and an Arduino UNO Microcontroller, a stunning person detection and recognition

system is presented. To deal with each aspect of the fundamental picture, the suggested face detection technique relies on simple cascade classifiers. The complete framework's structure is divided into two sections: software and hardware. which is used to communicate with the device installed in our vehicles, which in turn will control the functions of the vehicle, as well as ensure the locking. so that the vehicle does not move. Thus, the most expensive and important asset of all of us, will be on our fingertips and fully secure. This will prove to be a great technique to prevent the theft of the vehicles, especially in metropolitan cities, where theft cases are being reported, every day.

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