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ADVANCED DRIVER ASSISTANT SYSTEM-ADAS

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Abstract – This project entitled as "Advanced driver assistant system" consisting of three sections
1. Face recognition to unlock
2. Traffic light detection
3. Drowsiness alert system.

Face detection and picture or video recognition is a popular subject of research on biometrics. Face recognition in a real-time setting has an exciting area and a rapidly growing challenge.. Face Recognition system is used in security. I build a camera-based real-time face recognition system and set an algorithm by developing programming on OpenCV and code embedded in nano board with Micro Servo Motor(SC90).Research on traffic light detection and semantics is important in the field of intelligent vehicles. Better detection and clearer semantics can help prevent traffic accidents by self-driving vehicles at busy intersections and thus improve driving safety. Effectiveness of the method has been verified on a self-driving vehicle platform.
Drowsiness and sleeping cause traffic accidents that result in the deaths and injuries of people. Nowadays, many different systems are being developed for intelligent cars to help drivers to reduce traffic accidents. The system detects drowsiness by means of face and eyes from the specific area of the image and eye blinks of the driver.

1.INTRODUCTION

1.1 FACE RECOGNITION

A face recognition program is a software application for verifying a person and identifying him or her with a video or picture from a source. The system uses Local Binary Pattern Histograms to recognize the person from the local database created for the family members of the house. Security, monitoring and control to automation in real time are the key components of this system.Here demonstrates a face detection technique, in which human face is detected from a a single image and multiple human faces can also be detected from a single image. A face detector has to tell whether there is any face in that image or not. With the open source platform Intel called OpenCV, (Media, 2008) facial recognition can be done quickly and reliably.

A servo motor is a rotary actuator or linear actuator that allows for precise control of angular or linear position, velocity and acceleration. It consists of a suitable motor coupled to a sensor for position feedback. It also requires a relatively sophisticated controller, often a dedicated module designed specifically for use of servomotors. Servo Motor is a closed-loop servomechanism that uses position feedback to control it's motion and final position. The input to its control is a signal(either analogue or digital) representing the position commanded for the output shaft.

1.2 TRAFFIC LIGHT DETECTION

Research on traffic light detection and semantics is important in the field of intelligent vehicles. Those who have color blindness can utilize this project. Better detection and clearer semantics can help prevent traffic accidents by self-driving vehicles at busy intersections and thus improve driving safety. However, complex traffic scenes increase the difficulty of detection and recognition algorithms. Our work includes an annotated collection of traffic scene image data, which fills a gap in public traffic light data sets. An optimal feature extraction network is selected through experimental comparisons. Effectiveness of the method has been verified on a self-driving vehicle platform.

1.3 DROWSINESS ALERT SYSTEM

Drowsiness and sleeping cause traffic accidents that result in the deaths and injuries of people. Nowadays, many different systems are being developed for intelligent cars to help drivers to reduce traffic accidents. This paper represents real-time drowsiness detection based on computer vision. This system is used to detect drowsiness with a

camera which is located in front of the driver and alerts the driver if there is an act of drowsiness. The system detects drowsiness by means of face and eyes from the specific area of the image and eye blinks of the driver

2. EXISTING SYSTEM

- For Unlocking the vehicle the existing system has Key, remote system and finger print.
- Traffic light can recognize manually and Drowsiness can recognize if have a company while driving.
- Duplication of key or theft may interrupt the unlock security system. Also those who have color blindness cannot detect traffic light clearly. If one has no company to accompany him while driving ,may he can't control drowsiness which leads to an accident.

3. PROPOSED SYSTEM:

3.1 FACE RECOGNITION TO UNLOCK VEHICLE

OpenCV is organized loosely into five main elements, four of which are outlined in Figure. The CV portion includes the main picture processing and lower computer vision algorithms. If the face is recognized , vehicles get unlocked.

3.2 TRAFFIC LIGHT DETECTION

The series will break down in a similar three part fashion

1. Identifying Regions of Interest
2. Training a Classifier
3. Tracking and Optimization

Traffic lights emit one of three colors — red, yellow, or green. The basic idea behind color thresholding is to limit the image to where these colors are present. Anywhere in the image that is not red, yellow, or green is set to zero (black). To effectively isolate the colors we're interested in, there are a few key considerations to cover: the color space, the threshold cutoff, and variations in illumination.

3.3 DROWSINESS ALERT SYSTEM

For detecting the face, since the camera is focused on the automobile driver, we can avoid processing the image at the corners thus reducing a significant amount of processing required. Once the region of interest is defined, the face has been detected, the region of interest is now the face, as the next step involves detecting eyes.

To detect the eyes, instead of processing the entire face region , we mark a region of interest within the face region which further helps in achieving the primary goal of the proposed system.

4. COMPONENTS REQUIRED

Hardware Specifications

1. Processer : Core i3
2. Clock Speed : 2.8 GHz
3. RAM : 4GB
4. Hard disk Capacity : Minimum 500 GB
5. DVDROM : 32x speed

Software Specifications

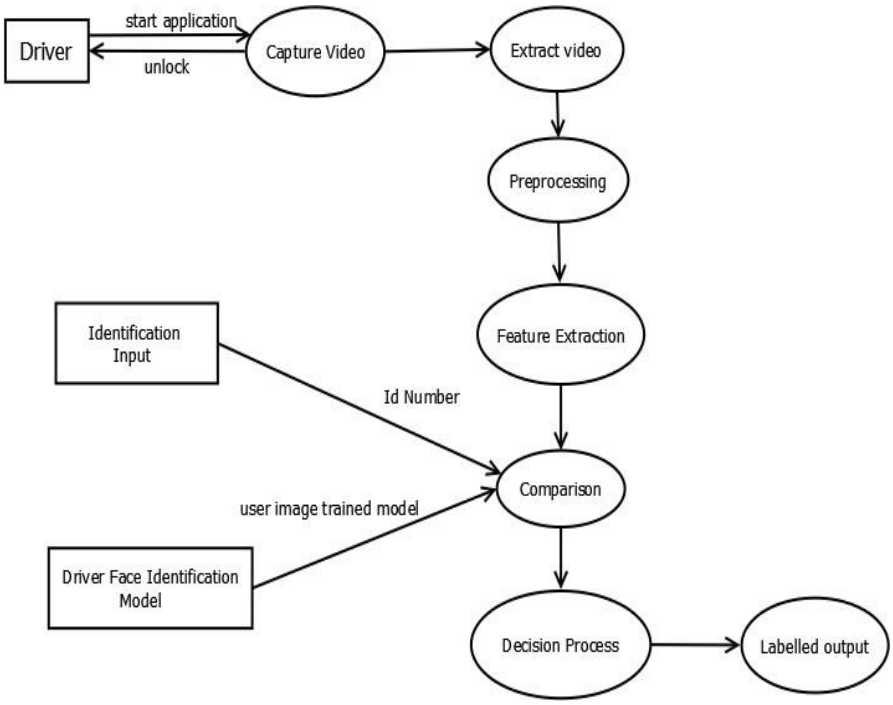
1. Operating System : Windows 7 64-bit , Ubuntu
2. Software : Anaconda 3, Spyder IDE
3. Programming Languages : PHYTHON

5.APPLICATION

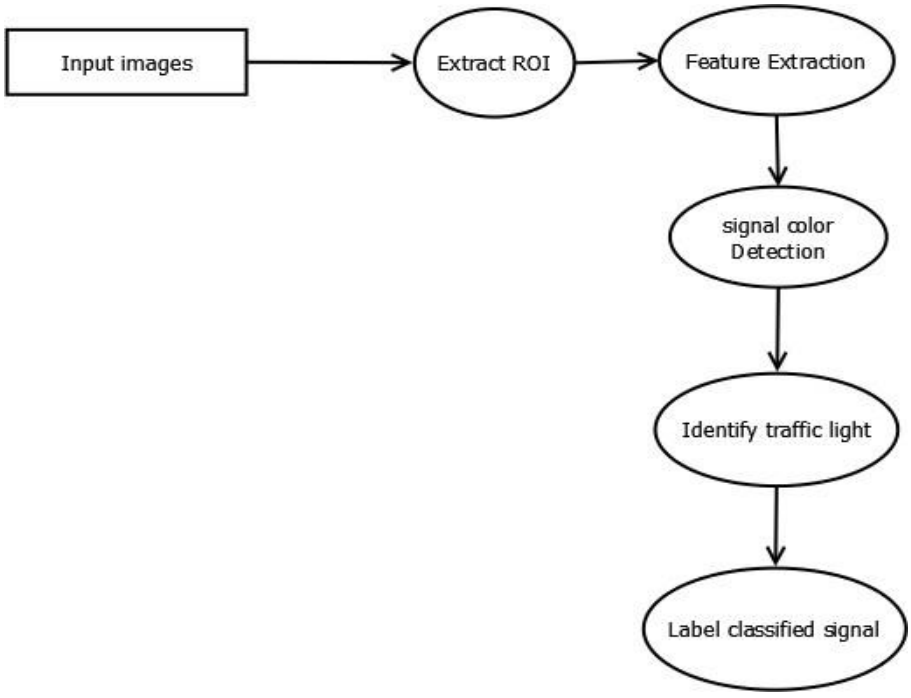
Driver alert system is safety technology which helps prevent accident caused by the driver getting drowsy and self automated driving sensing the correct colour of traffic light around 20% accidents can be avoided

6. FLOW OF THE PROJECT

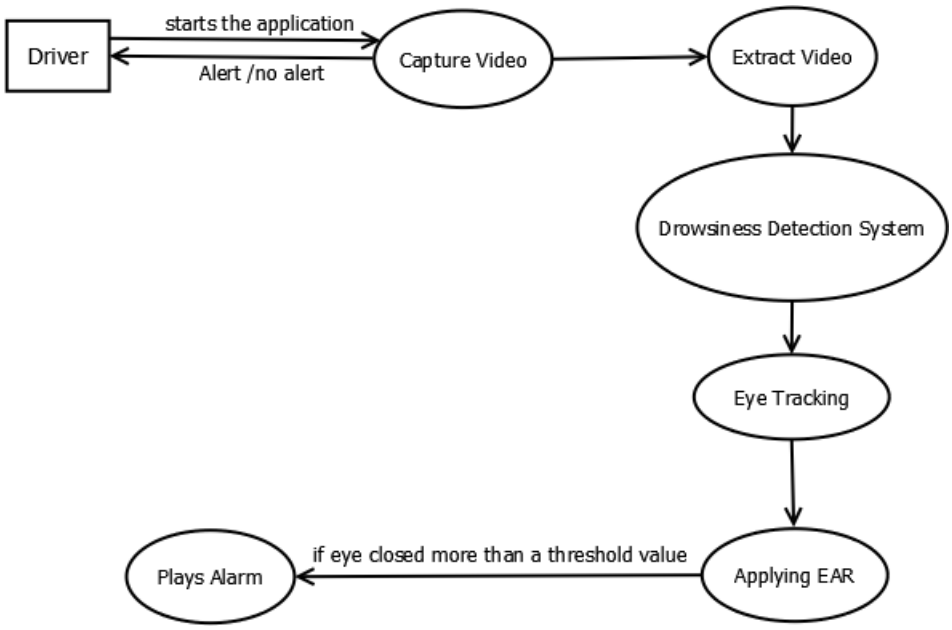
1. Face recognition



2. Traffic light detection



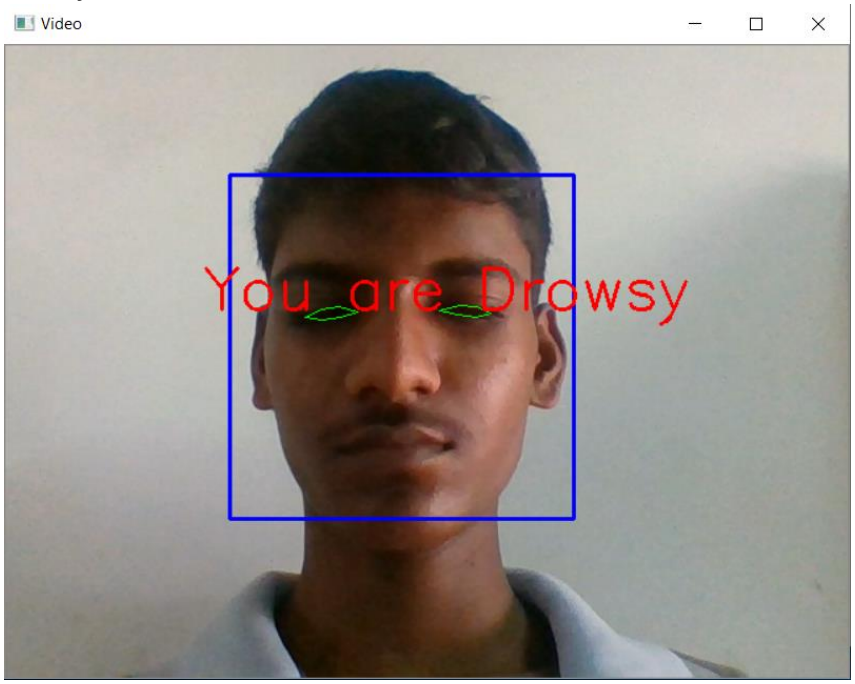
3. Drowsiness detection



7. SCREENSHOTS AND EXECUTION

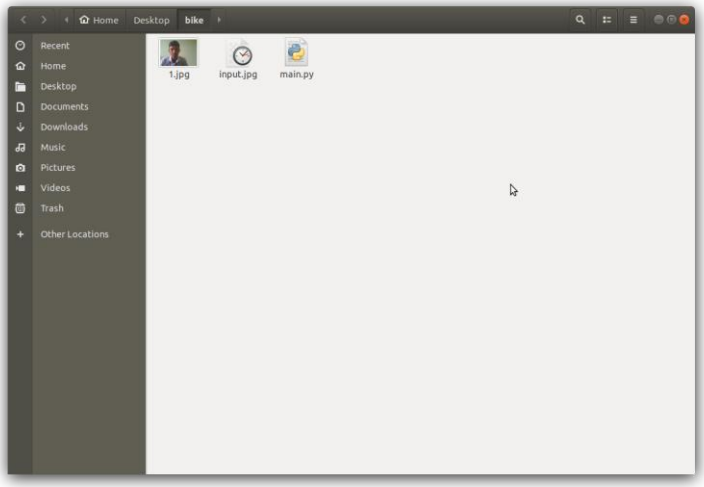
7.1 Drowsiness detection

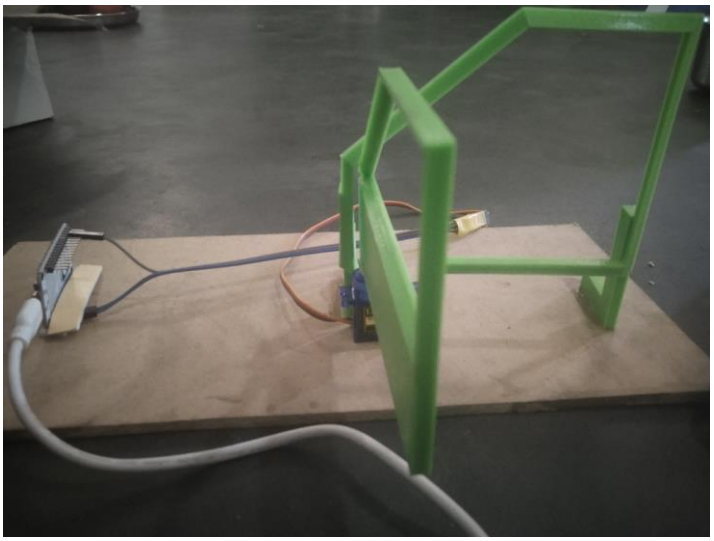
STEP1: Open anaconda prompt in Windows 10.
STEP2: Set the path to project folder.
STEP3: Then type python drowsiness_detect.py and then click enter key you will get an Camera Screen view for Recognition the face is Drowsy or not.



7.2 Face recognition

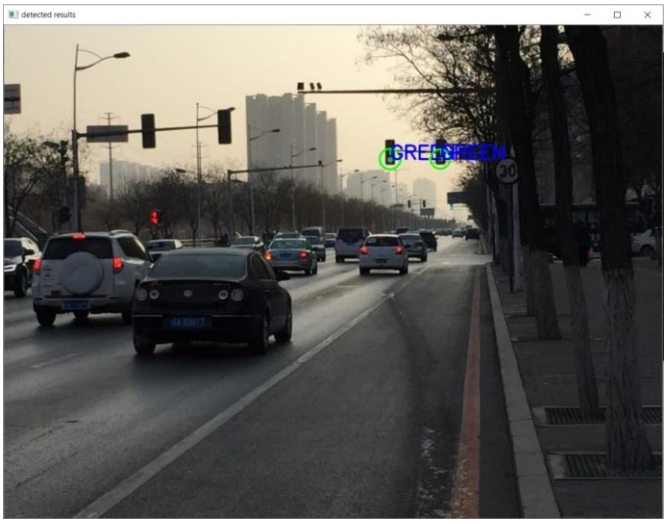
STEP1: Open Terminal in Ubuntu OS.
STEP2: Set the path to project folder.
STEP3: Then type python main.py and then click enter key you will get an Camera Screen view for Recognition the face or not in data set.

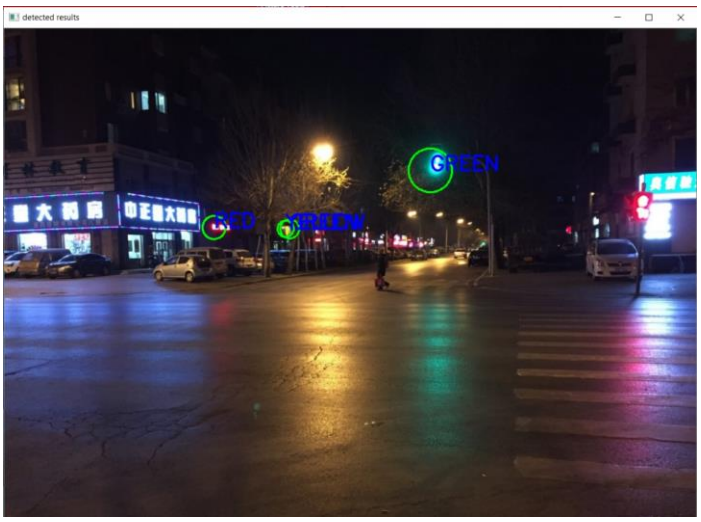




7.3 Traffic light detection

STEP1: Open Terminal in Ubuntu OS.
STEP2: Set the path to project folder.
STEP3: Then type python main.py and then click enter key you will get an Camera Screen view for Recognition the Traffic Light Signal.





8. CONCLUSION

In the last 20 years, facial recognition technology has come a long way. Today can check identity information automatically with regard to safe transactions, tracking, security purposes and buildings access control. Such systems normally work in controlled environments and algorithms of recognition may manipulate environmental constraints to achieve high accuracy of recognition. Yet face-recognition technologies of next generation will be commonly used in smart settings where computers and machines are more like supportive helpers.

Traffic light can recognize manually. And self automated vehicles drives sensing the correct colur of traffic light around 20% accidents can beavoided.

9. BIOGRAPHIE

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