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Drunk and Driving Detection Using Driving Patterns and Facial Recognition

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ABSTRACT: As per an administration study, tanked driving comprises to 33 percent of mishaps in India Drunk driving, or formally Driving Under the Influence (DUI) of liquor, is a significant reason for auto collisions all through the world. In this exploration, we propose a profoundly effective framework focused on early identification and caution of hazardous vehicle developments commonly identified with tanked driving. The whole arrangement requires just a raspberry pi set in vehicle and with accelerometer. Programming introduced on the raspberry pi figures speed increases dependent on sensor readings, and contrasts them and run of the mill smashed driving examples extricated from genuine driving tests. When any proof of tipsy driving is available, the raspberry pi will consequently Capture the face and identify the face. In the event that the Face demeanor is like the inebriated example, it will naturally produce cautioning which helps to public sector.

KEYWORDS: Accelerometer; Drunk Driving; Face detection; Camera; Raspberry pi.

I. INTRODUCTION

Inebriation is a state where there is a reduction in cautions and cognizant level of the driver. Despite the fact that there is no immediate measure to distinguish the drowsiness level of the driver there exist a few circuitous techniques which can be utilized for the same. Different sorts of strategies are available, for example, vehicle based development measures, physiological measures, social measures. Utilizing those strategies a knowledge framework can be created which would alarm the driver in the event of inebriated condition and forestall mishaps. The methodology for the whole framework is to such an extent that first we examine the plastered driving practices and concentrate its key signals dependent on sidelong and longitudinal speed increases of vehicle, which is dictated by accelerometer sensor. In the event that a tanked driving conduct is identified, the framework will incite the camera module to take constant pictures. The pictures are separated into outlines and examined for plastered state through picture preparing. Whenever tanked condition is discovered, then, at that point the ringer is set off and the area data of the driver.

The gear that is used for the entire structure is Raspberry Pi. Raspberry Pi will be set up appropriately for execution. A few subjects will be taken to record the reaction and working of the framework. The launch of eyes was shown by roundabout shapes. Assuming plastered state is recognized, circle doesn't seem showing the conclusion of eye or tanked condition of a driver. Results were appeared with a few photographs with both educational and shutting condition.

1.1 Problem Definition

In the 21st century, Drunken Driving has continued to be a major challenge contributing to a large number of accidents on our roads. Government put several of measures but problem continues despite of that; they increased the number of drivers for buses that travel at night so use of alcohol blows to detect drunk drivers among many others. However, there are few systems available in the market for drunken driving testing; some are not very effective while others are quite expensive to implement. Hence, This system is proposed to use driving patterns and facial features of driver to detect drunken driving and inform authorities about same.

1.2 Need

To develop a system that detects drunk and drive based on the patterns as well as facial recognition with maximum precision and with minimum processing time to help in the public field.

II. LITERATURE SURVEY

Hasanin Harkous and Hassan Artail [1] introducing that irregular driving alludes generally to alcoholic driving, exhaustion driving, and forceful driving practices. This places of business alcoholic driving identification, which really can be stretched out to apply to discovery of the other anomalous driving practices. The methodology finds out about the related on-board vehicle sensors for recognizing alcoholic driving practices dependent on picking up utilizing certain alcoholic driving signs. In a past work, we built up a Hidden Markov Model (HMM) technique and applied it to each time arrangement of the chose sensors estimations. The expectation exactness was most elevated for the longitudinal quickening, with a limit of 79%. Here, we expand our initial work that depended on HMMs and utilize Recurrent Neural Networks that spend significant time in time arrangement, where our testing results show exactness rates that go into the upper nineties.

Mohammed Madne Girnari [3] proposed With India detailing as numerous as 1.34 lakhs fatalities in street mishaps consistently, a huge 70% of them being because of smashed driving, questions are currently being raised on whether the mushrooming development of alcohol distributes along the roadways is dependable for costing valuable lives in an unfavorable way. The framework executed by us targets diminishing the street mishaps later on because of tanked driving. The motivation behind this undertaking is to create vehicle mishap avoidance by strategy for liquor identifier in exertion to lessen car crash cases dependent on driving impaired liquor. In this proposed project another strategy is utilized by use of picture preparing framework and liquor in perspiration palm for alcoholic and Driving identification.

Jie Hu et.al [4] introducing Unusual driving conduct may make genuine risk both the driver and the general population. In this work, we propose to recognize unusual driving by breaking down standardized driving conduct. Filling in as the virtual driver, a customized driver model is set up for the speed control reason by utilizing the privately planned neural organization and this present reality Vehicle Test Data. The driving conduct is standardized by utilizing the virtual driver to lead the speed following assignment as characterized by the standard driving cycle test, e.g., the FTP-72. Three common unusual driving practices are portrayed and recreated, to be specific, the weariness/inebriated, the wild and the telephone use while driving. An irregularity record is proposed dependent on the examination of standardized driving practices and is applied to quantitatively assess the abnormality. Mathematical examinations are directed to check the viability of the proposed plot.

Md. Atiqur Rahman et.al [5] stated wellbeing and security in vehicle voyaging are a pre-prominent worry for all. With the quick urbanization and stunning development of transport networks like bike vehicles, wellbeing on the streets and security on the bicycle has arisen as a certain need for us. It has extended the pace of mishaps, which prompts a few harms with loss of lives. Much of the time, we can't ready to identify the mishap's area. A cap is a type of ensuring gear worn to be careful the head from wounds. All the more explicitly, the cap helps the skull in securing the mind. A brilliant protective cap can identify the mishap's areas likewise save lives and makes bike driving more secure from already. This system propounds a savvy protective cap framework to dodge the mishap. The framework separates into three sections cap circuit, auto circuit, and portable application. From the start, the head protector circuit has IR and liquor discovery sensor. The vehicle circuit has a 3-pivot accelerometer, Bluetooth module, hand-off, and load sensor. The cap circuit imparts a sign to the car circuit to begin if the protective cap is wearied and no liquor recognizes. At that point the vehicle circuit checks the status of the heap to begin. 3-pivot accelerometer detects crash or hit. In the wake of identifying a mishap versatile application sends the mishap area naturally to police and crisis contact number through the information base.

III. PROPOSED METHOD AND ALGORITHM

A. Proposed Methodology:

The accelerometer is able to detect the rash driving. An accelerometer measures speed variations of anything that it's mounted on by extracting cues from the vehicle's lateral and longitudinal accelerations. If the driving is reckless the designed system will detect the vibrations from the vehicle and then automatically invoke the camera. There are several different algorithms and methods for eye tracking, and monitoring. The vast majority of them somehow or another identify

with highlights of the eye (regularly reflections from the eye) inside a video picture of the driver.

The unique point of this undertaking was to utilize the retinal reflection as a way to finding the eyes on the face, and afterward utilizing the nonattendance of this reflection as a method of distinguishing when the eyes

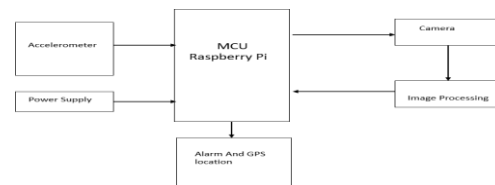


Fig1. Proposed Architecture

are shut. than normal blinking. So we will warn the driver as soon as abnormality in eye movements is detected.

Rash Driving:

The accelerometer is able to detect the rash driving through calculating the x, y, and z coordinates of the motion of vehicle. Once any abnormal activity is identified the system triggers the camera module which then captures real-time images of the driver. If the drunken state is confirmed by image processing as well then it sends a notification to the respective person's app with a latency of less than a second. Through GPS the location of the vehicle is measured with an accuracy of 3 meters. Activities and location data are logged with a timestamp in the app to analyze in the future. Unlike most other proposed methods that use the phone's camera to detect drowsiness, in this proposed model a smart steering wheel encompasses both drowsiness detection and rash driving.

Drunk Detection

Since the proposed method uses cameras, it will work on all light conditions. The proposed model extracts features like the closing of eyelids and face orientation. With these features, the model is able to classify drunken person with better accuracy.

B. Algorithms

i) Convolutional Neural Networks (CNN)

Convolutional Neural Networks (which are additionally called CNN/ConvNets) are a kind of Artificial Neural Networks that are known to be tremendously strong in the field of distinguishing proof just as picture order.

Four main operations in the Convolutional Neural Networks are shown as follows:

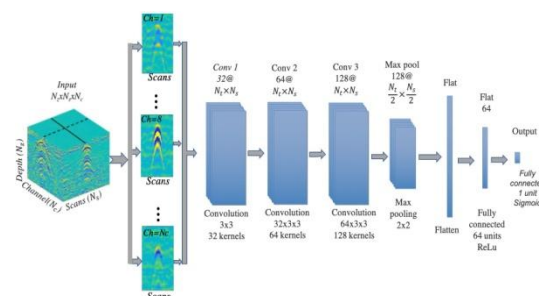


Fig 2. CNN Architecture

(i) Convolution

The principle utilization of the Convolution activity if there should be an occurrence of a CNN is to recognize fitting highlights from the picture which goes about as a contribution to the primary layer. Convolution keeps up the spatial

interrelation of the pixels This is finished by fulfillment of picture highlights utilizing miniscule squares of the picture.

(ii). ReLU

ReLU follows up on a rudimentary level. All in all, it is an activity which is applied per pixel and overrides every one of the non-positive upsides of every pixel in the component map by nothing.

(iii). Pooling or sub-sampling

Spatial Pooling which is likewise called subsampling or downsampling helps in lessening the elements of each element map yet even at the same time, holds the most important data of the guide.

(iv) Fully Connected layer

The yield from the convolution and pooling activities gives noticeable highlights which are removed from the picture.

ii) Haar Cascaded Algorithm

Haar Cascade is a machine learning-based approach where a lot of positive and negative images are used to train the classifier. Positive images – These images contain the images which we want our classifier to identify. Negative Images – Images of everything else, which do not contain the object we want to detect. Face detection using Haar cascades is a machine learning based approach where a cascade function is trained with a set of input data. OpenCV already contains many pre-trained classifiers for face, eyes, smiles, etc.. Today we will be using the face classifier. You can experiment with other classifiers as well. The Local Binary Pattern Histogram (LBPH) algorithm is a simple solution on face recognition problem, which can recognize both front face and side face. ... To solve this problem, a modified LBPH algorithm based on pixel neighborhood gray median (MLBPH) is proposed. Haar-like features are digital image features used in object recognition. ... A Haar-like feature considers adjacent rectangular regions at a specific location in a detection window, sums up the pixel intensities in each region and calculates the difference between these sums.

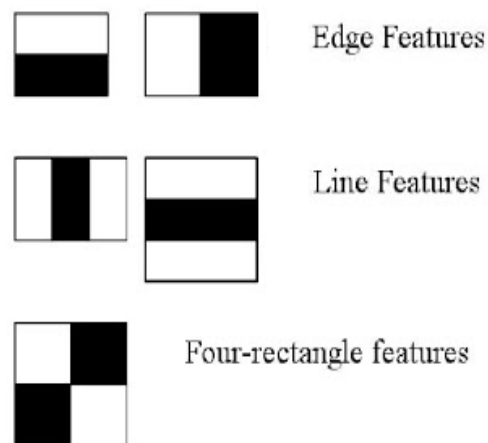


Figure 3: Feature Extraction Using LBP

Facial recognition is a way of recognizing a human face through technology. A facial recognition system uses biometrics to map facial features from a photograph or video. It compares the information with a database of known faces to find a match.

IV. RESULTS OF THE SYSTEM

In our experimental setup, as shown in table 1, the numbers of trained images for drunk and some new images were tested. These images go through CNN framework by following feature extraction using our image processing module. Then our trained model of classification of drunk and drive get classifies the image into result.

These images were then divided into two subcategories; among which properly predicted and some are not predicted respectively.

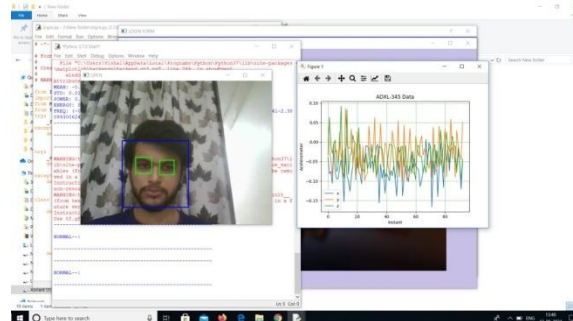


Figure 4: Output Image

The figure shows predicted face. We classified images data into predicted and not predicted categories based on accuracy factor which is our main motive.

VI. CONCLUSION

In this method we are proposed the face detection by using haar cascaded algorithm and drunk and drive detection using CNN. There are several different algorithms and methods for eye tracking, and monitoring. Most of them in some way relate to features of the eye (typically reflections from the eye) within a video. Nowadays accidents are frequently increasing at a high rate due to careless driving which results in damage to one's life or worse, cause death image of the driver. As per the survey, many accidents are caused due to rash driving under the influence of alcohol. A Drunk Driver System is a system which can reduce these accidents to some extent caused due to rash driving and unconsciousness induced by alcohol. Raspberry Pi will be set up properly for implementation. Several subjects will be taken to record the response and working of the system. The opening of eyes was indicated by circular shapes. If drunken state is detected, then circle does not appear indicating the closure of eye or drunken state of a driver which is done by haar cascaded algorithm. Results were shown with several photos with both eye opening and closing condition.

REFERENCES

- [1] Hasanin Harkous; Hassan Artail "A Two-Stage Machine Learning Method for Highly- Accurate Drunk Driving Detection" 2019 International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)
- [2] Jiangpeng Dai; Jin Teng; Xiaole Bai; Zhaohui Shen; Dong Xuan "Mobile phone based drunk driving detection" 2010 4th International Conference on Pervasive Computing Technologies for Healthcare
- [3] Mohammed Madne Girnari "Detection of Drunk Drivers by Using Image Processing for Pupil Size Abnormality and Intoxicate Bottle Detection with Alcohol Sweat Level Detection" 2017 International Journal of Engineering Science and Computing.
- [4] Jie Hu, Xu Li, Xin He ,Hong Jiang "Abnormal Driving Detection Based On Normalized Driving Behavior" IEEE Transactions on Vehicular Technology PP(99):2017
- [5] Md. Atiqur Rahman; S.M Ahsanuzzaman; Ishman Rahman; Toufiq Ahmed "IoT Based Smart Helmet and Accident Identification System" 2020 IEEE Region 10 Symposium
- [6] Rajvardhan Rishi; Sofiya Yede; Keshav Kunal; Nutan V. Bansode "Automatic Messaging System for Vehicle Tracking and Accident Detection" ICESC 2020
- [7] Y. Choi, S. I. Han, S.-H. Kong, and H. Ko, "Driver status monitoring systems for smart vehicles using physiological sensors," IEEE Signal Process. Mag., vol. 33, no. 6, pp. 22–34, Nov. 2016.
- [8] Kaur, N., Verma, S., Kavita, & Yadav, A. L. (2019). Survey on classification and clustering schemes in big data using image processing. International Journal of Control and Automation, 12(4), 170-188.
- [9] A. ElMasri, H. Artail, and H. Akkary, "Toward self-policing: Detecting drunk driving behaviors through sampling CAN bus data", Int. Conf. on Electrical and Computing Technologies and Applications, Ras Al Khaimah, UAE, 2017, pp. 1-5
- [10] Z. Li, X. Jin, X. Zhao, "Drunk driving detection based on classification of multivariate time series", Journal of Safety Research, v. 54, 2015, pp. 61



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