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The ability to detect vehicles and their speeds

Ms. S. Chandra Priyadharshini, Ms. R. Latha Priyadharshini, Mr. S. Sugavanam, Mr. S. Satheesh
Associate Professor [1,3], Assistant Professor [2,4]

chandrapriyadharshini.s@actechnology.in, lathapriyadharshini.r@actechnology.in,
sugavanam.s@actechnology.in, thilagavathi@actechnology.in

Department of CSE, Arjun College of Technology, Thamaraikulam, Coimbatore-Pollachi Highway, Coimbatore, Tamilnadu-642 120

ABSTRACT

The number of incidents that happen during sleepy road journeys is steadily rising. Since many of these mishaps are caused by drivers being too tired or distracted, this study mainly aims to find the best way to detect whether a driver is too sleepy. State of the driver in actual driving situations. Reducing the frequency and severity of these incidents is the primary goal of driver drowsiness detection systems. Several approaches have been used to detect sleepiness or inattentive driving, and the secondary data acquired is centred on prior research on systems for detecting drowsiness. One of our vehicle safety projects aims to eliminate accidents caused by sleepy drivers by creating an interface that can automatically detect when a driver is too sleepy to operate the vehicle safely. This will be achieved by analysing the webcam's captured image of a person and determining how best to use this information to enhance driving safety. Gathering a human picture from the camera and investigating its potential applications to enhance driving safety is basically what you're doing. Gather photos from the live camera feed, run them through a machine learning algorithm, and determine whether the driver is tired or not. It activates the driver's sleep alarm and raises the volume of the buzzer when the driver starts to nod off. In the event that the driver remains unconscious, they will inform their loved ones of their whereabouts by email and text message. Because of this, the usefulness of this tool extends beyond the issue of driving when sleepy. Dlib for face and eye extractions.

Key words: Eye detection, face extraction, driver drowsiness

I. INTRODUCTION

In recent decades, the automotive sector has seen consistent growth on a global scale. As a result, road accidents have been on the rise worldwide due to the exponential growth in the number of cars on the road. Accidents on the road have become a serious problem, putting everyone's safety—including drivers—at risk. According to the World Health Organization's

Global Status Report on Road Safety, the leading causes of road accidents are inattention, drunk driving, and lethargy. Families throughout the globe face a grave danger as a consequence of the deaths and the costs that follow. Due to their high price and limited availability, the existing technologies used to detect tiredness are not widely employed since they are impractical in ordinary or non-luxury automobiles. There is, therefore, an increasing need for an effective and intelligent sleepiness detection system that the industry's many vehicles can readily adopt. Numerous revolutionary developments have been achieved in the domains of artificial intelligence and machine learning, which use various algorithms to teach the model to be intelligent and self-sufficient.

Motivation

One of the leading causes of fatalities in car accidents is drowsy driving. Drivers on long-distance routes, overnight buses, and truckers who work long hours (particularly at night) are at a higher risk of experiencing this issue. In whatever nation, passengers suffer under the cloud of drowsy drivers. Tired drivers cause a disproportionately high number of injuries and fatalities on the road each year. As a result, there is a lot of interest in studying how to identify driver weariness and what signs to look for because of how useful this information is. The three main components of a sleepiness detection system are the acquisition system, processing, and the system itself.

procedure and alert mechanism. In this case, the front-facing camera footage of the driver is recorded in acquisition system and transferred to the processing block where it is processed online to detect drowsiness. If drowsiness is detected, a warning or alarm is send to the driver from the warning system

Objective

Here, we're trying to identify drowsiness in drivers by keeping an eye on their webcam activity and using a machine learning method called LBPH (Local binary Pattern Histogram). Using the built-in webcam, this app will scan a driver's face for facial features using the OPENCV LBPH algorithm. If it detects that the driver is yawning or blinking his eyes for 20 frames in a row, it will send a drowsiness alert. By using the LBPH pre-trained drowsiness model, we are able to continually monitor or anticipate the distance of the EYES and MOUTH from sleepiness. The application will notify the driver if the distance is approaching drowsiness. Python and OpenCV were my tools of choice for this project's lane line detection. I applied the outcome of a processing pipeline I built for a sequence of individual photos to a live video feed.

II.LITERATURE SURVEY

A System for Intelligently Detecting Drowsy Drivers Using Video Under Different Lighting Conditions and Embedded Software This work develops a smart video-based method for detecting sleepy drivers that is independent of different lighting conditions. The suggested technique accurately identifies the sleepy circumstances, regardless of whether the driver is wearing glasses or not. The suggested method is split into two computational steps that are executed in a cascaded fashion using a near-infrared-ray (NIR) camera: detecting sleepy drivers and driving eyes. Accuracy in detecting drowsiness state may reach 91%, while the average rates for open/closed eye recognition without glasses are 94% and with spectacles 78%, respectively. The embedded architecture that uses field-programmable gate arrays (FPGAs) allows for processing speeds of up to 16 frames per second (fps) with 640×480 format video after software optimisations.

"Driver Fatigue Detection based on Eye Tracking and Dynamic Template Matching"

A A device that can detect driver weariness in real-time using vision is suggested for safer driving. Using skin tone characteristics, the driver's face may be found in colour photos taken inside a vehicle. After that, the eye areas are located using edge detection. The captured pictures of the eyes are used for two purposes: first, to serve as dynamic templates for the next frame's eye tracking; and second, to identify weariness, which in turn triggers certain driving safety warning sirens. We ran the system tests using a 128 MB RAM Pentium III 550 CPU. It seems like the experiment turned out very well. The system's eye tracking capability reaches 20 frames per second, and on four test movies, it achieves an average accuracy rate of 99.1 percent for both eye location and tracking. Although the average accuracy percentage on the test videos is 88.9%, the right rate for tiredness detection is 100%.

III. The Current Setup

One of the most pressing problems facing contemporary cities is traffic congestion. In the past, many methods for collecting traffic data—including infrared light sensors, induction loops, and others—had inherent drawbacks. Using closed-circuit television video set up along the traffic signal, image processing has shown encouraging results in obtaining real-time traffic data in recent years. Various methods have been suggested for extracting traffic information. While some tasks include tallying the total number of pixels[3], others involve determining the number of vehicles [4-6].The outcomes of gathering traffic statistics using these approaches have been encouraging. However, rickshaws and auto-rickshaws, which are common forms of transportation in South Asian nations, may not be included in the total number of vehicles, and very near vehicles may be mistakenly counted as one if the intravehicular spacing is very narrow.

Drawbacks:

• One of the problems is the traffic. This area makes use of an infrared light sensor for traffic detection.

The use of image processing to get real-time traffic information from CCTV video put at traffic lights has shown encouraging results, while the method was not without its share of drawbacks.

IV.PROPOSED SYSTEM

Here, we're trying to identify drowsiness in drivers by keeping an eye on their webcam activity and using a machine learning method called LBPH (Local binary Pattern Histogram). Using the built-in webcam, this app will scan a driver's face for facial features using the OPENCV LBPH algorithm. If it detects that the driver is yawning or blinking his eyes for 20 frames in a row, it will send a drowsiness alert. Using the LBPH pre-trained drowsiness model, we are constantly monitoring or

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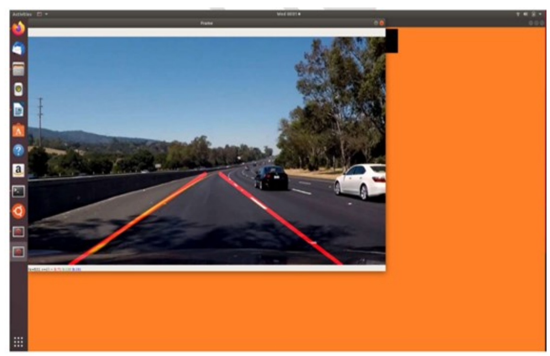
estimating the distance between the EYES and MOUTH in relation to tiredness. If the distance is getting closer to drowsiness, the application will notify the driver.

V.METHODOLOGY:

One of the leading causes of traffic accidents and fatalities is drowsy driving. As a result, there is a lot of activity in the field of identifying driver weariness and its symptoms. Many of the most common approaches rely on vehicles, human conduct, or physiological factors. While some solutions do not disturb drivers, others need costly sensors and data processing. Consequently, this research establishes a low-cost, somewhat accurate method for detecting driver sleepiness in real time.

Home page.

on order to link the program with the camera, click the "Start Behaviour Monitoring Using Webcam" button on the previous page. This will bring up the screen below, where you can see the webcam in action. The webcam feed is shown on the above screen, and the program checks each frame to determine if the person's eyes are open or closed. If they are, the following message will be displayed.



VI.CONCLUSION

This research proposes a visual behaviour and machine learning-based solution for real-time, low-cost driver sleepiness monitoring. Here, we use the live video streamed from a camera to calculate visual behaviour characteristics such the ratio of the eyes to the rest of the face, the opening to closing ratio of the lips, and the length of the nose. To identify sleepiness in drivers in real time, an adaptive thresholding method has been created. The created system functions properly when used with the synthetic data that was produced. After that, we've applied machine learning techniques for categorisation and saved the feature values.

This article delves into the exploration of Bayesian classifier, FLDA, and LBPH.

VII.FUTURE ENHANCEMENT

When compared to Bayesian classifier, FLDA and LBPH perform better. In contrast to LBPH's 0.956 sensitivity and FLDA's 0.896 sensitivity, both have a specificity of 1. There will be an effort to include FLDA and LBPH into the built system for online sleepiness detection and categorisation because of the improved accuracy they provide.

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