Retraction

Retraction: Intelligent Analysis for Drowsiness Alert using Conventional Neural Networks (J. Phys.: Conf. Ser. 1916 012131)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1
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Intelligent Analysis for Drowsiness Alert using Conventional Neural Networks

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Abstract. When a job is assigned to drivers who travel through the roads and highways riding a CAB or NATIONAL PERMIT TRUCKS face the risk of tiredness especially during night travels and early morning. This project is to develop a driver drowsiness detection system by using Deep learning. It is known that a driver is under drowsiness influences by looking at the eyes for a moment of duration. Based on the previous research, there is none added tome counter that may exclude driver drowsiness from other activities of eyelid movement. The result can be accurate because histogram analysis analyzed the whole image upto a certain duration giving alarm with battery connection to be disabled for mentioned span of time. Therefore, he can start the vehicle only when the driver completes his rest time.

Keywords: OpenCV, Convolutional Neural network , Keras, Pygame timer events,Tensorflow.

1. Introduction

More people take a ride on the highways whole day. Cabs, buses, trucks and other four wheelers to heavy vehicles travelling to long distances undergo lack of sleep overnight. This skipping of rest becomes very unsafe to drive when feeling tired and drowsy. Many accidents occur due to the uncontrollable fatigue state of driver [1-4]. To avoid these incidents we construct a system using Python, OpenCV, Keras and Pygame that alerts the driver when feeling drowsy. Exhaustion is an important cause of roadbumps and has strong disbelief for traffic security. Some cruel crashes can be prevented if the sleepy travellers are alerted on time. A variety of tiredness identifier methods exist that monitor the drivers' fatigue state while driving and alarm the drivers if their concentrations aren’t on road. The relevant methods can be found from expressions such as yawns, eyelids down, and positions of head for recording range of sleepiness. The organic situation of the body of person who drives, in addition to automobile behavior, is analyzed for traveler drowsiness alert [5]. The paper affords a contextual evaluation of the prevailing method of driving force drowsiness detection and affords an in depth clarification of broadly used type strategies on this regard. In the beginning, we classify the prevailing strategies into 3 categories: behavioural, vehicular, and physiological check cases—primarily based totally strategies. Next, pinnacle supervised getting to know techniques used for fatigue identity are reviewed [6]. Third, the advantages ,negative aspects and collective take a look at of the various approach are collected. In addition, the studies frameworks are elaborated for higher understanding. In the end, normal studies findings primarily based totally at the sizable survey are concluded with a view to assist younger researchers for locating ability destiny paintings withinside the applicable field [7].

2. Related Work
Traveller expression tracking device is a real-time device which can detect fatigue and distraction the use of tracking imaginative and prescient approaches. Eyetracker signals in opposition to Momentary Driver Drowsiness - the specific characteristic of the Eyetracker is that it may be mounted in any automobile. There isn’t any want for a complex computations of the cameras [8-10]. “With traditional systems, everyone whose line of imaginative and prescient is to be observed has to complete extra or much less time-ingesting preparations. Because each head, face, pair of eyes vary from every other,” notes Prof. Husar of the IDMT. Effect of using time and partial sleep misery on next alertness and overall performance of automobile drivers - The effect of partial sleep misery and using length on next alertness and development in automobile drivers had been investigated. 20 healthful male topics, among 30 and 60 year antique persons, unfastened from any drowsiness disorder, took element in simulated using classes had been carried out among 2pm and 4pm. Before first session, topics had been sleep disadvantaged as they had been allowed to sleep handiest among 3am. and 7am at some point of the night time preceding. Throughout the using task, the topics' using overall performance, eeg and measures from Karolinska Sleepiness Scale had been observed [11-15].

3. Proposed System

Pictures in the perspective of Computer’s Perspective are regarded as matrices of numbers indicating the discrete colour or extreme values found in each single pixel of picture. Each picture is taken as enter records conveyable in lots of ways, whether or not as pixel values arrays or both multidimensional plots indicating the distribution of pixel magnitudes. Images may be provided in shade layered with 3 channels (Blue, Green, and Red), values in pixels of grayscale varies from zero-black to 255-white, and binary representing black or white values need to be zero or 1 only.

Colour area is constituted via way of means of three exceptional channels Red, Green, and Blue. Every channel constitutes from the so-known as trichromatic characteristics of human imaginative and prescient on account that we've got three separate photoreceptors every of which react selectively to diverse elements of the shadeation spectrum. The three number one hues are brought to create 16,777,216 hues in an eight bit in line with channel RGB system. In Opencv, snap shots are transformed into multi-dimensional arrays, which simplifies their influence. For instance, a grayscale photo is elaborated as a 2-dimensional array with pixels various from zero to 255 . Coloured pics are barely greater complex due to the fact we're managing 3-D arrays in which every pixel is rendered in 3 exceptional shadeation channels. It could be exciting to break up the authentic photo into its corresponding RGB additives to comprehend how the shadeation layered version works. We will use critical OpenCV instructions to do it:

- one Splits a single multidimensional array into many.
- other Merges various channels of RGB.

Printing as of the form of the resulting channels we are able to see that the measurement has been downscaled to 1. Each channel consists of the RGB additives of the photo however it’s rendered into unmarried measurement drawn in format of grayscale.

Image gradient strategies offers beneficial records approximately the parts of the photo. Each pixel of a gradient photo measures modifications in depth of that equal pixel withinside the unique photo, in a special direction. With the pixel records we will infer that the pixels with greater gradient values will become viable edges. Hence, a few famous facet detection algorithms like Canny Edge Detector appreciably use the gradient photo to extract the contours.

The Laplacian of an photo highlights areas of speedy depth alternate and it’s broadly used as a previous step for facet identification. The operator usually recieves a unmarried grayscale photo as
enter and generates every other grayscale photo as output. Laplacian spinoff applies to two dimensional features, in our context the characteristic we distinguish represents the pixel significance values for a grayscale model of the enter photo. Grayscale photographs may be considered as features of inputs (x representing width, y representing height) supplying pixel depth output. Figure 1.

![Figure 1. Pixelisation](image)

4. Components Required
   1. OpenCV
   2. TensorFlow
   3. Keras
   4. Pygame

5. Implementation and Result
The dataset used on this implementation version is amassed with the aid of using our team. To form this dataset, a script was constructed that captures pair of eyes from any digital digicam and shops withinside the neighborhood disk. We separated them into their respective labels “Opened” or “Closed”. The information turned into manually compressed with the aid of using getting rid of the undesirable photos which weren’t wanted for building the version. The information accommodates extra than 6000 photos of people’s eyes below distinct lighting fixtures environment. After organizing the version on our dataset, we connected the very last weights and version structure document - “version/cnnCat3.h4”. Now, we are able to use this version to categorise if a character’s eye is opened or closed.

The Architectural model
The version accomplished proper right here superior with Keras the usage of Convolutional Neural Networks (CNN). The convolutional neural series is a completely precise form of deep neural community which plays especially properly for photo type applications. This CNN essentially incorporates of an enter layer, an output layer and a hidden layer that could have many numbers of layers. A convolution operation is accomplished on the ones layers using a clean out that performs 2 dimension matrix multiplication on the layer and clean it from the photo. This CNN version structure includes the subsequent layers.
   Two layers of convolution with 32 nodes and the third one with 64 nodes, each having three kernel size.
   At last Fully linked layer with 128 nodes.
   The very last layer is hooked up layer as an entire with 2 nodes. In each layer, a Relu activation feature is used besides the output layer wherein we’ve used Softmax.

Requisites
The requirements for this Python undertaking is a webcam through which we are able to click on photos of the driver. We want to use Python - 3.6 version or better version set up on our computer, after this step, the use of pip, you could set up the essential python libraries.

```
pip3 set up opencv-python -face and eye monitoring.
pip3 set up tensorflow -keras makes use of TensorFlow to shape backend connectivity.
pip3 set up keras -to assemble our type version.
pip3 set up pygame -to play alarm sound and carry out timer occasions linked to ignition.
```

The “ haar eye cascade documents” folder includes the documents in xml which can be critical to recognize gadgets from picture. Considering this case, we’re detecting the face and eyes of the driver. The file named fashions consists of our version report “version/cnnCat3.h4” which modified into expert on cnn. We use an audio report “alert.wav” that is performed whilst the individual is feeling exhausted.

“fatiguemodel.py” report consists of this system via which we constructed our type version with the aid of the use of education on the dataset. We want to peer the implementation of cnn on this report. “Drowsiness alert.py” is the principle report in the undertaking. To begin the identification system, we must execute this program.

1 : Record picture as Input from a Camera With a webcam, we are able to take pix as enter. So to get right of get entry to to the webcam, we created an limitless loop as a way to report every body as an entire like a video. We use the technique provided with the aid of the use of Openvc, get right of get entry to  the digital digicam and set the recorded item (cap). examine every body and we hold the picture in a body variable.

2 : Identify Face withinside the body and create a Region of Interest To recognize the human withinside the picture, first we want to convert the picture as a grayscale because of the reality the Opencv set of regulations for item identity recieves grey pix withinside the enter. We do now now no longer want coloration information to recognize the gadgets. We can be the usage of haar cascade model to recognize faces. Then we carry out the identity the usage of faces = face.idenMultiScale(grey). It returns an array of identifications with x, y coordinates, representing height and width of the outline area of an item. Now it runs technology around the head separated from body to mark dotted frame covering from hair to chin of the human vertically and both ears horizontally as a square identifier.

3 : Identify the iris and retina from location of facial magnitude and ship it to the cnn model The equal system to recognize faces is used to recognize eyes. At First, we set the cascade classifier for eyes in leeye and rieye respectively then recognize the eyes the usage of left_eye = leeye.idenMultiScale(grey). Now we want to collect out exceptional ‘eyes records from complete picture. It may been finished with the aid of the use of extracting the boundary area of the attention after which we are creating a role to drag out the attention picture from the body. l_eye exceptional consists of the picture records of the left eye. This can be given as enter into our cnn model so you can are searching beforehand to if retina are opened or closed. Likely, we are able to be drawing the proper eye records into r_eye.

4 : Model will organize whether or not or now no longer or now now no longer Eyes are every Opened or Closed We are the usage of of cnn model for predicting the attention recognition. To feed our picture into the version, we want to carry out tremendous operations due to the reality the version goals the right dimensions to begin with.First we convert the picturegraph recorded right proper right into a grayscale monochrome format.Then we reconstruct the picture with the aid of the use of lowering the scale and function a length of 24*24 pixels.

5 : Calculates Scores(seconds) to verify whether or not or now no longer the human is sleepy or every exceptional distraction span time. The rating is a charge incrementing we are able to use to decide how a long way the individual has his eyes in closed state on frame. Hence, each of eyes is not open, we are
able to preserve on growing rating and whilst eyes are open, lower the rating. Drawing to end result at
the display function in an strive to show actual time recognition of the individual.

6 : The timer is cut up as much as shape distinct timing. First span of time linked to alert sound, this
runs on display screen wherein constantly the character’s eyes are lacking or protected with the aid of
using eyelids (closed) or tilted down for numerous frames of photos while this system runs on a loop.
The 2d timer begins offevolved and ends the relaxation time that is linked to the ignition device of
the car after while the timer runs out, the impediment is eliminated that avoids ignition of the car Figure 2.

Figure 2. Output

6. Conclusion
The drowsiness alert and resting system can give a mandatory resting span of time to the driver through
timer attached to the ignition system, as a result of detecting closed eyelids and tilted headposition. The
time counter avoids small distractions that do not come under drowsiness actions. In future the nearby
parking lots can be identified by the GPS, to take a break and rest during travel. When the driver is in
emergency and needs to start the travel immediately, there can be a small test for few minutes before
ignition to test his brisk level. There can be face recognitions in case of multiple drivers on a single
vehicle taking shifts to drive and recognize that the driver has been changed in case of drowsiness.

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