Anti-accident System Using MT-CNN And KCF Algorithms

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Abstract -: The face is an important part of our body, conveys plenty of information. When a driver is feeling drowsy and is in a fatigue condition, he's frequency of eyes blinking and yawning is distinct from that of the normal condition. In this paper, we advocate a system referred to as Anti-accident system, which detects the driver's condition of fatigue with the use of video images, without equipping the driver's body with any devices . Refering to the shortcomings of previous algorithms, we propose a new face-monitoring algorithm to improve the accuracy of tracking. For detecting the primarily based 68 key-points of the face we design a new technique. Then we use those facial regions to assess the drivers' nation. By evaluating the conditions of the eye and mouth, Anti-accident system alerts about the driver's condition. The experimental consequences confirm that Anti-accident system achieve around 92% accuracy.

Key Words:deep learning ,opencv,.wav file, shape predictor.

1.INTRODUCTION *(Size 11, Times New roman)*

Automotive population is increasing exponentially inside the country. The biggest trouble regarding the increased traffic is the increase in number of street accidents. Road accidents are surely a international threat in our country. The global status file on road safety published by means of the World Health Organization (WHO) identified the foremost reasons of street accidents are because of driving force errors and carelessness. Driver sleepiness, alcoholism and carelessness are the key gamers in coincidence scenario. The fatalities and associated fees due to avenue accidents are very serious issues To perceive the driving force is sound asleep or not. To keep away from foremost road coincidence. It offer the safety to internal passengers of the bus, van etc. Bus driving force is snoozing at riding the vehicle it can reasons the important accident to keep away from this we are identified the motive force is attempting to sleeping or not.dominance in the payments industry and to extent their control over the monetary system. Central Banks and intergovernmental authorities, including the Bank of International Settlements

2. MOTIVATION

3. RELATED WORK AND LITERATURE SURVEY

Building a face expression recognizer and a face expression database for anintelligent tutoring system [1].

Author: Ramon Zatarain-Cabada, Maria Lucia Barron-Estrada, Francisco Gonzalez-Hernandez, Hector Rodriguez-Rangel

Nowadays, the importance of artificial intelligence cannot be denied. We can find the use of artificial intelligence methods in subjects such as social networks, smart devices, games, industrial management control processes, and education

Facial Expression Recognition by Calculating Euclidian Distance for Eigen Faces using pca [2].

Author: Divya Mangala B.S and Prajwala N.B

In this paper, Facial expressions of human being is recognized by using Eigen Faces**.** Facial Expression Recognition[3] from a Partial Face Image by Using Displacement Vector

Author: Charoenpong Theekapun, Shogo Tokai, Hiroyuki Hase As facial expressions significantly provide information such as cognitive activity, affective stage, temperament, personality, truthfulness and, psychopathology, there are

several research studies on facial perception from the past three decades.

4. MATHS

Mapping Diagram
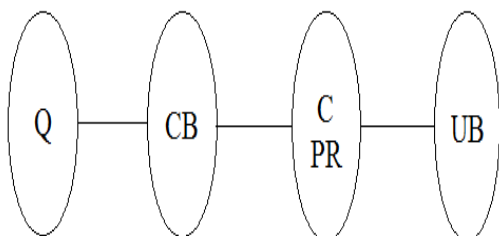
Where,

Q = User entered input
CB = Check face key region
C = face detect
PR = Recommend
UB = Recommend alert

Set Theory

1) Let S be as system which input image

$$S = \{In, P, Op, \Phi\}$$

2) Identify Input In as
   In = {Q}

Where,

Q = User entered input image(dataset)

3) Identify Process P as

   P = {CB, C, PR}

Where,

CB = System check facial key region

C = Detect face

PR = Preprocess request

4) Identify Output Op as

   Op = {UB}

Where,

UB = Update Result

Φ=Failures and Success conditions.

Failures:
1. Database can be huge which can further lead to more time delay to get the required information
2. Hardware failure.
3. Software failure.

Success:
1. Search the required information from available in Datasets.
2. Result is evaluated very fast according to the need of the user.

Space Complexity:
The space complexity is evaluated according to the presentation of the discovered patterns and also their visualization. If the data storage is vast then the space complexity is also more.

Time Complexity:
Check that the no. of patterns available in the datasets= n
If (n>1) then the information which is retrieved is time consuming. So the algorithm's time complexity can be evaluated as $O(n^n)$.

5.EXISTING SYSTEM

In existing machine there may be no computerizes machine to identified the present day driver slumbering expressions. So someday driver is making an attempt to sleep on duty so this is dangerous for the passengers on board bus. So we're trying to triumph over this trouble we are seize video streaming online of bus and discover the motive force expression and extract facial expression and decide the driver is napping or not.
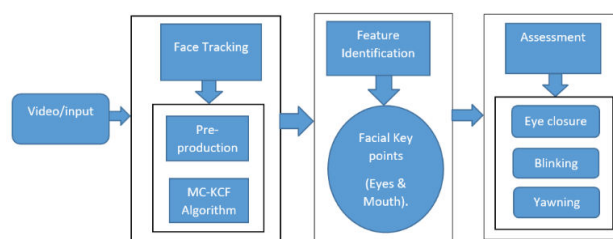
6.ADVANCE SYSTEM AND ADVANTAGES

Fig.1 Advance System Architecture

Our system is built using a camera, more specifically an automobile camera device, a cloud server which is used to store and process the video data, and a mobile that stores the result and gives an alert to the driver and also the passengers.

The camera captures the facial features of the driver such as the key points of the face, which are the eyes, frequency of blinking of the eye lids, and shape of the, mouth.

The video is been recorded live throughout the journey and is been proceesed in three steps:

Inthefirststephumanfaceistrackedi.e.theexactpositio nofthefaceofthedriver. This is the pre-processing part of the system and this processing is done using mc- kcf algorithm.

The second step consists of feature identification in which the facial key regions is been detected and identified. Facial key regions here are the eyes and the mouth.

Inthethirdstepevaluationofthefacialkeypointsisdone .Suchasthefrequencyof blinking of eye-lids, for how much time eye-lids remain closed is been identified. The shape of the mouth i.e. our mouth changes shape while yawning and also the yawning frequency.

Comparing all the features the result is evaluated and the result is been sent to the mobile of the driver or the alert system.

KCF algorithm is used mainly to track the face. But as this algorithm has some drawbacks in real time use we combine CNN and MT-CNN algorithms alongwith KCF algorithm to propose a new algorithm MC-KCF to improve the KCF's drawbacks.

Advantages:

1) Improve bus security and passengers.
2) Avoid accidents
3) Secure and efficient system .

7. CONCLUSION AND FUTURE WORK

We endorse a system to compare level of fatigue of the driver primarily based on first locating the face of the driver and detection of key points of the driver's face. By setting new rules and advising th MC-KCF algorithm to locate the driver's face. CNN and MTCNN algorithms are used to improve the efficiency of the KCF algorithm. Based on the 68 key points of the face we detect the state of the eyes and the mouth. A method which is based totally on the state of eyes and mouth for the detection of the level is drowsiness is evaluated. Therefore, Anti-accident system can be said as a real-time system as its operational speed is high. From the experimental results, Anti-accident system is relevant to unique circumstances and it also offers stable performance. Further we will put in force drowsiness detection device in aircraft as a way to alert pilot. There is an alcoholic sensor which is also used for drivers which are drunk. The alcoholic sensor is also used for inebriated drivers.

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