IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 8, May 2022
Impact Factor: 6.252

Drivers Fatigue Level Prediction Using Facial, and Head Behavior Information

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Abstract: *With driver fatigue continues to cause serious and deadly car and motorcycles accidents, The need for automatically recognizing driver fatigue and alerting the drivers is apparent. Although various Approaches that explore physiological and physical factors to classify driver fatigue have been developed. The overall accuracy, recognition speed, distraction in the driving process and the cost of these systems still need to be improved. In this paper, we present a low-cost driver Fatigue level prediction framework (DFLP) For detecting driver fatigue in its earliest stages. DFL predicts driver fatigue based on eyes, mouth, and head Behaviour cues using a non- physical contact sensor input (infrared dradiation)(IR) camera .DFL P classifies the level of drowsiness and attributes the level of altering accordingly. To validate the proposed fatigue prediction framework, we conducted the experiment using real dataset sunder night and day Illumination conditions. The results of the experiment show that the proposed approach can predict the level of driver's fatigue with 93.3% overall accuracy. The solution proposed in this paper, not only reduces the number of drivers fatigue-related accidents but also addressed an area of sufficient interest for transportation, psychology and public health expert sand readers as well as automakers to developan in-vehicle fatigue prediction system..*

Keywords: Driver Fatigue.

I. INTRODUCTION

Driver fatigue is one of the major contributors to serious sand Deadly road accidents worldwide. According to the Transport Department of New South Walesstatein Australia, fatigue has The same level of danger as drink driving[1]. Furthermore, A Study conducted by the Adelaide Centre for Sleep Research Has shown that drivers who have been awake for 24 hours Have an equal driving performance to apers on who has a Blood alcohol content(BAC)[2] of 0.1g/100ml and is seven Times more likely to have an accident [3]. Fatigue can often Affect the driving ability of the drivers long before the drivers' Even notice, furthermore, the reisno standard rule to measure The level of drivers fatigue other than paying attention to Fatigue signs[4]. Fatigue associated with accidents is often More severe than others because driver's reaction times are delayed, or the driver shave failed to make any manuevers to avoid a crash. With unsafe and dangerous driving accounts for hedeath of more than one million lives and over 50 million serious injuries worldwide each year[5], the need to address this problem is quite obvious.

1.1 Objectives

The objectives of the system are:

1. Feasibility
2. Methodology/planning of work
3. Expected outcomes
4. Facilities required for proposed work.

1.2 System Architecture (Block Diagram)

System Architecture gives us the overall description about the how system is working System that contains both input and output and also short description about the operation I gives basic idea about what type of functionality is performed. In this system we two scenarios.

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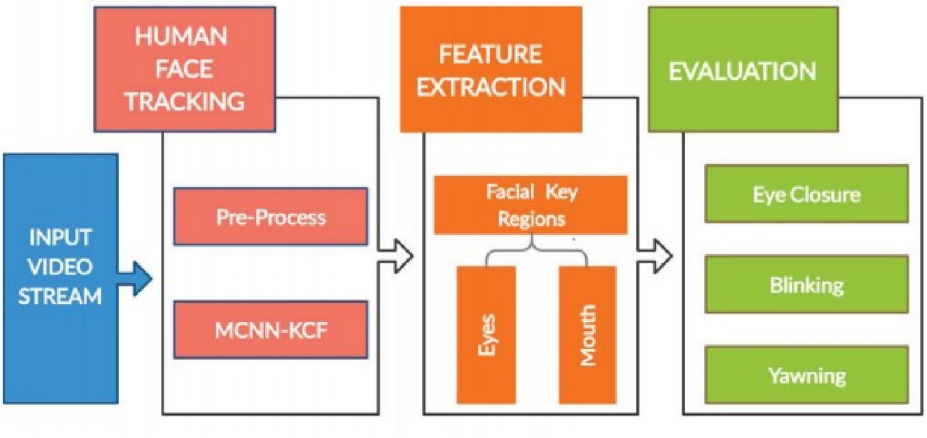


1.3 Problem Statement

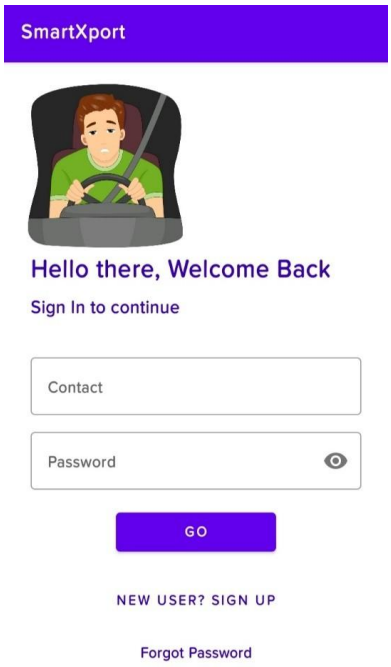
We are developing an android application to work on Real- Time Driver-Drowsiness and accident detection with vehicle tracking.

Module Information

1. Camera Interface
2. Face Detection
3. Eye Tracking
4. GPS Tracking
5. Accident Detection
6. Cloud Interface[firebase]

1.4 Implementation of Modules

This module introduce us about the prototype model (GUI) in which it known us how project look like and implementation detail of first module.



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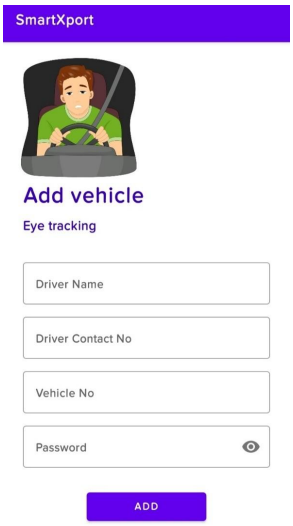
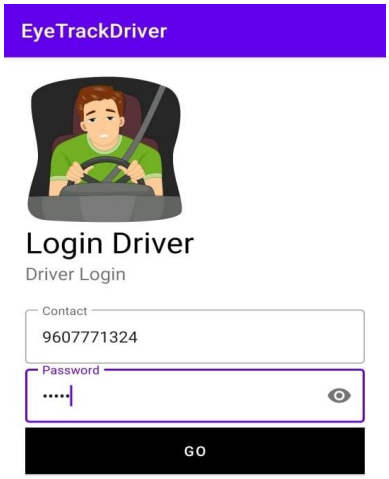
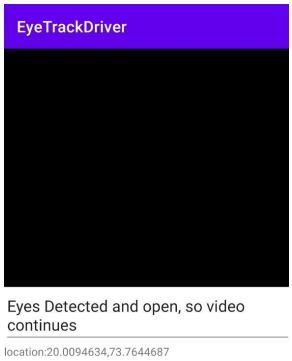
In the module shown in fig the admin must enter all the necessary credentials required for the adding the vehicle details. Post successful add the vehicle details is stored into the cloud and then admin can easily tracking the driver location using the driver contact number.



In the module shown in fig, whenever Driver sign in, you'll enter your contact number and password as usual then go to the next level of Eyes Tracking of driver to capture thus facial expression.



The module shown in fig is the page that the driver will see upon a successful log in. then application can start the eyes detection,(facial expression)of the driver to send the location, messages to the admin.



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II. CONCLUSION

1. In the behavioral approaches various techniques like machine learning, image processing were all used to solve drowsy problem, however despite their success, suffers false alarm, poor dataset design, unreliability, among others.
2. There are many types of DL algorithms but CNN was choose due to its operating success in processing large image or video based data, when compared to other DL algorithms. We define the facial regions of detection based on facial key points. Moreover, we introduce a new evaluation method for drowsiness based on the states of the eyes and mouth.
3. Therefore, DriCare is almost a real-time system as it has a high operation speed.

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