Using Mobile Devices to Monitor Taxi Driver Behavior

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Abstract — *One of the leading causes of fatal car accidents is texting while driving (TD). To identify or prevent TD, various innovative technologies and mobile phone apps have been developed. However, one of the most important features of a functional TD detection system is the capacity to tell apart the mobile phone habits of the driver from those of the passengers. All current options need some degree of user intervention. at addition, they use specialized GPS gadgets to ascertain whether or not a mobile phone is present and at a certain area relative to the driver. In this study, we offer an automated technique for detecting TD that requires no ancillary equipment, making it a practical and economical solution. The basic idea is that the Smartphone's in-built sensors (i.e. gyroscopes, accelerometers, and GPS) record data like touch strokes, holding orientation, and vehicle speed when a user; (specifically Driver) is composing messages or misusing Smartphone outside of normal usage. This data will be stored so that it may later be evaluated and classified to look for reoccurring trends. Extensive testing was done by a variety of people in a wide range of driving conditions. Based on the findings, we may prioritize road passenger safety while still achieving high detection accuracy. This technology requires no specialized setup and delivers precise results. This approach is also secure since it does not read the contents of messages.*

Keywords: *Roadway safety, distracted driving detection, and sobriety checkpoints.*

INTRODUCTION

According to a study conducted by the United States Department of Transportation in 2011, 1.3 million accidents included mobile phones. Among the many forms of mobile phone-related distraction on the road, texting while driving (TD) has emerged as the most lethal. As a result, we've come up with a novel idea to help people everywhere avoid these kinds of incidents in the future.The goal of our suggested system is to create a program that can identify TD on its own, without the need for any other hardware or software. As such, the goal of this project is to put the spotlight on a safety system whose only function is to make passengers feel safe in the face of reckless driving.

To determine whether or not there is a TD pattern that leads us to the conclusion that vehicle speed is lowered, increased, or diverted due of this activity, we employ users' smartphones to capture pertinent data while messages are being produced.

LITURATURE SURVEY

Description:

Distracted driving due to cell phone usage is an increasingly problem in terms of lost lives and property damage. Thus for public safety and security, several state and federal governments have enforced regulations that prohibit driver from using mobile phone usage while driving. Here we have proposed a computer vision based method for determining driver cell phone usage using a near infrared (NIR) camera system directed at the vehicle's front windshield. This method consists of two stages; firstly we localize the driver's face region within the front windshield image using the deformable part model (DPM). Secondly we utilize a local aggregation based image classification technique to classify a region of interest (ROI) around the drivers face to detect the cell phone usage.

Description:

Mobile phone usage while driving is dangerous. It may cause traffic accident. Detection and proof of usage should be done by a system. Anti-Distracted Driving Act that became a law last August 1, 2016 will now be enforced and put into practice by many countries. So drivers may get penalized if they use mobile phone while driving. This paper is intendedto develop a neural network application that can detect mobile phone usage. For the system training and testing, sample pictures would be used. Based on this pictures we will train the Cascade Object Detector on MATLAB.

PROPOSED SYSTEM

In proposed work is first of all we are going to developed a Smartphone application. This application will collect data from user's mobile phone and will do a comparative analysis from database to identify similar trends as defined in system. Here we would be recording driver's behaviors and its physical state such as drunk or normal. Secondly this system proposes an algorithm using sensor to check whether the user, particularly driver is using his Smartphone for general navigation purpose as defined by commercial Cab services such as OLA and Uber.

Our application will detect the behavioral usage pattern of drivers mobile. It will check for its state i.e. whether it's in landscape mode or portrait. If yes for how much time duration and what purpose its serving while diving. Apart from this it will check, if

there is continuous activity in mobile position i.e can be an example of user playing game while driving. This again can lead to distraction from driving and result into mishaps. Thirdly, it would check if driver is texting while driving. This can be recorded if user is using continuous key strokes for texting while driving. Thus our system covers all the drawbacks of existing system and proposes a new and more secure reliable system. This is not only cost effective but also saves human life and improves road driving quality.

ADVANTAGES OF PROPOSED SYSTEM

➢ Reduce road accidents and mishaps which happen due to TD behaviour.
➢ Alerts the passengers as well as user about Smartphone usage is exceed its maximum limit.
➢ Detecting behavioural drunk driver patterns thus alerting the passenger and system.
➢ Cost and resource effective.

I.   FLOW OF PROPSED SYSTEM
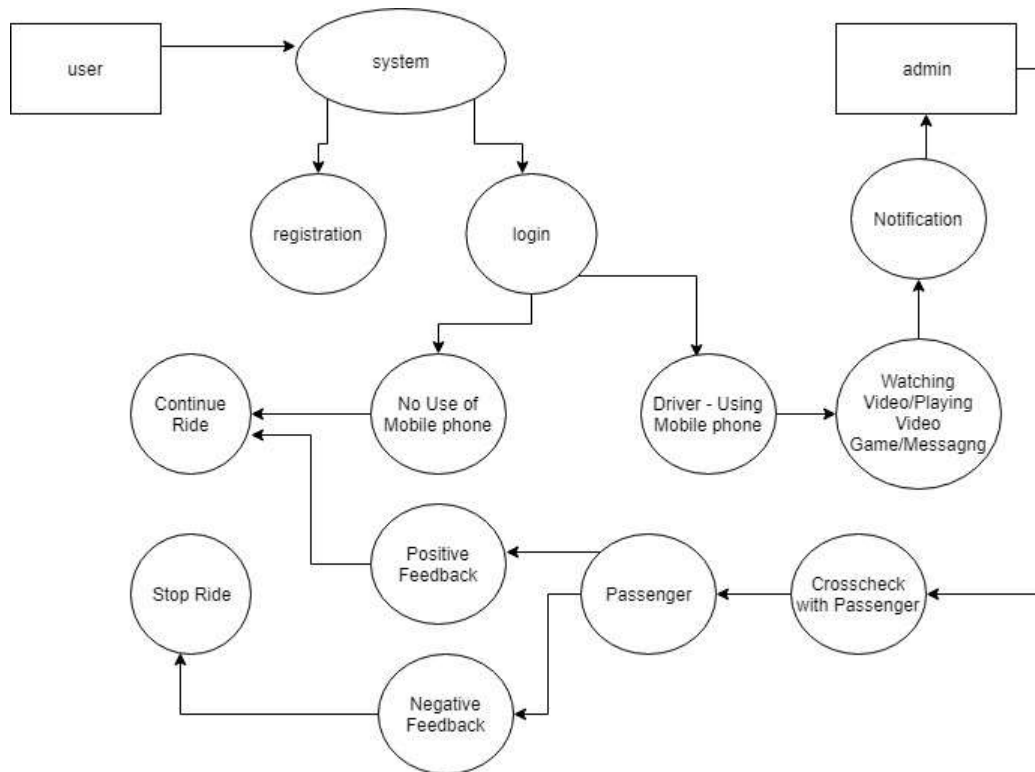
MATHEMATICAL MODEL

Let W be the set of whole

system which consists of the

input, process and output of

the system.W = input,

process, output.

Where,
Input = is the set of inputs given to the system to achieve the problem statement.
Process = is the procedure or the algorithm applied to the system which gives the expected output.
Output = is the output of the

system.

input = S, U, A, R, P, N, Avg.Let,
S = Drivers activity.

U = be the set of users/Drivers.U = u1, u2, u3,   un.

A = be the set of Miss behavior activities.A = a1, a2, a3, an.

P be the process which monitors users behavior.
Process: Step 1: User 'Ui' will registered while booking and boarding the cab.
Step 2: User 'Si' activities will be starting to monitor once the ride is started.

Step 3: User will give get an alert if the driver's behavior or smart phone usages are as per predefined pattern in database.

Depending on the user history of particular driver 'Si' system will apply the efficient algorithm to detect the drunk driverpattern and Smartphone usage and the categorize it accordingly to send alert by the system.

Avg = (sum of S) / total number of that U users.

if avg is greater than threshold
average value then that ad post is
considered as positive category
elseit is negative.

Step 4: As per Negative Rating System will Notify to passenger i.e. alert about drivers behavior.

Step 5: System will record and report against that driver for safety issues.

SYSTEM REQUIREMENTS HARDWARE REQUIREMENTS:

- ➢ System Processors　　　:
  CoreI7 an compatible

- ➢ Speed　　　　　　:
  2.4 GHz and above

- ➢ Hard Disk　　　　: 3
  GB and above

SOFTWARE REQUIREMENTS:

- ➢ Operating system　　　:
  32bit Windows 7 and on words

- ➢ Coding Language:　　　:
  Java J2EE\Android

- ➢ IDE　　　　　　:
  Eclipse Kepler

- ➢ Database　　　　:
  XAMP Server

CONCLUSIONS

In this paper, we have explained how the influence of utilization of Smartphone and its adverse effects which may have severe impacts such as loss of human life's. We have proposed a novel and cost effective method which can be easily implemented to to detect TD(Texting-while-Driving) without using any extra devices. The system is designed in such way that CAB Organization automatically get drivers activity while ride is going on. Using inbuilt sensors Detection system get current running application status with respective sensors. In this project system generate alert message with device details to Organization. And every week CAB Department generates weekly report for drivers behaviors. If driver's activity always gives negative feedback then Service providers will take action against him.

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