Scientific Journal of Impact Factor (SJIF): 5.71

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 5, Issue 10, October -2018

DRIVE NOW TEXT LATER, DETECTION OF CAB DRIVER ILLIGAL ACTIVITY WHILE DRIVING

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Abstract —*Texting-while-driving (TD) is one of the top dangerous behaviors for drivers. Many interesting systems and mobile phone applications have been designed to help to detect or combat TD. However, for a TD detection system to be practical, a key property is its capability to distinguish driver's mobile phone from passengers. Existing solutions to this problem generally rely on user's manual input, or utilize specific localization devices to determine whether a mobile phone is at drivers' location. In this paper, we propose a method which is able to detect TD automatically without using Any extra devices. The main idea of our proposed system very straight forward: when a user is composing messages, the smartphone embedded sensors (i.e. gyroscopes, accelerometers, and GPS) collect the associated information such as touch strokes, holding orientation and vehicle speed. This information will then be analyzed to see whether there exist some specific TD patterns. This type of experiments have been conducted by different persons and in different driving cases. The results show that our goal can achieve a good detection and accuracy with low Negative rate. Besides being infrastructure free and with high accuracy, this method does not access any content of messages and therefore is privacy-preserving.*

Keywords- *Cascade Classifier, Object Detection, neural network, cascade object detector, mobile phone usage detection of driver*

I. INTRODUCTION

As per to the U.S. Department of Transportation, in 2011, at least 23 per of auto collisions involved cell phones, that is 1.3 million crashes. Among all distracted driving activities associated with cell phones, texting-while-driving (TD) has become the top one killer. Drivers who send text messages at the time of driving are 23 times more likely to experience a crash, compared to 2.8 times more by dialing and 1.3 times more by talking or listening. Besides using laws and battles against TD, many systems have been recently developed to help combat the desire to TD. For example, Drive Mode is a mobile phone app and once activated, blocks you from reading or typing anything. Text-STAR and Textecution utilize the GPS and Network Location services of Android mobile phones to calculate the speed that the cell phone is travelling at the time text messages are sent and disable texting when required. However, the major problem for these systems is that they either require user's manual activation (such as in Drive Mode), or disable all the cell phones in a moving car (such as Text-STAR and Textecution), causing necessary inconvenience to the passengers. Therefore, the key challenge in detecting TD is to find a way to determine whether the mobile phone being utilized belongs to the driver or to a passenger. For this purpose, some systems adopt cameras mounted in front of the driver to directly monitor the drivers activity associated with TD. With carefully designed activity recognition software, camera-based TD detection systems can achieve high accuracy but are infrastructure-heavy and raise intrusive concerns.

II. LITURATURE SURVEY

Title - : Detection of Drivers Mobile Phone Usage

Authors: Hayrullah Yasar, Phd Student, De La Salle.

Description: While driving, mobile phone usage is dangerous that 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 starting May 18, 2017 in the Philippines. So drivers may get penalized if they use mobile phone while driving. On this study it is intended to develop a neural network application that can detect mobile phone usage. Sample pictures used for the system training and testing. Positive pictures and negative pictures were used to train the Cascade Object Detector on MATLAB.

Title: Sensing vehicle dynamics for determining driver phone use

Authors: Y. Wang, J. Yang, H. Liu, Y. Chen, M. Gruteser, and R. P. Martin.

Description: This paper utilizes smartphone sensing of vehicle dynamics to determine driver phone use, which can facilitate many traffic safety applications. Our system uses embedded sensors in smartphones, i.e., accelerometers and gyroscopes, to capture differences in centripetal acceleration due to vehicle dynamics. These differences combined with angular speed can determine whether the phone is on the left or right side of the vehicle. Our low infrastructure approach is flexible with different turn sizes and driving speeds. Extensive experiments conducted with two vehicles in two different cities demonstrate that our system is robust to real driving environments. Despite noisy sensor readings from smartphones, our approach can achieve a classification accuracy of over 90% with a false positive rate of a few percent. We also find that by combining sensing results in a few turns, we can achieve better accuracy (e.g., 95%) with a lower false positive rate.

III. PROPOSED SYSTEM

Our purpose is to detect drivers activity while driving car. We propose a method which is able to detect TD automatically without using any extra devices. Concept of our proposed system is very simple to understand. when a user or driver is composing messages, the smartphone embedded sensors (i.e. gyroscopes, accelerometers, and GPS) collect the associated information such as touch strokes, holding orientation and vehicle speed. The motivation behind this project is an attempt to focus on a security system that is designed merely to serve the purpose of providing security to Passengers so that they never feel helpless while facing Misbehavior of Driver. To develop application for securing the transport system so people can travel without any risk. We build our application with in Traveling scope where people need to travel in day to day life.

IV. SYSTEM ARCHITECTURE AND DFD DIAGRAM

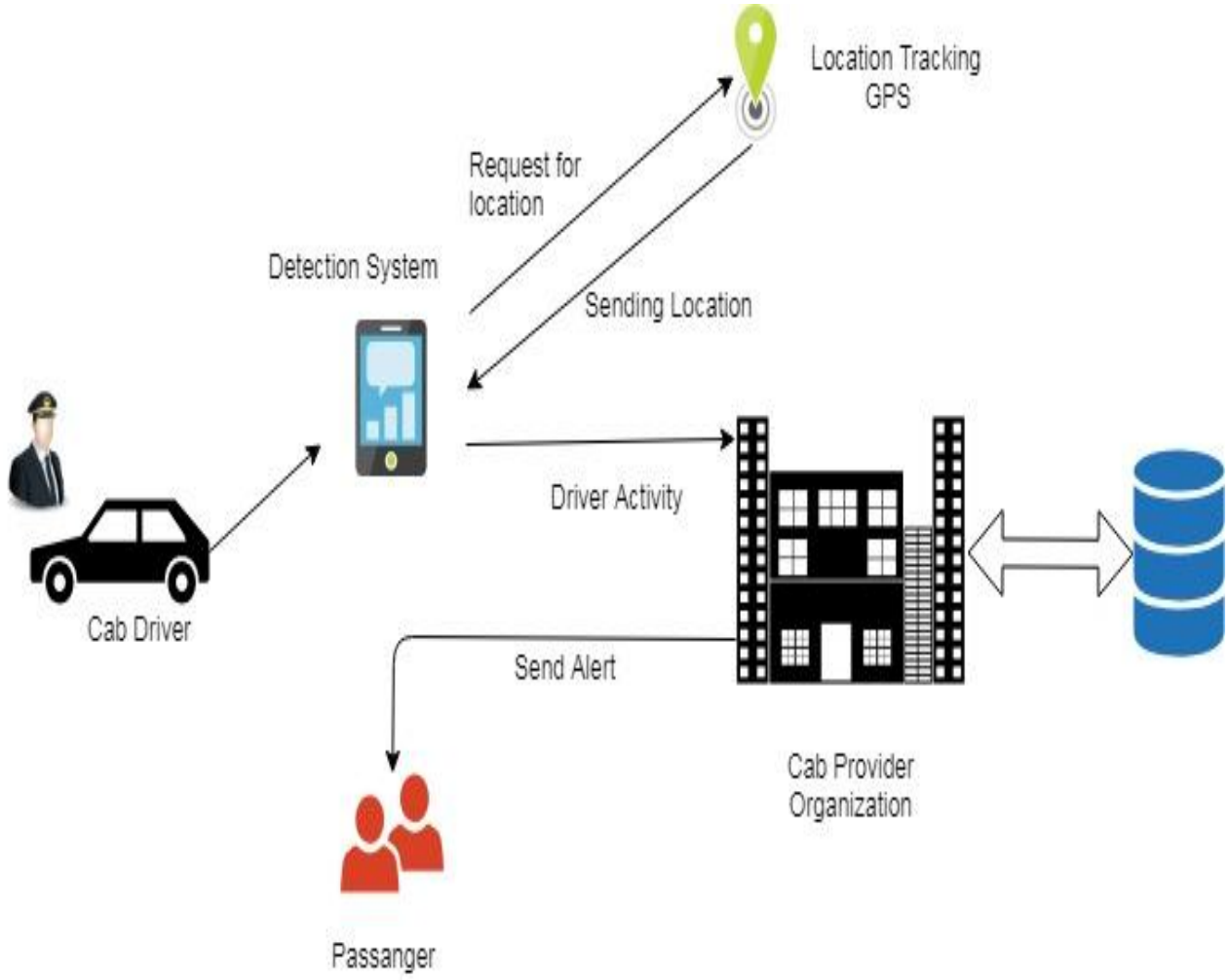
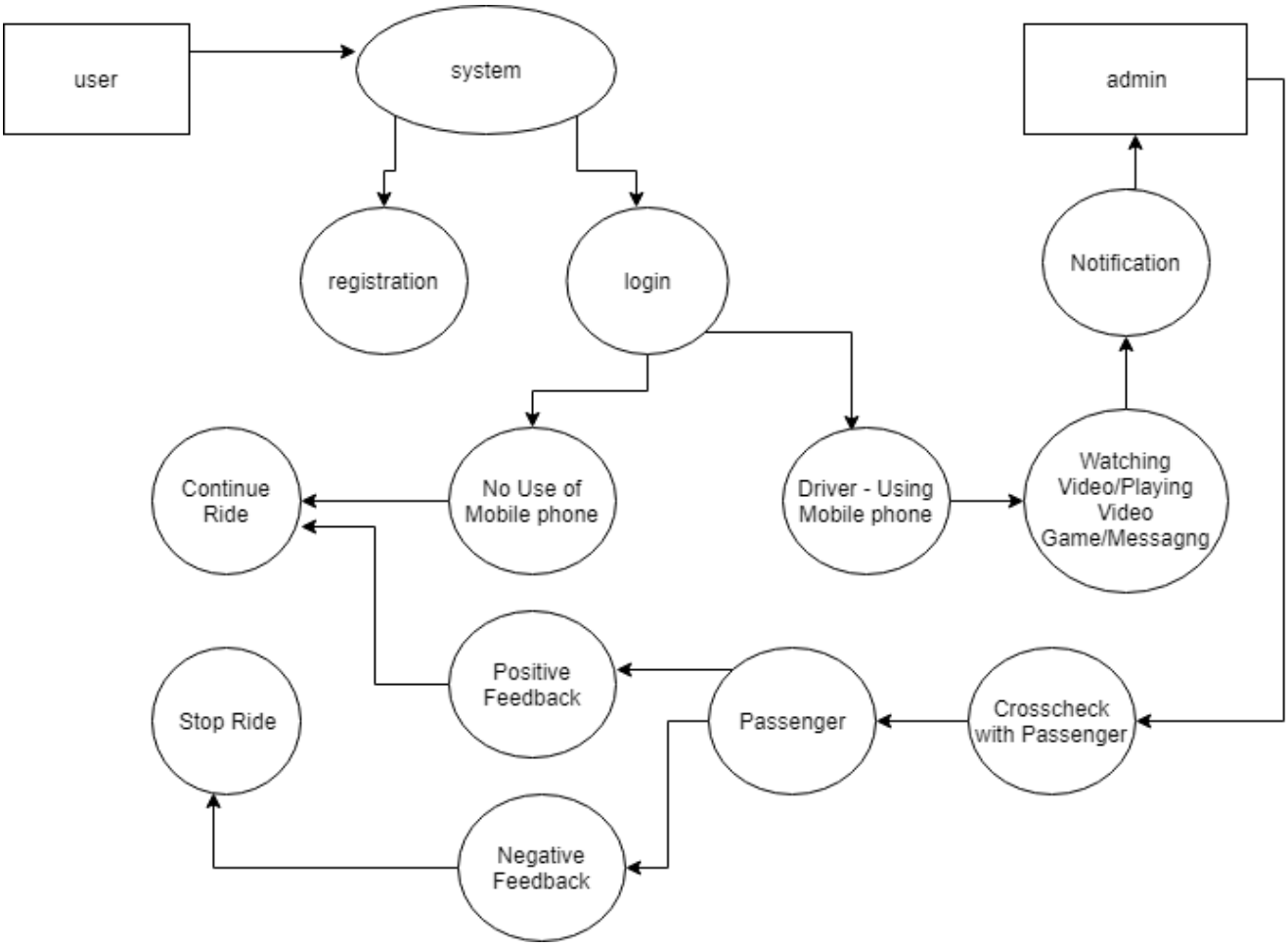


Fig.1 System Architecture



V. RELEVANT MATHEMATICS ASSOCIATED WITH THE PROJECT

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,
1. S = Drivers Activities.
2. U = be the set of users/Drivers.
U = u1, u2, u3, ...un.
3. A = be the set of Miss behavior activities .

A = a1, a2, a3, ...an.

Let U1, U2, Un be the set of users, providing the registration and getting used system daily. After verify the registration id, access will be given to the specified user. Administrator will update the information regarding the material taken by the users.

P is process which monitors users behavior and get details by internal sensors and GPS and provide data to Output System A act as administrator who get all information about drivers behavior and using input data it generates report and send warn notification to CAB owner and drivers.

VI. GOALS AND OBJECTIVES

To detect TD, we utilize the user's smartphone to collect the data when messages are being composed and from which to identify, whether there exist the TD patterns. More specifically, when we find a mobile phone user is editing messages, we need to determine, in a statistically manner,

- Whether the speed of the vehicle decreases, and
- Whether the vehicle is taking turns, and
- Whether the user is holding the phone uprightly.

To detect these patterns, the first important task is to determine when the messages are being composed. More specifically, we will show later that we need to know when these touch strokes occur. This task can be easily fulfilled if we can obtain the record of the SMS software.

VII. CONCLUSION

We propose a novel method which is able to detect TD (Texting-while-Driving) Instead of 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 driver's behaviors. If driver's activity always give negative feedback then Service providers will take action against him.

VIII. APPLICATIONS

1. Travel Agencies
2. Cab Organization
3. Employee Pickup-Drop Agency
4. Third Party Organization like OLA,Uber.
5. Passenger Safety Services.

IX. RERERENCES

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