Automated Behavioral Sensing Traffic Control App

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Abstract

In this society, travelling from one place to another in a fastest possible time seems a necessity. Road accidents are increasing day by day, many of them occurs because of the carelessness and aggressive driving behaviour’s. Therefore, drivers should be aware of their actions not only for their lives but also for passengers and bystanders on the road. In this situation, it is a need to have an application that aims at reducing road accidents by monitoring the vehicles in public places. Our application ‘Traffic app’ mainly aims at reducing road accidents by sending information about vehicles which violates the traffic rules to the nearby police stations and Regional Transport Office (RTO). So that this app helps to bring the accused drivers in front of the law.

Keywords: Image capturing, Driving Behaviour, Image processing

I. INTRODUCTION

In our modern society today, travelling from one place to another in a fastest possible time seems a necessity especially in large cities. But most drivers seem careless and aggressive when they are in control of the wheel. In the past few years, traffic congestion and accidents have increased enormously. Most of these happens because of these aggressive and carelessness driving behaviours. Even in our daily life, we come across many problems caused due to traffic rule violation by some people. So, it is essential that drivers are aware of their actions not only for their lives but also for the passengers and bystanders on the road.

It is well established that the main contributing factor to road accident is the driver’s errors. In terms of driver’s errors, the fundamental elements leading up to the violent driving behaviours are from various driving events during the journey. These include over speed, rapid lane change, drunken driving etc. Hence, it is essential to detect these driver’s errors. To ensure a reliable transport system it is important to have an intelligent control system.

Through this project we are aiming to provide a traffic control system for reducing the road accidents by sending the information about the vehicles to nearby police station and the Regional Transport Office. So, this app helps to bring the suspected drivers in front of the law. Here we propose a method of image processing. The information about the vehicles include image of that vehicle, location etc.

II. RELATED WORKS

Md. Munir Hasan, Gobinda Saha, Aminul Hoque, and Md. Badruddoja Majumder proposed a system where the technique of image processing is used in smart traffic control system. In this project they present a process of extracting traffic information from image. Here finds out total amount of pixels in a video frame which is corresponds to the amount of area occupied by the vehicles. If the amount of area occupied by the vehicles is greater, then the traffic congestion will be greater. By using this traffic data they propose a model for traffic control depending on the amount of traffic on the road. The two main steps in this paper are: Traffic information extraction and application of traffic control algorithm.

Our work proposed in this paper differs from the work in the literature. We use the application of image processing to extract the traffic information and send the information and the image of the vehicle which violates the traffic rules to the authorities.
III. PROPOSED SYSTEM

We have developed an intelligent traffic control system called automated behavioural sensing traffic control app to monitor the traffic congestion and to reduce road accidents. This traffic control application is a cost-effective and easily maintainable traffic monitoring system by sending the photo of the vehicle which violates the traffic rules to nearby police station and Regional Transport Office.

In the proposed scenario, it is assumed that all the vehicle users must register in this application. The functionalities of this app include: Registration and login, profile, image capture and upload, admin module etc. For the registration the user should provide the details such as name, address, phone number, vehicle number, licence number, username and password. Once registered, the user can use their username and password to login this app. All the data in the registration are retrieved and displayed in the profile module. If there will be any change in the user’s details, they can edit it and save in this profile module. The most important functionality of this application is image capture and uploads. In this module, the user can send the photo of the vehicle which violates the traffic rules. Suppose, if the user notice a drunken driver is driving a vehicle, the user can capture the image of the vehicle and can send the picture along with the location and the description of the crime to the nearby police station and Regional Transport Office (RTO). RTO is an Indian government bureau which is responsible for the vehicle registration and the issue of the driver’s licences. So they can easily chase the suspected driver using the license number in the image and can take necessary actions. At the same time the suspected drivers profile is updated with a summons as a recent activity. This summons is treated as a black mark in his profile. If the black mark is detected more than one time, automatically the license of the suspected driver gets cancelled. All the activities in this app are controlled by the admin. He can login with his username and password. The admin page is updated with recent activities. He can view the information of the traffic violation entered by the user, and can track the location using the map.

IV. RESULT ANALYSIS

A. Comparison:

Comparison of image capturing methods based on level of human interaction.

<table>
<thead>
<tr>
<th>Comparison factor</th>
<th>Manual image capturing</th>
<th>Semi-automated</th>
<th>Fully automated</th>
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<tbody>
<tr>
<td>Level of human interaction involved</td>
<td>Involves manually capturing the image of the vehicle in users mobile. And send this to RTO.</td>
<td>Includes the interaction of a human operator. His rule is to check the accuracy of the image taken by original camera, and send the image to RTO.</td>
<td>Does not involve human interaction. The original camera which is fixed on the city or town takes the image of the vehicle.</td>
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<td>Application</td>
<td>It can be used by anyone who has this application in their mobiles.</td>
<td>Uses different strategies to combine computers and human expertise to obtain an efficient image capture and upload.</td>
<td>Can provide an efficient image capturing in a large city.</td>
</tr>
<tr>
<td>Limitation</td>
<td>If the person capturing the image haven’t a good visual ability, image results will be poor. Also when the vehicle is too fast, images cannot be taking properly.</td>
<td>May be subject to variation</td>
<td>Extremely difficult to develop a fully automated system.</td>
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</table>

V. CONCLUSION

In this paper, an automated behavioural sensing traffic control application, for detecting the transport or traffic rule violation when the vehicle is on move is proposed. In the past few years road accidents are enormously increased. So, this application will help the traffic police department to improve the road traffic safety. We have use the techniques of image processing for capturing and sending the photo of the vehicle which violates the traffic rules. Suppose if we are seeing an over speed vehicle, first we can capture the image of the vehicles in the mobile and can send the image to nearby police station and RTO along the information such as location and description of crime. Admin track the location and chase the suspected driver. This application is fully based on human interaction. When compare with other methods, this application can be used by anyone at any time.

REFERENCES


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