

Traffic and Criminal Vehicle Detection using Smart Phone

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Abstract: Nowadays, people use the radio channels and phone lines to inform the department about the traffic information. These information are fed and retrieved by the radio channels to distribute all over the city. Our system completely focuses on customers, our employees, growth, innovation and efficiency. All of these elements will drive us towards success and show us as one company that can perform and give value for money. Today, Mobiles are the most easily available communication devices. Traffic control system can be automated by using the mobile based system. Every user in the system will have to register in this application. There are four types of users in this application. Traffic police after login will set the location of the signal and once its set then the data captured from their will be set in the server which will be thrown to normal users. Traffic police will have an user interface where they can punch in the current status of the traffic at that location. Similarly, all different location will set their own status and based on that the results will be shown to user. Car entry module is accessible to traffic police as well as regional police to enter the data of criminal vehicles and stolen vehicles which get stored in centralized server. So they get an option to fed in the data of car and their car number. Every toll and parking area will be using a web based system which will help them to enter the data of vehicle which is passing on from that junction. After entering the vehicle number, it will automatically check in the server whether the vehicle is clean or its involved in some or the other criminal activity. Based on it the result will be displayed on the users screen and if its really criminally involved vehicle then a provision to the user is provided that they can push a message to the concern police department. User traffic view module will facilitate the user to retrieve the data from the server and will display the live and current status of the traffic at different location.

Keywords: Smart phones ; GPS; Algorithms.

I. INTRODUCTION

Traffic problems nowadays are increasing because of growing number of vehicles and the limited resources provided by current infrastructures. On intersecting roads, huge number of vehicles leading to congestion and heavy traffic. Traditional traffic controls (warning signs, stop signs, etc.) are used in most areas but these are sometimes inadequate to address the problem. Since the expansion of the traffic network is no longer a socially attainable solutions, the existing control system have to be used in more intelligent way in order to increase traffic throughput and decrease total travel times. This system will have multifunctional operations. Nowadays, people use the radio channels and phone lines to inform the department about the traffic information. These information are fed and retrieved by the radio channels to distribute all over the city. Our system completely focuses on customers, our employees, growth, innovation and efficiency. All of these elements will drive us towards success and show us as one company that can perform and give value for money. Today, Mobiles are the most easily available communication devices. Traffic control system can be automated by using the mobile based system.

Every user in the system will have to register in this application. Every user during login will be verified and only valid user will be able to login into the application. There are four types of users in this application. Traffic

police after login will set the location of the signal and once its set then the data captured from there will be set in the server which will be thrown to normal users. Traffic police will have an user interface where they can punch in the current status of the traffic at that location. Similarly, all different traffic police will set their own status and based on that the results will be shown to user. Car entry module is accessible to traffic police as well as regional police to enter the data of criminal vehicles and stolen vehicles which get stored in centralized server. So they get an option to fed in the data of car and their car number. Its been done through android application.

Every toll and parking area will be using a web based system which will help them to enter the data of vehicle which is passing on from that junction. After entering the vehicle number, it will automatically check in the server whether the vehicle is clean or its involved in some or the other criminal activity.

Based on it the result will be displayed on the users screen and if its really criminally involved vehicle then a provision to the user is provided that they can push a message to the concern police department. User traffic view module will facilitate the user to retrieve the data from the server and will display the live and current status of the traffic at different location.

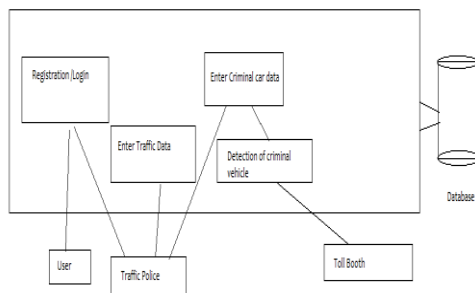


Fig.1 System Architecture

II. LITERATURE SURVEY

In 1868, illuminated traffic signal was installed in London near the houses of parliament. The device had semaphore arms to signal drivers and pedestrians during the day and it had red and green lenses illuminated by gas for viewing at night. The police officer would turn the signal 90 degrees to position the semaphore arms and the coloured lenses towards traffic as needed. This was the first recorded use of illuminated red and green colours to control traffic. In 1912 Salt Lake City, UT police detective Lester Wire but a two-colours traffic signal that use electric illumination. In 1914 the American Traffic Signal Company installed two-colour signals in Cleveland, Ohio.

In 1920 William Potts, a Detroit Traffic Police Superintendent, design the first 4-way three-colour traffic control device that is recognised as the basis for the modern traffic signal. In India, Mumbai's traffic system is controlled by "Real Time Intelligent Urban Traffic Management Technology".

Nowadays, people use the radio channels and phone lines to inform the department about the traffic information. These information are fed and retrieved by the radio channels to distribute all over the city. It is very hard to maintain the records and catch the criminals. So our project will be digitalizing all the necessary. Our project will be digitalizing all the necessary and regular workload of Police Department with improving efficiency and accuracy.

III. METHODOLOGY

Registration and Login for the system is that every user in the system will have to register in this application. Only after registration user will be able to use the application and they can login into it with help of their own credentials. Every user during login will be verified and only valid user will be able to login into the application. There are four types of users in this application. All four has to register and then only they can get an access to it.

Traffic police traffic entry module will allow the traffic police to login and then he will set the location of the signal and once its set then the data captured from there will be set in the server which will be thrown to normal

users. Traffic police will have an user interface where they can punch in the current status of the traffic at that location. Similarly, all different location will set their own status and based on that the results will be shown to user.

The Car entry module is accessible to traffic police as well as regional police to enter the data of criminal vehicles and stolen vehicles which get stored in centralized server. So they get an option to fed in the data of car and their car number. Its been done through android application. Toll and Parking system will allow Every toll and parking area to be used as a web based system which will help them to enter the data of vehicle which is passing on from that junction. After entering the vehicle number, it will automatically check in the server whether the vehicle is clean or its involved in some or the other criminal activity. Based on it the result will be displayed on the users screen and if it is really criminally involved vehicle then a provision to the user is provided that they can push a message to the concern police department. User traffic module will facilitate the user to retrieve the data from the server and will display the live and current status of the traffic at different location.

IV. DATA COLLECTION

Equipment required to carry out the experiment are on Android phone, A server to process the data. A smart phone is pre-installed with an application called "Crime and Traffic Management". Basically there are two modules, first is traffic measurement and second is criminal vehicle detection. Our aim is to develop the system for traffic police to keep a control on traffic. It will have multifunctional operations. The system will firstly measure the traffic density at different signals which is done manually by traffic police. Secondly it will also convey the users about density of traffic. The traffic police will upload the status of traffic of the particular area. The user can retrieve the traffic status of an area which is uploaded by the regional traffic police. The users can do this by just entering the name of the location whose traffic status is to be retrieved. The GPS system is used to do all this. With the help of GPS, the location can be uploaded and retrieved. This system is customized and will inform the users about the traffic in particular area. .

The criminal detection application will maintain a record of the vehicle identification number and the corresponding crimes charged on that number. This is uploaded by the traffic police. It will help the police to detect criminals missing in their record in shopping malls and toll plazas.

V. CONCLUSION AND FUTURE WORK

This paper explores features and relationships between acceleration data, collected by smart phones, and road roughness condition. With the assumption that rough estimation of road surface condition from smart phones would be helpful enough for road management and planning, provided that the approach is very low cost, easy to operate and can be implemented frequently.

An experiment is carried out to obtain data. The data is checked and matched with referenced data. The matched data then cut into sections representing many 100 meter road sections. Analysis is carried out in frequency domain to calculate magnitudes of acceleration data. An adopted group of road condition indexes have been proposed. From the analysis, it has been found that acceleration data from smart phones has linear relationship with road roughness condition. However, the significant of relationship depends on speed in which it is considerably significant when speed is less than 60kph. Furthermore the relationship also partly depends on vehicle type and device. Based on the condition indexes, similar tendency of the classification of the sum of magnitudes of acceleration vibration is observed.

Although we can conclude that a simple model may be sufficient to estimate road roughness condition from acceleration data obtain by smart phones, there are still many issues that have to be dealt with in our future works to make the approach practically applicable. Main focus in the future works includes:

- Detail studies on the features and the relationship of the acceleration data and road roughness condition. Realistic smart phones setting, not fixed coordinate, will also be considered.
- Explore approaches to estimate road surface condition from many anonymous road/smart phone users, who agree to participate. Plenty of data for many different road sections would enable us to build models to simulate and estimate road roughness condition and soundness of road infrastructure as a whole.

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