



Traffic Accident Evaluation using MATLAB

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DOI: <https://doi.org/10.34256/irjmt19211>

ABSTRACT

The main aim of this paper is to analyze the road traffic accidents in metro-politian city level at all intersection points. Analysis shows that the distribution of road accidental deaths and injuries in cities varies according to age, month and time. To develop the system that would avoid the accident by sending the notification whether the area is most traffic and there are so many accidents occurred in that place. The most accident precaution systems are available but those are not enough to users, so this new system may bring comfort zone to the users. Already know that high number of accidents is happened because of high traffic at peak hours. Reason of traffic was no of vehicles are increased. so the main concept of the system has to be done using the no of vehicles at every zone. And we use some clustering methods to denote that which zone was in active and un-active state. The user who travelling in the night that should be most useful for them.

Keywords: Traffic accidents, Clustering, Flash board, MATLAB, number of vehicles.

1. INTRODUCTION

Road accidents are higher in extreme weather and during working hours. The Analysis of road accident scenario at state and city level shows that there is a huge variation in fatality risk across states and cities. Fatality risk in 16 out of 35 states and union territories is higher than the all India. Although, burden of road accidents in India is marginally lower in its metropolitan cities, and almost 50% of the cities face higher fatality risk. In general, while in many developed and developing countries, road safety situation is generally improving, India faces a worsening situation. There is thus an urgent need to recognize the worsening situation in road deaths and injuries and to take appropriate action. We are developing the system that can be used to avoid the accidents in intersection of roads and major traffic areas. Using clustering methods, merging the all intersection the roads. For this system we develop a manual report of particular four zones. That report containing number of vehicles about north, west, east, and south. Using the report we have drawing the graph that showing the number of accidents occurred and number of vehicles in current location. From the graph which location has the high percentage of Accidents and vehicles at a time the Flash board that show the alert message to the drivers.

2. EXISTING SYSTEM

Previous works are contain only about traffic risks, high risky location and some precaution methods. Some works have collected the reasons of those accidents like drivers unawareness, improper driving experience and their age. Other systems are tried to collect the fatality, injury

types and compare them using some classifiers. Several studies related to traffic data mining have been reported. Most of these studies have focused on flow prediction and path exploration Bashah and Hill, whose work involved data mining of traffic accidents, analyzed the causes of accidents using prediction methods. Krishnaveni and Hemalantha focused on prediction and characterization of the severity of injury resulting from traffic accidents. Chang and Chen analyzed the factors underlying frequent accidents. Bayamet *et al.* analyzed the relationship between driver's age and accidents. Chong *et al.* adopted machine learning methods to model the severity of injury due to traffic accidents.

2.1 Disadvantages

The task of driving can be easy or difficult depending on the momentary task of driver's skill to control their vehicle correctly. The relationship between driving behavior and number of traffic accidents at any location cluster analyzed by forward stepwise procedure. Those previous works are just collected the data but they are not developing any precaution methods to peoples. Works are only developed for traffic problems and there is no articles are worked over the traffic accidents. Necessity of Completing Risk Information. Necessity of Discovering Global Knowledge of Traffic Risk.

3. PROPOSED SYSTEM

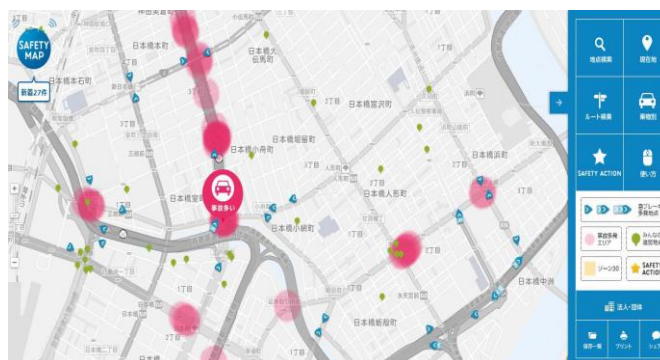


Fig.1 Accident zone density using clustering

Developing the system to avoid the accidents in most Traffic Area. For this system we develop a manual report of particular four zones. That report containing number of vehicles about north, west, east, and south. Using the report we have drawing the graph that showing the number of accidents occurred and number of vehicles in current location. From the graph which location has the high percentage of Accidents and vehicles at a time the Flash board that show the alert message to the drivers. So the Drivers are getting alerted when they saw the message alert. When there is low percentage at a Graph the flash board is un-active. The flash board containing the three lights that is red, yellow, and green. Red light showing the most dangerous area, green light showing the low number of vehicles and yellow light show the average number of vehicles.

3.1 Advantages

By using this system user can know about a dangerous zone at each place, where he/she travel. When people are entered into a unknown places, this system may help them. If the alert message is reached to the users then they become careful and make some lower speed limit. From the result of clustering, it creates a ranking of risky locations. Locations could be sorted by the degree to which they belong to the risky cluster and comparing the number of accidents occurring at the location. It provide an map notification which is used to indicate a More number of accident on which path the user travel.

4. PROPOSED SYSTEM ALGORITHM

4.1 Clustering Algorithm

Clustering is the task of grouping a set of objects. To develop a system clustering method was mainly used particularly super clustering method. Super clustering was used at where thousands and millions of data points are to be clustered. Clustering is a process of partitioning a set of data into a set of sub-classes, called clusters. Help users understand the natural structure in a data set. Used either as a stand-alone tool to get insight into data distribution or as a preprocessing step for other algorithms. Connectivity-based clustering, also known as hierarchical clustering, is based on the core idea of objects being related to nearby objects. These algorithms connect "objects" to form "clusters" based on their distance from one another. A cluster can be described largely by the maximum distance needed to connect parts of the group. At different distances, different clusters will form, which can be represented using a dendrogram, which explains where the common name "hierarchical clustering" comes from: these algorithms do not provide a single partitioning of the some data, but instead provide an extensive hierarchy of clusters that merge with each other. In a dendrogram, the y-axis marks the distance at which the clusters merge, while the objects are placed along the x-axis such that the clusters don't mix.

5. COMPONENTS

5.1 Power supply (Adapter)

A DC power supply is one that supplies a voltage of fixed polarity to its load. The purpose of a power supply is to convert the electric current from a source to the correct power the load. At the result, power supplies are referred to as electric power converters. Some power supplies are stand-alone pieces of equipment, while others are built into the load appliances that they will give power.

5.2 PIC (peripheral interface controller)

This powerful yet easy-to-program (only 35 single word instructions) CMOS FLASH-based 8-bit microcontroller packs Microchip's powerful PIC® architecture into an 40- or 44-pin package. read-only memory (ROM) or field-programmable EPROM for program storage, some with provision for erasing memory are only models of PIC. Flash memory was mostly used for program storage, and newer models allow the PIC to reprogram itself. Program memory and data memory are separated.

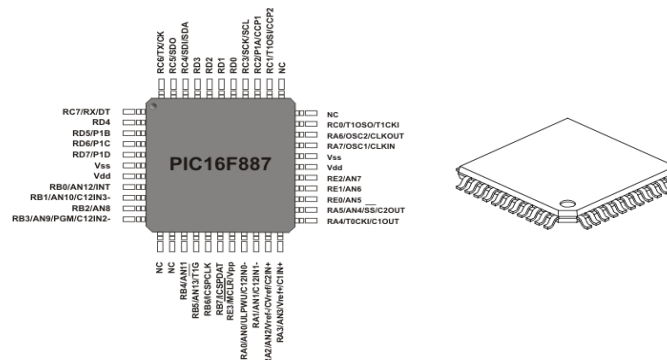


Fig2. PIN diagram of PIC

5.3 LCD (Liquid-crystal display)

LCDs are used to display arbitrary or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. LCDs should either be normally on or off, depending on the arrangement of polarizer. For example, a character positive LCD with a backlight have black lettering on a background that is the color of the backlight, and a character

negative LCD have a black background with the letters being of the same color as the backlight. Optical filters are added to white on blue LCDs to give them their characteristic appearance better.

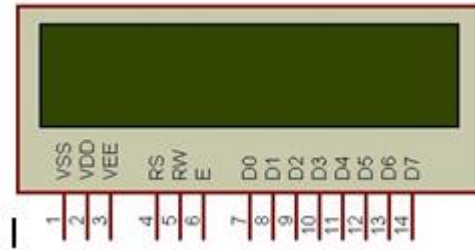


Fig 3. Pin diagram of LCD

5.4 HC-05

Is an easy to use Bluetooth SPP (serial port protocol) module designed for transparent wireless serial connection setup and its range about 10 meters. **HC-05 Bluetooth Module** is an easy to use Bluetooth Serial Port Protocol module, designed for wireless serial connection setup. The **HC-05** has two operating modes, one is the Data mode in which it can send and receive data from other Bluetooth devices and the other is the AT Command mode where the default device settings can be changed.

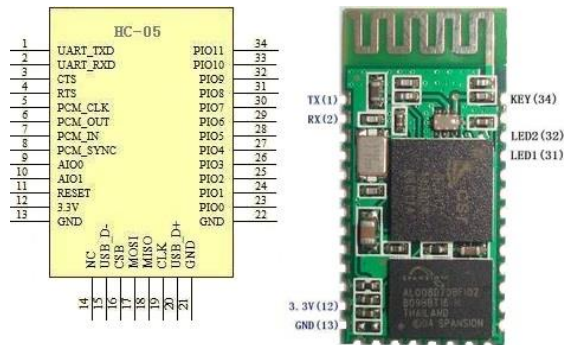


Fig 4. pin diagram of HC-05 BLUETOOTH

5.5. UART

A universal asynchronous receiver-transmitter is a hardware device for asynchronous serial communication in which the data format and transmission speeds. The electric signaling levels and methods are handled by a driver circuit external. UART stands for Universal Asynchronous Receiver/Transmitter. It's not a communication protocol like SPI and I2C, but a physical circuit in a microcontroller. A UART's main purpose is to transmit and receive serial data.

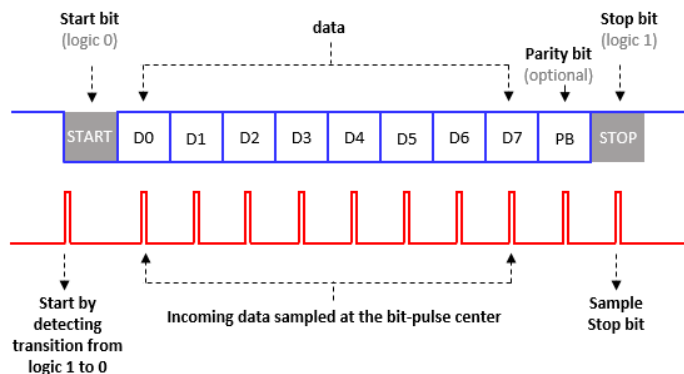


Fig5. pin diagram of UART

6. WORKING MODULE

In this module, for experiment purpose, peripheral interface controller, liquid compact display, UART for data configuration and this are manipulated in MATLAB .Collecting the manual or original data about particular four zones. whether the number of vehicles and how many number of accidents occurred in the current locationBy using the clustering methods .we merge the all of the information about the road.The manual report containing the data of four zones that is east,west,north,south . Using the report we have drawn the graph.The flash light is activated or deactivated based on the graph that is whether the graph is high or lower degree. If the number of vehicle is high so the flash board is activated and then the people can drive carefully.

7. CONCLUSION

The work is the implementation of Traffic accident evaluation system using sensors and micro controllers. That will absolutely reduce the high number of accident in most traffic area.By using the system People are getting alerted about dangerous zone.The people driving carefully with the help of the alert messages and they are reaching their destination successfully.

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Conflict of Interest

None of the authors have any conflicts of interest to declare.

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