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Design and Implementation of a Model to Retrieve Safety Information of Moving Vehicle

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ABSTRACT: It is known that the technological advancements are increasing at a faster pace. But the utilization of technologies in various sectors is very low. It is commonly known that the accidents are increasing in our day-to-day life. There are lot of Hit and Run cases registered in a day. So people may tend to lose their life. And also the victim would escape from the accident. The existing system consists of accident indication system using GSM module. Here whenever the accident is occurred then a text message is transmitted to the concerned person indicating the accident using GSM module. The proposed model is to retrieve the safety information of moving vehicle. This consists of a vibration sensor to detect the unusual vibration of the vehicle (which may be caused by accident). The project consists of a MATLAB section. Here when vibration sensor sense the vibration, the video of the vehicle with license plate is provided to the MATLAB section. The image processing is done by the MATLAB section. Once the processing is done, then the license number of the vehicle is transmitted to the controller using UART communication protocol. The data is received by the controller. Once the controller receives the data, then it uploads the plate number to the server using IOT so that it can be retrieving later.

I. INTRODUCTION

This paper presents the design and implementation of a model to retrieve safety information of moving vehicle. The proposed system consists of a vibration sensor to detect the unusual vibration of the vehicle (which may be caused by accident). The project consists of a MATLAB section. When vibration sensor sense the vibration, the video of the vehicle with license plate is provided to the MATLAB section. The image processing is done by the MATLAB section. Once the processing is done, then the license number of the vehicle is transmitted to the controller using UART communication protocol. The data is received by the controller. Once the controller receives the data, then it uploads the plate number to the server using IOT so that it can be retrieving later.

Measuring, displaying, and analyzing linear velocity, displacement and proximity, or acceleration are sensed by the vibration sensor. The accelerometers range between 10 and 100 mV/g; higher and lower sensitivities where also available. During measurement it is mandatory to understand the range of vibration amplitude level to select the correct sensitivity for an application. Digital processing is used to create, process, communicate, and display the digital image. Digital image processing algorithms is used to convert signals from an image sensor to digital images. In order to improve clarity, remove noise and other artifacts. It is a serial communication interface which consists of two lines for sending (TRANSMITTER) and receiving (RECEIVER) data. Since it is an asynchronous communication interface, it does not need to send clock along with it as that of the synchronous communications. Our old computer's RS-232 serial port is of UART communication standard. The Microchip's PIC Microcontrollers have embedded in USART Module. USART stands for Universal Synchronous Asynchronous Receiver. A cloud database which runs on a cloud computing platform, which access to provide services. Database services consists of scalability and high availability of the database. Database services make software-stack transparent to the user.

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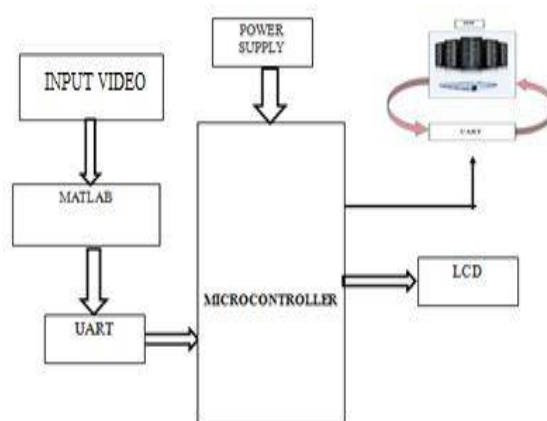
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II. SYSTEM DESCRIPTION

When vibration sensor senses the unusual movement of the vehicle it will extract the license plate number (which may be caused by the accident). The video with the license plate number and the color of the vehicle will be uploaded to the MATLAB section. The image processing is done by the MATLAB section. Once the processing is done, then the license number of the vehicle is transmitted to the controller using UART communication protocol. The data is received by the controller. Once the controller receives the data, then it uploads the plate number to the server using IOT so that it can be retrieving later.

TRANSMITTER:



Transmitter is the electronic device to transmit the data to the receiver, the video is given as a input to the MATLAB section, the controller which receive the data send a serial port using UART communication protocol, these data is send to the receiver part.

RECEIVER:



The data is stored in the cloud database which can be accessed using internet.

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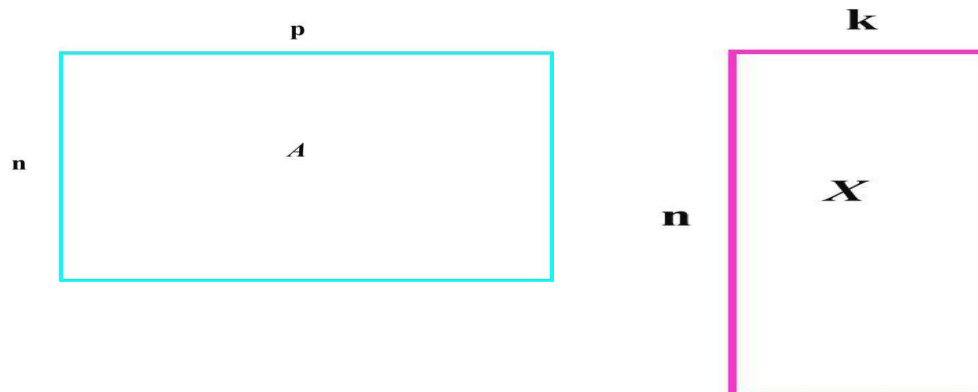
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III. METHODOLOGY

The methodology used in this project is MATLAB and Cloud which is the user interface. The MATLAB is used to extract the license plate number and color of the vehicle using image processing. The information such as license plate number and the color of the vehicle will be stored using IOT. Hardware interface consists of microcontroller and PC. The PIC controller is used to transmit the data as serial port using UART communication protocol. The PC is used to have the MATLAB software to extract the license plate number and color of the vehicle. MATLAB and EMBEDDED C are the software interface. The MATLAB is used to extract the license plate number and color of the vehicle using image processing. The embedded c is used for the controller and MATLAB to extract the license plate number and color of the vehicle. And finally communication interface is cloud. Once the controller receives the data, the collected information gets stored in the server using IOT and it is monitored anywhere using internet

IV. ALGORITHM

Summarization of data with many (p) variables by a smaller set of (k) derived (synthetic, composite) variables.



Takes a data matrix of n objects by p variables, which may be correlated, and summarizes it by uncorrelated axes (principal components or principal axes) that are linear combinations of the original p variables the first k components display as much as possible of the variation among objects.

IMPLEMENTATION



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In this paper, we design and implement a model to retrieve the safety information of a moving vehicle. The license plate number of the vehicle is extracted from the video which is uploaded to the MATLAB section, image processing is done in the MATLAB section. The license plate number of the vehicle is stored in the cloud database

V. LIMITATION

Residual variation is information in which A is not retained in balancing act between clarity of representation and oversimplification

Probably the most widely-used and well-known of the “standard” multivariate methods invented by Pearson in 1901 and Hostelling in 1933, which is first applied in ecology by Good all in 1954 under the name “factor analysis”.

1. When two car dashing each other, the inner system will get damaged.
2. Since the two car hits each other, the video will not be clear to extract the license plate number.
3. Real time implementation is difficult.

VI. FUTURE SCOPE

1. Enhancement of limitation
2. To provide security for the data which is extracted

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