

Intelligent Safety Using Smart Blackbox

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Abstract

This paper exhibits a keen security strategy to gather the wellbeing data around an accident utilizing smart black box. Routinely, in non-systematical technique if data is required about accident or crime happened examiners gets the conceivable pieces of information from the general population who are going in that way. We are proposing an efficient strategy for gathering that data utilizing an astute keen black box that examines and assembles data of neighboring vehicles while driving. For this, we are including a capacity for putting away video, tag number and shade of neighboring vehicles utilizing raspberry pi 3. Here we are utilizing video adjustment system to get balanced out video arrangement and expels vibration. Also, the accident auto sends an alarm message to crisis responder for quick recuperation. As opposed to existing methodologies, we are adding IOT usefulness to get data ask for message from the server and transfer the coordinated data to the server.

I. INTRODUCTION

At the point when an accident or crime happens, data related with those accident is expected to discover the reason for the accident or the guilty party of the crime. In non-systematical strategy the examiner assembles bits of gossip or asks the spectators who go by that place at the season of accident. We are proposing another technique utilizing black box to discover how an accident happened. Discovery innovation has for some time been utilized universally in planes, serving, in addition to other things, as a gadget to recognize the reason for a noteworthy accident. This idea is currently being connected to vehicle discovery gadgets, with the goal that auto collisions can be recorded, and the driver's voice and crash pictures are saved.

We add a few extra functionalities to the current normal discovery framework. The main usefulness is investigating and removing the key data of the encompassing vehicles. While driving, video adjustment strategy is used to extract the number plate of the vehicle without any vibration disturbances. Without video adjustment system the video obtained from the camera will be trembled because of vehicle movements. It can be partitioned into two classes, equipment (mechanical) and programming (PC program) methods. Equipment

system is executed utilizing mechanical gadgets to diminish the vibration of the structure holding the camera. Be that as it may, this procedure can't expel all vibrations due to some fast developments in encompassing vehicles. To conquer this, we utilize programming method which balances out the video arrangement.

We additionally include the acknowledgment motor which separates the tag number and shade of the going by vehicles. Also, we add the correspondence motor to get the data ask for from the server and transfer the put away data. GPS motor is likewise added to record the time and driving course data, which are utilized to coordinate the put away data with that demand. At the point when the server communicates data of some time and place, our clever Blackbox framework gets that demand message from the server, coordinates the time and place tag and after that send the coordinating data to the server.

Our framework initially identifies the path of the street and neighbor vehicle. At that point considering the path and vehicle data we threshold the tag look locale and distinguish the area of the plate rectangle. After that we apply tag number acknowledgment calculation utilizing versatile thresholding, naming, OCR (Optical Character Recognition). Since the data accumulated could contain the private information, we apply the security calculation for the putting away and exchanging of the information from and to the server.

II. SYSTEM DESCRIPTION

At the point when the accident or crime happens, it is accounted for to the police server framework and data ask for message containing the time and area of the accident is communicated to the keen discovery framework. The black box with the acknowledgment and GPS module coordinates the demand message with the information in database (DB) framework. If the framework finds the coordinated information, at that point it consequently transfers that data without the client intercession to the server.

This is actualized to decide how accident happens while driving out and about way utilizing a PC vision based savvy Blackbox framework. Raspberry pi 3 is a fundamental piece of this framework which is data gathering (Blackbox) framework. Web camera is utilized to identify the front of the vehicle and tag that data is put away utilizing raspberry pi.

Accelerometer sensor, LCD and GPRS are interfaced to pic 16F877A microcontroller. These are utilized to identify the vehicle while driving. GPS is utilized to recognize the area data of the vehicle.

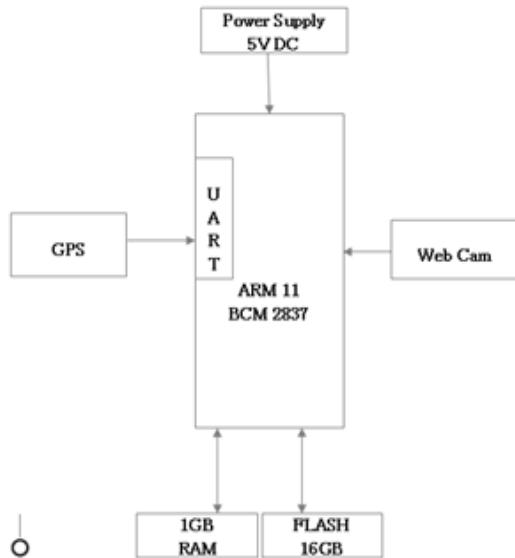


Fig-1 message sender

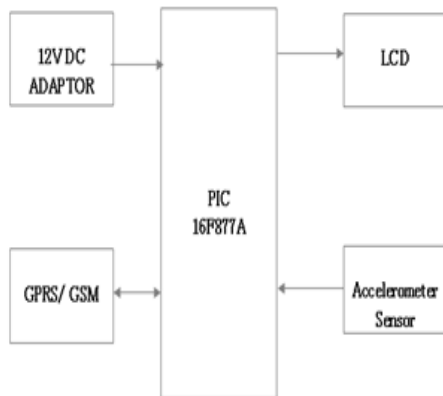


Fig-2 Accident vehicle

A) Blackbox

Blackbox has size of about advanced mobile phone which records speed, separate voyaged and the season of day or night, amid voyaging when we are out and about. The parts of Blackbox are Raspberry PI 3, Web Cam, GPS module, PIC 16F877A controller, Accelerometer sensor, LCD.



Fig-3 blackbox

B) Raspberry Pi 3

The Raspberry Pi is a charge card estimated PC which can be utilized for a considerable lot of the things that your work area PC does, like word-handling and recreations. In any case one key viewpoint that makes the Raspberry Pi so splendid is its capacity to execute "Python" coded programs. This permits us alongside the General-Purpose Input Output (GPIO) pins to make programs that can control anything from a solitary LED to opening your carport entryway.

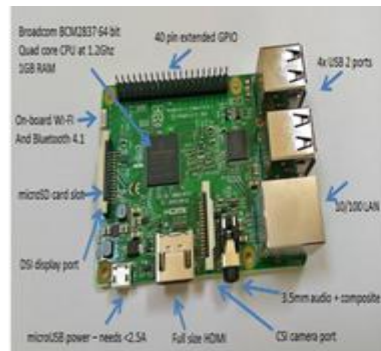


Fig-4 raspberry pi 3

C) Pic Microcontroller

Programmable Interface controller(pic) are electronic circuits that can be modified to complete a tremendous scope of assignments. It highlights are 12-bit wide code memory, a 32-byte enlist record, and a small two level profound call stack. They are spoken to by the PIC10 arrangement, and by some PIC12 and PIC16 gadgets. Gauge gadgets are accessible in 6-stick to 40-stick bundles. They can be modified to be clocks or to control a generation line and substantially more.

D) Web Cam

AH5020B23-S1-2Z1 is a USB Video Class (UVC) agreeable camera module with video include, intended for convenient journal PC picture applications.

It not just presents to UXGA determination (1600X1200) for picture applications to take still picture, yet in addition offers video stream for end client to see/record movement picture through USB 2.0 interface. It can bolster VGA (640x480) determination up to 30 fps at YUY2 mode. The MEMS (Micro Electro Mechanical) spinners procedure is utilized for enhancing the video nature of camera.

Web camera measure the rate of revolution. In this manner, gyro information should be coordinated just once to acquire the cameras introduction.



Fig-5 web cam

E) GPRS

General Packet Radio Service (GPRS) is a bundle situated Mobile Data Service accessible to clients of GSM (Global System for Mobile Communications). It has information rate between 56 to 114 Kbit/s. GPRS can be utilized for administrations, for example, Wireless Application Protocol (WAP) get to, Short Message Service (SMS), Multimedia Messaging Service (MMS), and for Internet correspondence administrations, for example, email and World Wide Web get to.

F) Accelerometer Sensor

An accelerometer is an electromechanical gadget used to gauge speeding up powers. Such powers might be static, like the persistent power of gravity or, as it is the situation with numerous cell phones, dynamic to detect development or vibrations.

Increasing speed is the estimation of the adjustment in speed, or speed partitioned by time. For instance, an auto quickening from a stop to 60 mph in six seconds is resolved to have an increasing speed of 10 mph for each second (60 separated by 6).

III. ALGORITHM: OCR

Optical character acknowledgment (likewise optical character per user, OCR) is the mechanical or electronic change of pictures of wrote, written by hand or printed content into machine-encoded content, regardless of whether from a filtered record, a photograph of an archive, a scene-photograph (for instance the content on signs and bulletins in a scene photograph) or from subtitle content superimposed on a picture (for instance from a transmission). It is broadly utilized as a type of data passage from printed paper information records, regardless of whether international ID reports, solicitations, bank proclamations, electronic receipts, business cards, mail, printouts of static-information, or any reasonable documentation. It is a typical strategy for digitizing printed messages with the goal that they can be electronically altered, sought, put away more minimalistically, showed on-line, and utilized as a part of machine procedures, for example, intellectual figuring, machine interpretation, (removed) content to-discourse, key information and content mining. OCR is a field of research in design acknowledgment, computerized reasoning and PC vision.

IV. SIMULATION RESULT

For simulation, we are utilizing proteus programming. We settle a specific incentive as threshold for instance 350. The variable resistors are utilized to change the esteem. The variable resistors are associated with PIC controller. If the esteem is not as much as threshold, it brings about the accompanying.

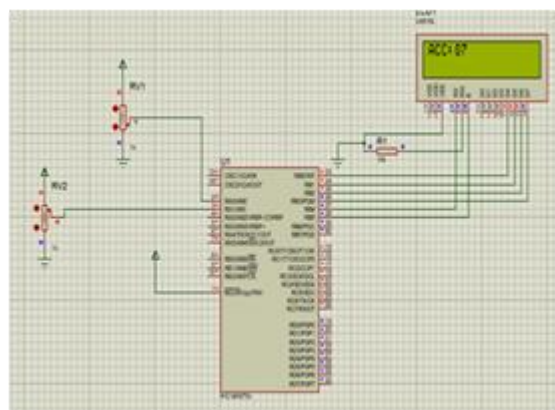


Fig-6 below threshold level

At the point when the esteem is over the edge then the accident happened is shown in the LCD.LCD has 16*2 characters.it contains two modes. Order mode and information mode. Charge mode is spoken to as 00(LOW) and DATA mode as

FF (HIGH). Rather than utilizing 8-bit microcontroller we can utilize 4-bit for our benefit

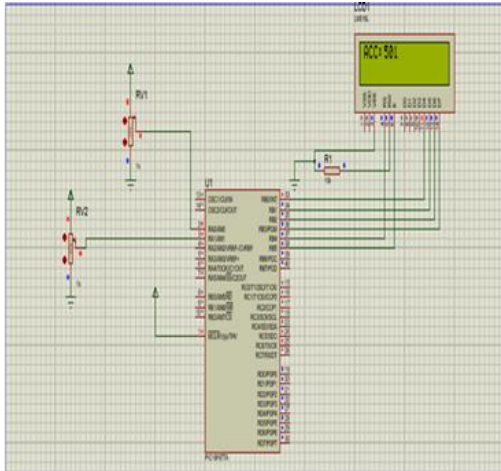


Fig-7(1) above threshold level

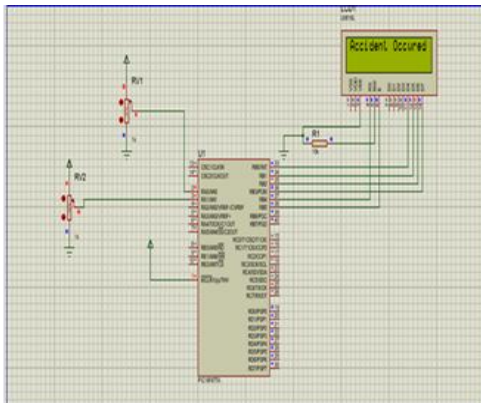


Fig-7(2) above threshold level



Fig-7(3) capturing the number plate of a vehicle

LCD reads the data 24 as follows
 24 represented in binary as 0010 0100
 0010 = MSB
 0100 = LSB

We have to left shift the original data by 4 bits it becomes as 0010 which is printed as MSB.

For the LSB the original data AND with 0F.
 0010 0100



Fig-7(4) Information put away in server after accident

&& 0000 FFFF
 0100=LSB

IV. CONCLUSION

By this way it reads the data and checks the threshold value. In this paper, we proposed an insightful Blackbox based wellbeing framework. We added extra functionalities to the standard auto Blackbox, for example, tag number and shading acknowledgment of neighboring vehicles and IOT usefulness to get the data ask for message and transfer the put away data.

A video adjustment calculation is produced and actualized with commonsense video frameworks. The framework comprises of a camera, remote video transmitter, video collector, and a PC. Our trial comes about exhibit that our strategy accomplishes an identification precision that is adequate for reasonable applications while running continuously.

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