

BROX-AUTO TECH AUTOMIZED SYSTEM

Dr.Beulah david
Department of Computer
Science
Jeppiaar Engineering College
Chennai, India

Anto abijit fernando J [1]
Department of Computer
Science
Jeppiaar Engineering College
Chennai, India

Sajishnu J.S[2]
Department of Computer
Science
Jeppiaar Engineering College
Chennai, India

Saran kumar .S [3]
Department of Computer
Science
Jeppiaar Engineering
College
Chennai, India

ABSTRACT

I. Introduction

Internet of Things (IoT) is nothing but the devices (things) communicating with each other by using the internet. IoT is a trend-setting innovation in which all the data from sensors is stored in the cloud where it can be easily accessed from the cloud. Sensors and actuators for gathering the data and sending across the internet are also included in this advancement. We use cloud not only to store data but also for data analysis, gathering, visualization. The key characteristics of cloud include on-demand service provision, resource pooling and elasticity. Internet of Things (IoT) means communicating of devices with each other over the internet. Some applications of IoT are Smart energy, smart city health monitoring system. In IoT data is transmitted from sensors and they can be stored and analysed by diverse IoT platforms like Blynk, Thingier.io, Thingspeak. In the present situation no less than one individual in the family has a vehicle, In the present age everybody inclination is changing regarding time, and they have to complete their works in restricted time, so the need to complete the work as fast as possible, because of that tendency they drive the vehicles very fast risking their lives in order to complete their work resulting to the cost of their life's. In some cases without the intervention of us even we may fall to accidents due to others fault. IN this present age the vast majority of them surmise that driving quick is form and those individuals think it is an excite driving quick.

II LITERATURE REVIEW

1. Smart helmet

We are developing a smart helmet using the internet of things (IoT) technology, in which we ensure the safety of the bike rider. by avoiding road accidents of the bikers by, The system detects whether the rider is wearing a helmet or not if he wears then only the vehicle will start.It detects the amount of alcohol consumed by the rider, if the rider has over drunk, the bike engine will not start. When the bike rider meets with an accident it detects it and gives the notification to the registered contact with a location. For the safety of the

bike rider, we are using the latest technology IoT, this technology provides the advance techniques for alerting the rider and ensures that rider follows the rules and regulations. For two-wheeler rider, Helmet is the most basic protection device and it is necessary for every bicycle or motorbike riders. But it does not ensure the safety of the rider and the rider won't follow the traffic rules. Most of the people use ordinary helmet just to avoid giving challan to the traffic police, these helmets do not ensure the safety of the driver. So, to overcome these problems we need to use the smart helmet [1]

2. Electric vehicle

Electric bike is a bike which is driven with the help of battery which is coupled to electric motor. Main principle: It works on the principle that the electromotive force of an A.C. motor which receives electrical energy stored in D.C. battery is converted with the help of D.C. to A.C. converter. Working medium: Here for the motivation of prime mover the chemical reaction takes place from which an energizing current is evolved which is responsible for the working. The working medium is sulphuric acid which is separated into columns of H ions and negative SO₄ ions when mixed with water. If the poles of the cell are connected by a load, the flow of the electrons is from negative to positive. A bivalent positive lead is produced from neutral lead combined with bivalent negative of SO₄ group to form lead sulphate. This results due to scarcity of electrons at negative pole. Through the electron supply a bivalent positive lead is produced at positive pole from quadrivalent positive lead rotated by the chain drive mechanism on which the other two remaining sprocket wheels are installed. [2]

3.GSM based system.

urbanization has increased tremendously. At the same phase there is an increase in waste production. Waste management has been a crucial issue to be considered. This paper is a way to achieve this good cause. In this paper, smart bin is built on a microcontroller-based platform Arduino Uno board which is interfaced with GSM modem and Ultrasonic sensor. Ultrasonic sensor is placed at the top of the

dustbin which will measure the stature of the dustbin. The threshold stature is set as 10cm. Arduino will be programmed in such a way that when the dustbin is being filled, the remaining height from the threshold height will be displayed. Once the garbage reaches the threshold level ultrasonic sensor will trigger the GSM modem which will continuously alert the required authority until the garbage in the dustbin is squashed. Once the dustbin is squashed, people can reuse the dustbin. At regular intervals dustbin will be squashed. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on roadside [3]

4. serial communication

Serial Communication Computers transfer data in two ways: 1) Parallel: Often 8 or more lines (wire conductors) are used to transfer data to a device that is only a few feet away 2) Serial: To transfer to a device located many meters away, the serial method is used. The data is sent one bit at a time. PC use RS232 interfacing standard for Serial Communication. An interfacing standard RS232 was set by the Electronics Industries Association (EIA) in 1960. The standard was set long before the advent of the TTL logic family, its input and output voltage levels are not TTL compatible. In RS232, a 1 is represented by -3 ~ -25 V, while a 0 bit is +3 ~ +25 V, making -3 to +3 undefined. [4]

5. remote controlled vehicle system

Radio-controlled or remote-controlled toys, popularly called RC toys, are self-powered and can be controlled from a distance using a remote that works with radio waves. 1. When we push the control, the transmitter sends a specific number of electrical pulses corresponding to that action through the air. The application allows you to control an Arduino based RC car over Bluetooth. This is done using a Bluetooth enabled Android phone. ... The app lets you control the car with either buttons or the phone's accelerometer. A slider bar allows you to control your car's velocity if the car's control circuit has this feature. Long distance control range: with 2.4GHz signal propagation technology, [5]

III IMPLEMENTATION

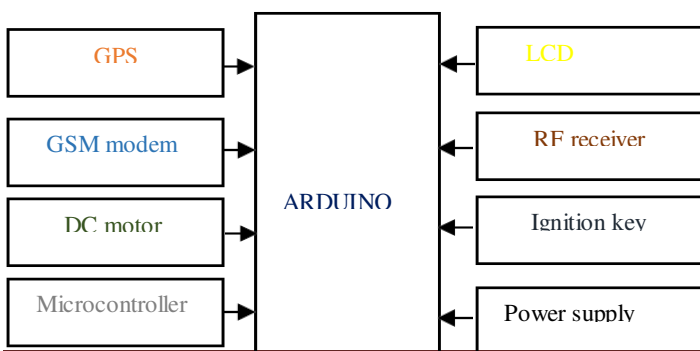


Fig.1 Architecture Diagram

Our proposed system uses Helmet section

This section comprises an alcohol sensor, switch, accelerometer, microcontroller and RF transmitter. The switch examines whether the rider is wearing a helmet or not and alcohol sensor senses the rider is intoxicated or not and transmits the signal through RF transmitter to the bike section. Alcohol sensor: An alcohol sensor detects the attentiveness of ethanol in the air when the drunk person breathes near this sensor, it discloses the alcohol gas in his breath and obtains the output based on alcohol concentration. It is placed in the helmet such a way that it can easily sense the breath of the person. It is an electromechanical device which is used to measure acceleration forces and the forces will be static or dynamic forces. An accelerometer will measure the vibration of the material and it is employed to continuously monitor the head inclination of the rider and position of the helmet and helpful for calculating the likelihood of accidents.

RF -MODULE

RF modules are 434 MHz transmitter and receiver components. RF transmitter is the wireless data transmitting device. It transmits serial data to the receiver through an antenna which is connected to the 4th pin of the transmitter. It transmits the helmet data to the bike receiver through the radio frequency signals and microcontroller will process the received data. This section comprises RF receiver, Microcontroller, Ignition key, GPS LCD, GSM modem and decoder. The RF receiver gets the signal from the helmet section and decodes signal using decoder if the person is over drunken then ignition will be automatically offed by the relay and if any accidents occur message will be sent using GSM modem

LIST OF MODULES

Our proposed system is made up of these following modules:

- Module 1: Input system condition
- Module 2: inter connection of microcontroller
- Module 3: Pre-processing steps
 - 3.1: Installing and importing libraries
 - 3.2: Controlling the system of each electronic
- Module 4: Smart bike in GSM
- Module 5: interconnect system to cloud
 - 5.1: ubidots cloud
 - 5.2: web application.
- Module 6: robotic system to control
 - 6.1: frame design and ic engine
 - 6.2: Channel connected with system
 - 6.3: output result for condition 1&2
 - 6.4: automate vehicle application system
- Module 7: system implementation.
 - 7.1: interconnect modules

MODULE 1: INPUT SYSTEM CONDITION

ZigBee, much like 6LoWPAN, is a low-cost, low-power, wireless mesh network) and has received ample attention as an up-and-coming protocol technology. Advances in ZigBee include connecting to the Internet using low-power, low-cost ZigBee radios. The idea is to leverage the ZigBee radio send and receive IPv6 packets to enable applications to send data back to the user via the Internet. This has broad potential for home applications, but ZigBee's prime drawback is its inability to communicate easily with other IP protocols.

MODULE 2: INTERCONNECTION OF MICROCONTROLLER

In this project, we designed to control home devices by remote, app and IP address.

Remote is connected with central controller and IRDA (Infra-red Data Association) is connected to both central connector and IRDA Decoder, a local wi-fi sensor to process in the Dom server to give the output. IP address is connected with cloud via internet, the given IP address is moved to the local network by detecting information's from cloud network, then it processes under the main Dom server to give the output.

MODULE 3: PRE-PROCESSING STEPS

we make use of three important libraries of python. First of all, for installing these libraries we should have the latest version of pip installed in our system. Those three important libraries are as follows:

The end individual can utilize their mobile phone or PC to sign into the machine. A fundamental test is accomplished for whether the equipment instrument is ON or not. handiest on the off chance that the equipment is approved and ON, at that point the individual is verified. when the confirmation is done accurately, individual is then equipped for send the control alarms to the equipment machine. at the equipment device the SL intention power program will always follow for the change inside the distinction and will thusly transport the markers to the Circuit. while a client chooses an exchange inside the notoriety for any of the instrument [I. e. ON or Off], the records from the hand-held is sent to the web Server in a string design, wherein the web – site is the host. at the server the status is spared in the database of their non-open device field. at the equipment end, the circuit power program a web website page is

utilized to rescue the notoriety of the contraptions in a reasonable example [for each 10sec]. those changes come quite close to treats [which are transitory web files] from the web server and are spared at the PC inside the name of the net site on the web. thusly every 10 sec on the grounds that the site page is revived and the new treat esteems are modernized.4.6.3Proposed Home Automation System Functions

MODULE 4: SMART BIKE TO GSM

Communication via the network In this mechanism communication is done via the network with the use of network cables and a switch. This medium is accurate since equipment's can be distinguished with unique IP addresses assigned to them and also it does not impose any limitation on the number of equipment's that can be connected. Though this mechanism requires wiring of equipment to the home computer this can be avoided with the use of Ethernet over power (EOP) mechanism.



Fig.2 helmet circuit



Fig.3 bike interface

MODULE 5: INTERCONNECTION OF CLOUD

A. Cloud Server

Cloud server is used for central storage. Centralization gives cloud service providers complete control over the versions of the browser-based applications provided to clients, which removes the need for version upgrades or license management on individual client computing devices. Cloud server contains user databases, glass fish sever, glassfish is an open source application server which is designed to make the web services accessible in an efficient and easy way

Client

This is the remote user who wants to automate home appliances by using android mobile device or the client pc. Android is a Linux-based operating system primarily designed for mobile devices such as smart phones and tablet computers utilizing ARM processors

89C51 I Microcontroller

The AT89C51 provides the following standard features:

4K bytes of Flash, 128 bytes of RAM, 32 I/O lines, two 16-bit timer/counters, a five vector two level interrupt architecture, a full duplex serial port. XTAL1 and XTAL2 are the input and output, respectively, of an inverting amplifier which can be configured for use as an on-chip oscillator ,A quartz crystal oscillator (11.0592MHz) also needs two capacitors of 33 pF value. RESET (Pin 9) pin is an input and is active high (normally low). Upon applying a high pulse to this pin, the microcontroller will reset and terminate all activities. The four 8-bit I/O ports P0, P1, P2 and P3 each uses 8 pins. PORT 0 can be used for input or output, each pin must be connected externally to a 4.7K ohm pull-up resistor .This is due to the fact that P0 is an open drain, unlike P1, P2, and P3. Open drain is a term used for MOS chips in the same way that open collector is used for TTL chips.

MODULE 6: ROBOTIC SYSTEM

. The proposed robot consists of two IR sensor and one motor driver circuit L293D with 2 DC motor for left side wheel and right-side wheel. The Arduino uno is the heart of the robot. Here we use ultrasonic sensor to detect the amount of garbage present in the dustbin. And gas sensor is used to sense the odor of

the proposed system. The line following bot needs mechanical arrangement of the chassis. Let's assume a two-wheel robotic vehicle with one castor wheel for front side. There are two IR sensors which are fixed on to the robot facing the earth's surface. Working of line following robot is based on the IR sensor output. The principle behind the IR sensor is when the light hits the surface, only small amount of energy is absorbed and rest of the energy gets reflected. Surfaces of different kinds absorb and reflect light in different portions. Black will absorb lighter when compare to white surface. The reflected light intensity is detected by the receiver as shown in fig. based on this, we will get the output high and low Here the robot reaches its destination by detecting the line drawn over the surface. The motion of the robot is based on the output of two IR sensors

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MODULE 7: SYSTEM IMPLEMENTATION

AV technology can play a substantial role in improving fuel economy. Despite being heavier, advances in engine efficiency and vehicle design have increased fuel economy compared with the vehicles of the 1970s and 1980s, as shown in Figure 2.5. In 2012, the average fuel economy of cars was 27.3 mpg, while the fuel economy of trucks was 19.4 mpg (EPA, 2013b). CAFE standards were recently updated, and will require increased fuel economy from new vehicles to reach an average of 54.5 mpg in model year 2025. Advances in technology will enable fueleconomy of conventional vehicles to continue to increase beyond that year. The NRC estimated the

potential fuel economy improvements to conventional vehicles between now and 2050 to be 130 to 250 percent This project report presents a photodiode sensor based line follower robot design of 200gm weigh which always directs along the black line on white surface. The electromechanically robot dimension is 192×100×70 mm³ with max rpm 180 at no load and frictionless condition. The minimum turning radius for the system is 100mm at velocity of 24.2 cm/s. The robot is able to detect it's path in case it is out of path. The line following robot project challenged the group to cooperate, communicate, and expand understanding of electronics, mechanical systems, and their integration with programming. The successful completion of every task demonstrated the potential of mechatronic systems and a positive group dynamic. Construction of application for collecting waste. The PIR sensor will observe a person nearby dustbin. If motion is detected the lid of dustbin is opened, the servo motor activates and as GSM connected it will send an alert message to user if dustbin is filled.

Dustbin placed in public place, people throw garbage in dustbin, place the ultrasonic sensor in top of the garbage bin. If dustbin reach in 75% then Arduino send message through GSM module. When dustbin level is reach threshold level buzzer will give alert sound for don't again put waste in dustbin. This all process updated in IOT GECKO platform for monitoring garbage bin.

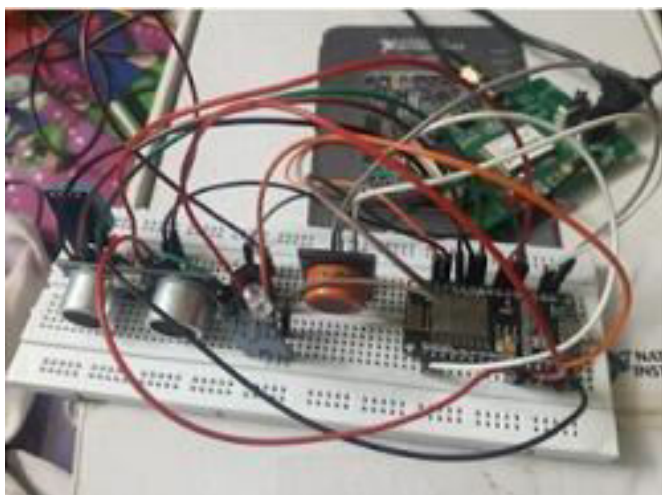


Fig.4 Input Image\ Frame

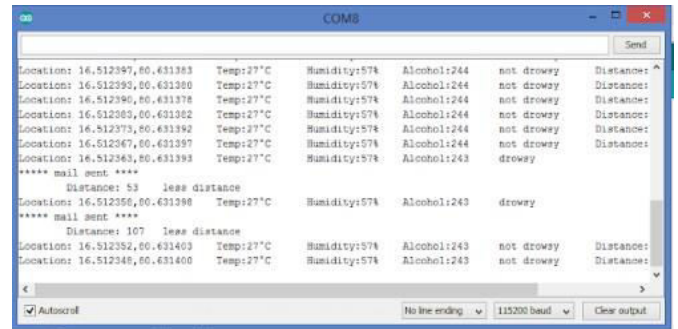


Fig.5 Output

IV. CONCLUSION

This paper proposed a model to support structural field testing of autonomous vehicles as well as a tool that implements this model. The model stores information of test scenarios which, in turn, can be performed by different versions of different programs. Each run of a test scenario for a version of a program can generate one or more logs. When performing the simulation of a scenario, we obtain the coverage obtained, the graph and the source code of the program coloured according to the coverage achieved and a software module scheme that enables a more global view of the coverage of the program. Using the tool, the tester can analyse this information and think of new test scenario to cover parts of the test that have not been performed initially. This tool is being used and validated by researchers and graduate students of our group of Mobile Robotic Systems and new reports and analysis are being developed. We devised two main important improvements to this environment in the near future. One of them is to be able to allow for dynamic, on-line acquisition and analysis. That is, the tester can go along with the autonomous vehicle while it is running and collect information on the command exorcized and show coverage information that can be used to change the program or the scenario dynamically to better reach the tests objective. The other improvement will be off-line. Using algorithms (e.g. genetic) for data set generation (14) we would like to use as input a log (or part of it) of a field testing and create a derived log satisfying a fitness function, like reaching a specific node or branch, or executing a particular command, in order to increase the coverage. This new log could then be used to simulate the behaviour of the autonomous vehicle. Explores data set generation in the proposal but use random testing

V. REFERENCES

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