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INTERNET BASED HUMAN VEHICLE INTERFACE

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ABSTRACT:

The project aims at designing a vehicle which is controlled through PC using wireless Wi-Fi technology in case of emergencies.

Now a day's technology is running with time, it completely occupied the life style of human beings. It is being used everywhere in our daily life to fulfil our requirements. We can not only increase the comfort of life but also increase the health monitoring techniques by making use of advanced technology. In this project we are making use of technology to sense emergency situations and control the vehicle for avoiding major accidents.

In case of emergency (accident) driver of the vehicle, presses emergency button then the system sends an alert message to the remote control centre. The people at the control centre controls the vehicle remotely through PC based application and 3G video camera. The vehicle can be controlled in all the four directions (front, back, and left, right)

through predefined keys assigned in the keyboard of PC.

Wi-Fi (Short for Wireless Fidelity) is a wireless technology that uses radio frequency to transmit data through the air. Wi-Fi has initial speeds of 1mbps to 2mbps. Wi-Fi transmits data in the frequency band of 2.4 GHz. It implements the concept of frequency division multiplexing technology. Range of Wi-Fi technology is 40-300 feet.

In this project we use micro controller, which is programmed to control the input and output modules interfaced to it. The controlling device of the vehicle in the project is a Microcontroller. When the emergency key was pressed by the driver of the vehicle, the system connects with the wifi network to control the vehicle from PC. The data sent from PC over Wi-Fi will be received by Wi-Fi module connected to Microcontroller. Microcontroller reads the data and decides the direction through which it operates the DC motors connected to it. The

Microcontroller is programmed used embedded 'C' language.

Key words: IoT, Smart Vehicle, SVMS, Embedded Systems, Accident Detection

1. INTRODUCTION

The internet of things (IoT) is the system of physical gadgets, vehicles, structures, and different things embedded with electronics, software, sensors, actuators, and network connectivity that empower these articles to gather and trade information. In 2013 the Global Standards Initiative on the Internet of Things (IoT-GSI) characterized the IoT as " the framework of the data society. The IoT enables items to be detected and controlled remotely crosswise over existing system infrastructure, creating open doors for more straightforward joining of the physical world into PC based frameworks and bringing about improved effectiveness, precision, and financial advantage. When IoT is enlarged with sensors and actuators, the innovation turns into an occurrence of the more broad class of cyberphysical frameworks, which likewise includes advancements such as smart grids, smart homes, intelligent transportation, and smart urban areas.

With the consistently developing innovative headway, human progress is searching for computerization in each circle of life. Robotized vehicle is probably the most recent pattern which has been greatly perceived by individuals all around the globe as they need greatest security and solace during driving. These days, the street mishap is one of the prime worries for individuals. It moved toward becoming very visit and questionable. The vast majority of the street mishap happens because of an absence of abidance of traffic rules. More often than not, the drivers become lazy or diverted during driving and inevitably hit items in front of them. In the event that the driving procedure can be taken care of with the guide of Computer Vision and proficient sensors then the danger of human errors can be profoundly decreased. Also, some of the time it gets important to get to the vehicle from a remote area so as to diminish bothers. For this situation, it would be much progressively advantageous if the vehicle could be seen from a remote PC and driven by communication through the PC console.

2. LITERATURE SURVEY

In the paper presented by Mrs. Madhuram.M et.al [1], proposed an IP (Internet Protocol) camera which was mainly developed for real time video surveillance system. The Face recognition module was developed using OpenCV (Open Computer Vision) and Python using algorithms. The System first detects the user's face and stores it in a database. The database of images are trained using a specific algorithm and a recognition module is then used to recognize the user's face.

In the paper presented by Chen-Yen Peng et.al [2], proposed a system for home automation using Google home voice recognition. The user gives commands to the voice recognition module of the Google Home and the commands are transferred to a Raspberry Pi using a Bluetooth module to control the various devices. They have also incorporated machine learning to understand the user's pattern of controlling the devices.

In the paper presented by B. Vamshi et.al [3], proposed a system for voice controlled home automation using Arduino. The voice control is implemented using a V3 voice recognition module which recognizes the user's commands. To secure the system the user have to use a voice password for authentication. The commands given by the user is transmitted to the Arduino through a RF (Radio Frequency) module. A RF receiver is connected to Raspberry Pi to decode the commands of the user. Then the system will control the specified home appliance. Some sensors are also used for temperature and motion detection.

3. System Architecture

Block diagram
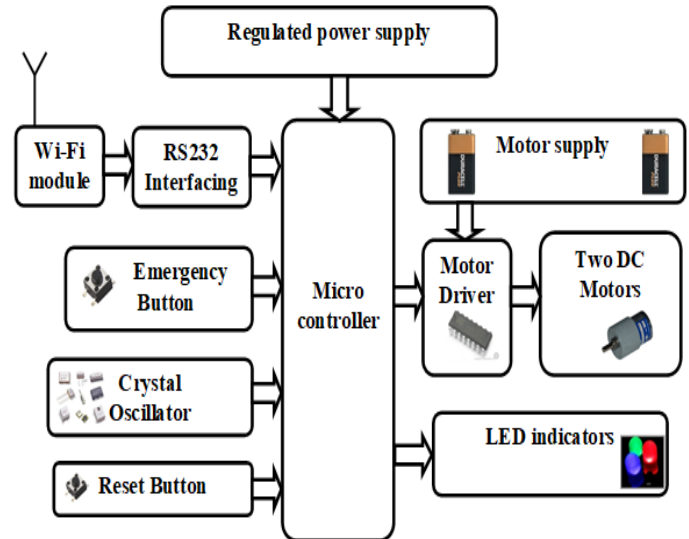
Block diagram

4. DESCRPTION OF COMPONENTS

4.1 ARDUINO

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.
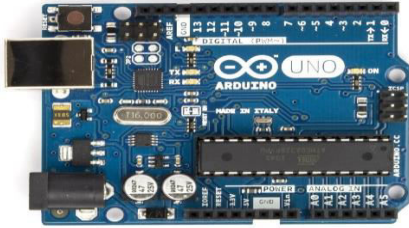
Fig: Arduino

4.2 LCD

Liquid Crystal Display also called as LCD is very helpful in providing user interface as well as for debugging purpose. The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. The most commonly used LCDs found in the market today are 1 Line, 2 Line or 4 Line LCDs which have only 1 controller and support at most of 80 characters, whereas LCDs supporting more than 80 characters make use of 2 HD44780 controllers.
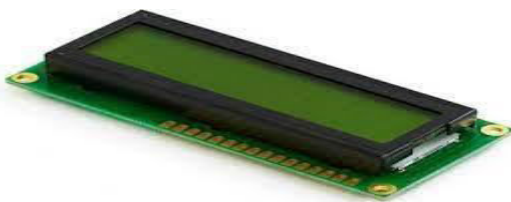

Fig: LCD

4.3 IR SENSORS

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of

an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called a passive IR sensor. Usually, in the infrared spectrum, all the objects radiate some form of thermal radiation.
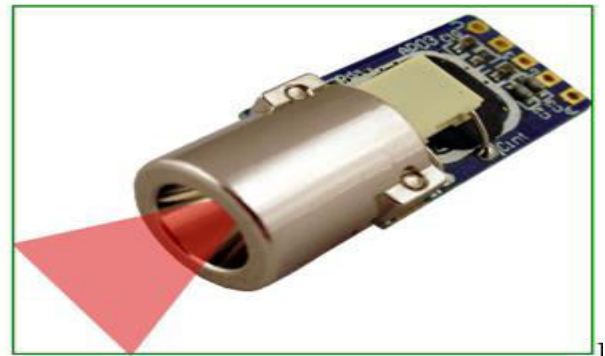

Fig: IR Sensor

4.4 DC MOTOR:

A direct current (DC) motor is a type of electric machine that converts electrical energy into mechanical energy. DC motors take electrical power through direct current, and convert this energy into mechanical rotation.

5. SOFTWARE IMPLEMENTATION

Arduino IDE

4.5 L293d

L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that you can control two DC motor with a single L293D IC. Dual H-bridge Motor Driver integrated circuit (IC).
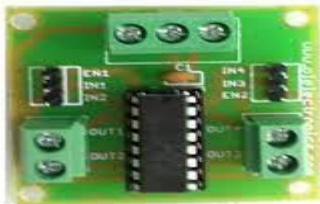
4.6 WIFI

A wireless network uses radio waves, just like cell phones, televisions and radios do. In fact, communication across a wireless network is a lot like two-way radio communication.

Fig: WIFI

IDE stands for ―Integrated Development Environment‖:it is an official software introduced by Arduino.cc, that is mainly used for editing, compiling and uploading the code in the Arduino Device. It is a cross-platform application (for Windows, macOS, Linux) that is written in functions from C and C++.Arduino IDE is anopen source software that is mainly used for writing and compiling the code into the Arduino Module. Ithas serial monitor mainly for interacting with the Arduino board using the computer, and is a great tool for real-time monitoring and debugging.
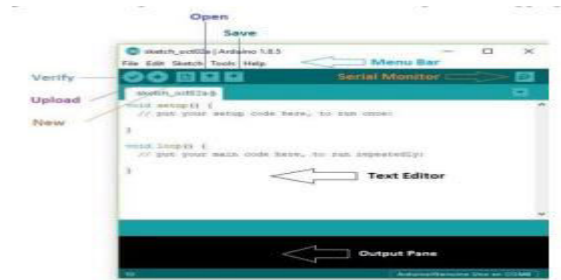


Fig 5.1: Arduino IDE

Implementation IOT:

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.
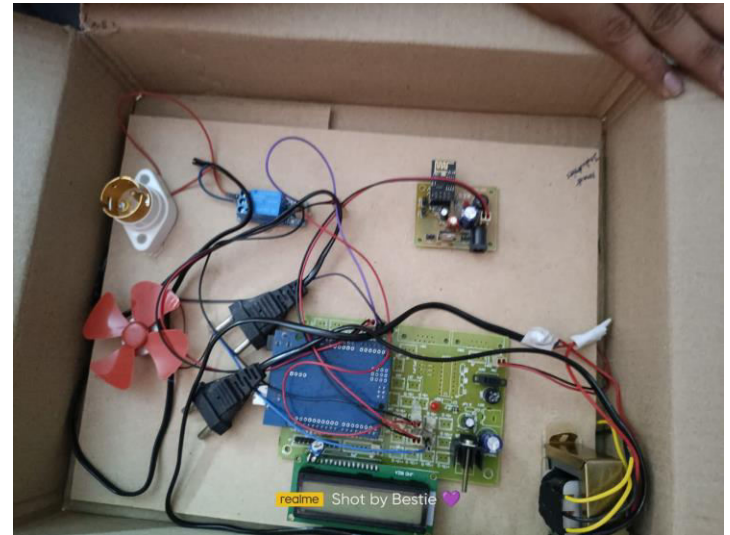
Fig 5.2: IOT Implementation

6. RESULTS

FLOW CHART:
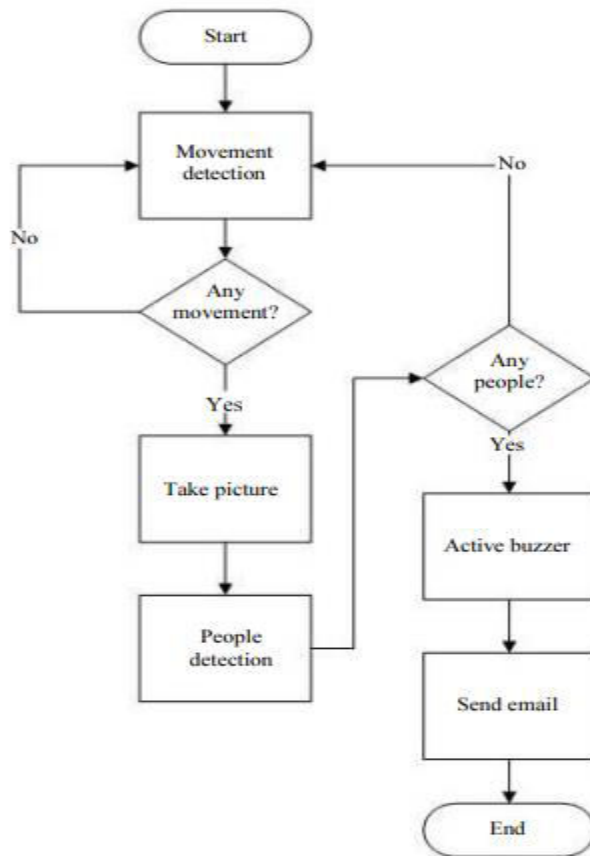
RESULTS:

CONCLUSION

In this project we use micro controller, which is programmed to control the input and output modules interfaced to it. The controlling device of the vehicle in the project is a Microcontroller. When the emergency key was pressed by the driver of the vehicle, the system connects with the wifi network to control the vehicle from PC. The data sent from PC over Wi-Fi will be received by Wi-Fi module connected to Microcontroller. Microcontroller reads the data and decides the direction through which it operates the DC motors connected to it. The Microcontroller is programmed used embedded 'C' language.

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