IoT Based Digital System: A Technology for Traffic Police Force

A Project Phase-2 Report

Submitted to the APJ Abdul Kalam Technological University in

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Bachelor of Technology

in

Electronics and Communication Engineering

by

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This is to certify that the report entitled **IoT Based Digital System : A Technology for Traffic Police Force** submitted by **DIVYA S** (SPT19EC003), **SUHAILATH T K** (SPT19EC009), **VICHITHRA U** (SPT19EC010) & **VYSHNAVI M B** (SPT19EC012) to the APJ Abdul Kalam Technological University in partial fulfillment of the B.Tech. degree in Electronics and Communication Engineering is a bonafide record of the project phase -2 work carried out by them under our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

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DECLARATION

We hereby declare that the project report **IoT Based Digital System: A Technology for Traffic Police Force**, submitted for partial fulfilment of the requirements for the award of degree of Bachelor of Technology of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by us under supervision of Ms. Anjali Ananthan.

This submission represents our ideas in our own words and where ideas or words of others have been included, we have adequately and accurately cited and referenced the original sources.

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Abstract

An efficient vehicle tracking system is designed and implemented for tracking the movement of any equipped vehicle from any location at any time. The system made good use of a popular technology that combines a Smartphone application with a microcontroller. This will be easy to make and inexpensive compared to other existing methods. The designed invehicle device works using Global Positioning System (GPS) and Global system for mobile communication/General Packet Radio Service (GSM/GPRS) technology that is one of the most common ways for vehicle tracking. The digital licence is used in this project. An authorised licence holder can access every vehicle by using digital RFID licence and can switch on the engine also. An unauthorised person cannot use a vehicle. An alcohol sensor is used in this embedded region to determine whether the driver is drunk or not. Hall Effect sensor is one of the magnetic field sensors is used here to calculate the speed of the vehicle. The embedded device will send all current information to the android phone by using Bluetooth communication. The information contains licence number, vehicle speed and alcohol status. The android device is embedded inside a vehicle whose position is to be determined and tracked in real-time. The vehicle tracking system uses the GPS module that is attached in smart phones to get geographic coordinates at regular time intervals. The GSM/GPRS module attached in the smart phone is used to transmit and update the vehicle location to a database. A Smartphone application is also developed for continuously monitoring the vehicle location. The Google Maps API is used to display the vehicle on the map in the Smartphone application. Thus, users will be able to continuously monitor a moving vehicle on demand using the Smartphone application and determine the status of vehicles. In order to show the feasibility and effectiveness of the system, this project presents an experimental result of the vehicle tracking system.

Acknowledgement

We take this opportunity to express our deepest sense of gratitude and sincere thanks to everyone who helped us to complete the work successfully. We are extremely thankful to our beloved principal Dr. S P Subramanian for giving us his consent for this project. We express our sincere thanks to Prof. Sushma M, Head of the Department, Electronics and Communication Engineering, Sreepathy Institute Of Management And Technology Vavanoor for providing us with all the necessary facilities and support.

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INTRODUCTION

Road accidents are on the rise in tandem with the growth in the number of automobiles. The problem of accidents is very acute in highway transportation due to complex flow patterns of vehicular traffic, presence of mixed traffic along with pedestrians. Traffic accidents lead to loss of life and property. Although they cannot entirely be avoided, road accidents can be reduced by taking the necessary precautions. Road accidents are the result of various factors such as intoxicated drivers, over speeding, fatigue, adults without legal identification etc.

According to the World Health Organization (WHO), road traffic injuries are the sixth leading cause of death in India. Road accidents scenario in the country is a matter of great concern, as it has become a major social, economic and health problem. India has nearly six crore motor vehicles on the road. Over 85000 people are killed annually in our country. People aged between 15 and 44 years account for 48 percent of global road traffic deaths. About 1.25 million people die each year as result of traffic crashes. Road traffic injuries are the leading cause of death among young people aged 15-29 years. 90 percent of the world's fatalities on the roads occur in low-and middle-income countries, even though these countries have approximately half of the world vehicles. Half of those dying on the world's roads are vulnerable road users: pedestrians, cyclists and motorcyclists.

A system is proposed to lessen traffic accidents. The project uses Radio Frequency Identification to verify legal identifications, alcohol sensor to detect presence of alcohol, speed monitoring system and drowsiness detection. The functionality of RFID is incorporated into the system as RFID has a wide range of features, mostly for identifying purposes. There are various methods to detect intoxication, mainly sensors. To identify fatigue of the driver, eye blink sensors can be used.

Chapter 1

LITERATURE REVIEW

2.1 Alcohol Detection

Intoxicated driving is one of the main causes of road accidents. There are various methods to detect the intoxication of drivers. The Alcohol sensor helps in detecting ethanol in air. When the sensor gets contact with alcohol it will detect the presence of alcohol along with other gasses. MQ3 gas sensor, Fig 2.1 is a commonly used alcohol sensor. Shahad *et al* [1] presented MQ3 gas sensors to detect alcohol, Benzine, CH4, Hexane and CO. The sensor is characterized by high sensitivity and fast response time.

Mandy *et al* [2] focused on Alcohol Vapor Sensors using Multiwalled Carbon Nanotubes (MWCNT). MWCNTs use lower power than most of the commercially available sensors. Alcohol sensors were produced in batches by bunding multiwalled carbon nanotubes that had been chemically functionalized by Au electrodes on SiO2 Si Substrate. Alcohol vapor electrophoretic techniques were created. The COOH groups have been chemically functionalized within MWCNTs by oxidation. Figure **2.2** shows schematic diagram of the chemically functionalized carbon nanotubes, which have COOH groups attached along the sidewall of the MWCNTs.

People respond to alcohol-induced impairment quite differently. Davishish *et al* [3] proposed a system that detects alcohol-induced driving impairment. The alcohol-induced impairment is detected using nonlinear invariant measures. There is still ongoing research in this field. The fundamental concept behind driver condition monitoring is to first gather data from embedded sensors in the vehicle, then use sophisticated data processing techniques to identify characteristics of the data that correspond to various degrees of driver impairment, and finally, differentiate between these various degrees of impairment.

Fig 2.1: MQ3 Gas Sensor [1]

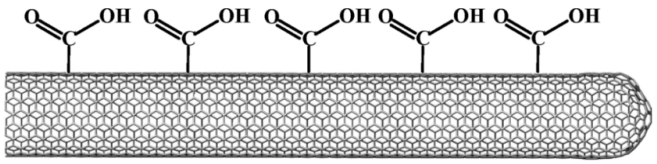

Fig 2.2: MWCNT [2]

2.2 Speed Monitoring System

The development of a risk-free transportation system depends significantly on road safety. Numerous tragic incidents caused by over speeding can be avoided by maintaining the threshold speed shown on the speed board sign. The main factor in car accidents that significantly raises the risk of death or injury is over speeding. Increased speed multiplies the risks of collisions and injuries. At a higher speed, the driver needs a more distance to stop. The most important requirement is to create a system that can track, report, and record vehicle speeds. For that purpose a Hall Effect Sensor is used for detecting the speed.

A Hall effect sensor (or simply Hall sensor) is a type of sensor that uses the Hall effect to detect the presence and magnitude of a magnetic field. Following the conventional design flow from the Hall plate through the mechanical/magnetic implementation, Marco Crescentini *et al* [4] discuss the fundamental operating principles and key implementation methodologies. Many requirements should be met by the current sensor, including low insertion loss, high dynamic range, robustness, high speed, low cost, and reduced physical dimensions. There are intriguing options because Hall-effect current sensors (HECSs) are compact devices with naturally galvanic isolation from the sensed current, have good linearity, a wide dynamic range, and are compatible with conventional silicon technologies.

Ashok Reddy and *et al* [5] describes a system that was built utilising image processing and Internet of Things (IoT) technology to alert and keep the vehicle's speed below the threshold.Many morphological operations are applied to detect speed label from speed sign board and capturing the mentioned speed using camera. Then it is converted in to frames using for speed label identifications. This image or frame will convert into RGB scale to grey scale for better application of morphological operations. G Scelba *et al* [6] has investigated hall effect sensor faults in BLDS drives and proposed a method to remove their effects on the performance of drive via the adoption of fault compensated position estimation algorithm. They estimated three defects using the estimation algorithms. All three algorithms allow the drive to recover for a single and double fault. In ultra-lowcost applications where redundancy is not necessary, redundancy can be raised by employing more than three Hall effect sensors, decreased by using two sensors, or eliminated by using a single sensor.

Ferrazzin D and *et al* [7] proposed a system using hall effect sensor based linear transducer. Essentially, a Hall effect sensor is a transducer that produces an output voltage that is proportionate to the local magnetic field in response. First, the description of the Hall Effect has made, followed by an explanation of the displacement sensor, and then an experimental apparatus has been developed to determine the optimal operating conditions of the transducer and finally, the parameters of a realised sensor are given their values. The specified Hall Effect sensors have a new sort of sensorized glove has been created using this technology, which is based on an original kinematics arrangement. And employed for VE purposes. Electric vehicle may be one of the main future transportation trends from the next decay due to their low population and high efficiency.

Taoufik Chaouachi *et al* [8] presented the impact of hall effect sensors filtered signals on the wheel motor of an electric vehicle. Due to background noise, filtered hall sensors are required for BLDC detected commands in electric vehicles. The effect of this filter on the decline in vehicle performance has been discussed in this work. The BLDC benchmark has been used to mimic and measure mechanical degradation. On the one hand, a 3D curve has been developed to observe the mechanical performance limit. To observe the effect of filters in each node, a wheel has been simulated

using the finite element approach in another hand. This effort broadens the field to create the filtering impact of another vehicle component.

2.3 Drowsiness Detection

Driver fatigue is one of the major causes of vehicle accidents in the world. A direct way of measuring driver fatigue is drowsiness. A real time system that captures image continuously and measures the state of the eye according to the face recognition. The value of each eye closure is taken into consideration when detecting drowsiness. The driver is considered to be sleepy when the amount of eye closure surpasses a particular threshold.

In a work done by Rohan Patel *et al* [9] an article was presented which help, anyone with knowledge of the Raspberry Pi and the vision system may be able to construct their own version of our system, which will be affordable for middle-class people and simple for them to instal in their automobiles. This post will also describe the somnolence system. Utilising image processing, the EEG method, artificial neural networks (ANN), vocal methods, and vehicular methods. There are numerous methods of image processing which can be seperated into three different groups. Using template matching, these use the eye-blink technique, and finally yawning method. These techniques can be used by suing combining image processing with computer vision. The Driver's Face Movements like eye blinks and head posture are primarily utilised to identify between driver sleepiness. This work employs a vision system and image processing during eye blinking and facial expressions in the OpenCV environment. The image is captured using a webcam. Image processing is done with the help of a microprocessor raspberry pi. OpenCV is a module used for computer vision. The OpenCV algorithm make decision on eye movement. If drowsiness detected, it will alert the driver or continue to capture images.

Based on the pupil of the eye which is controlled by the autonomic nervous system Junpei Nishiyama *et al* [10] focused on the pupil of the eye as a possible pre monitor of drowsiness. The pupil

is inner walled by the autonomic nervous system whose activity will change in parallel with drowsiness. Currently pupil's diameter is measured here. The participants practised using the driving simulator for one minute while seated in a driver's seat with natural posture. For this experimental design, a driving simulator was constructed specifically. The subjects were told to use the simulator in a laid-back manner. They were told to keep pace with the vehicle in front and travel as quickly as possible in a straight line on the highway (monotonous driving situation).

1st Petchara Inthanon *et al* [11] proposed a system to detect drowsiness using facial landmarks to generate eyes and mouth components effectively and creating equations to analyse drowsiness correctly by using Nvidia Nano Jeston, which is a tool that accurately evaluates image by tracking closing eye motions more than 35 FPS or 1.5 seconds and yawning or opening mouth motion more than 50FPS or 2 seconds. It suggests a potential for tiredness and alert the drivers. It is an algorithm to analyse face structure from taking video media and detecting drowsiness. The system is also conducted to examine algorithms efficiency. K Satheesh *et al* [12] developed a system to recognize the drowsiness action by capturing driver face and eye retina. Facial feature extraction is also done along with calculation of blinking values, after which the threshold values are set. Then the Arduino module is used which is integrated with elastomeric sensors for real time calculation of driver hand pressure on the cars steering wheel and threshold value is set. The result from both methos is taken as input for taking the final decision and alerting the driver.

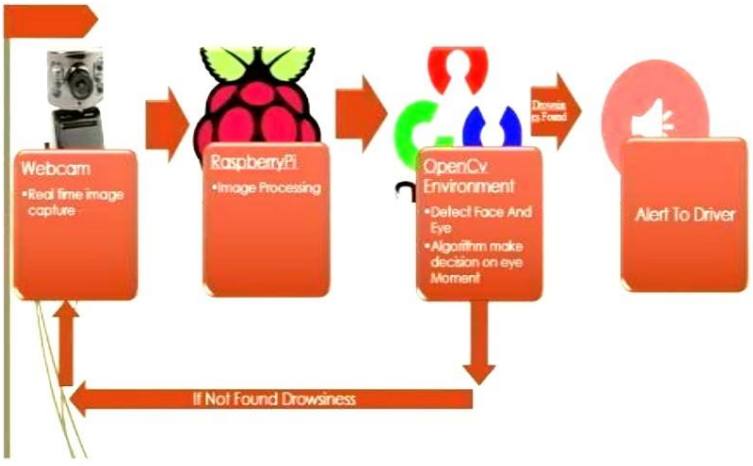

Fig 2.3: Flow Chart of Image Processing Method [9]

2.4 Radio Frequency Identification

It is well known that in the current world, the usage of vehicle transportation has been increasing rapidly. Adults without proper identity are involved in road transportation, which leads to accidents and becomes a major problem. To implement an Active Safety System on vehicles, we can use a dual tag Radio Frequency Identification (RFID) can be used. RFID Technology helps in identifying and tracking the tags attached to the objects by electromagnetic fields. RFID will help us to identify, track and distance measurements between moving machinery and people. In this project we can use an RFID reader module that can be used by the Traffic police is used. Various fields can benefit from the technology of RFID.

RFID has a wide variety of methods for facial recognition and license plate recognition [17]. In a work done by Kerem *et al* [14] a passive UHF RFID system is presented, suitable for capacitive sensor applications. ICs that contain the circuitry for remote powering, communication, and sensor interface are integrated into an inductively-fed, meandered dipole antenna. With self-threshold cancellation, the tag's rectifier is a highly efficient differential rectifier. In order to read the differential capacitive sensor on the tag, a low-power, all-digital, PLL-based sensor interface is used. Sensor interfaces in passive RFID tags cause high power consumption. Based on a fusion of well-tested wireless technologies, Claudio *et al* [13] have developed a new system using ad hoc sensor networks and body area networks coupled with proprietary RFID & quote; Dual Active & tag technology, ad hoc sensor networks and body area networks can dramatically reduce power consumption and accurately track moving machinery and people. It will also allow people to identify and track people. Vittorio *et al* [15] proposed a system that can withstand high temperature and integrate into metal cavities. IoT Based Digital System integrates RFID along with the Internet of Things.

The block diagram of the RFID tag created for the system is shown in figure 2.4. The differential capacitive sensor, external storage capacitor, tag antenna, and tag chip make up the tag. A tiny antenna that is impedance matched to the tag chip is created using the meandering and inductive

loading. The tag chip consists of the rectifier, the sensor interface, and the backscattering modulator. The rectifier is a three-stage, differential rectifier with self threshold compensation.

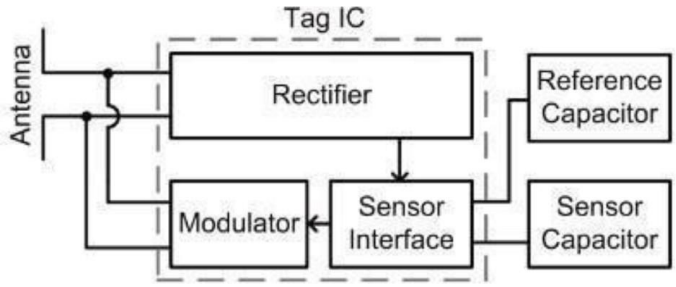

Fig 2.4: Block Diagram of Tag [14]

In a paper presented by Alessandra Costanzo [16], a home autonomous system consists of an Internet of things platform based on wireless sensors and RFID technologies. Here it is shown that RFID can be integrated with IoT. In this project RFID serves the primary purpose of identifying a person. Thirumarai *et al* [18] developed an RFID module integrated with IoT. The vehicle's information and ownership information are antecedental generated with the help of PHP server and MySQL software. Vehicle identification is done by reading the serial variety within the RFID tag and automatically looking at the validity of all certificates.

Chapter 3

IoT Based Digital System: A Technology for Traffic Police Force

3.1 Problem Statement

In our country, India, we frequently witness people breaking traffic laws. As a result, road accidents are also increasing. While examining numerous polls conducted in India, it is found that more than 400 persons pass away every day because of traffic accidents. The number of disabled persons caused by traffic accidents, it is too high. So we need an efficient method to track violation of traffic laws at anytime or location is verymuch needed in the present scenario. Even though there are several measures, such as cameras, for detecting traffic rule violations, they are nonetheless ineffective. There must be a reliable system to monitor traffic law violations.

3.2 Proposed Solution

The proposed system is an efficient method to monitor violation of traffic laws. This approach uses an Android smartphone application and the Internet of Things. Data is gathered using a variety of sensors, and stored in a mobile application . This gathered and stored data will be available to the traffic police force or authorities. This will allow continuous monitoring of breaking of traffic rules at anytime or location. The GPS in the technology can locate or track the car at any moment. This would undoubtedly lower the amount of traffic accidents, which will lower the number of fatalities and injuries sustained in them.

3.3 Block Diagram

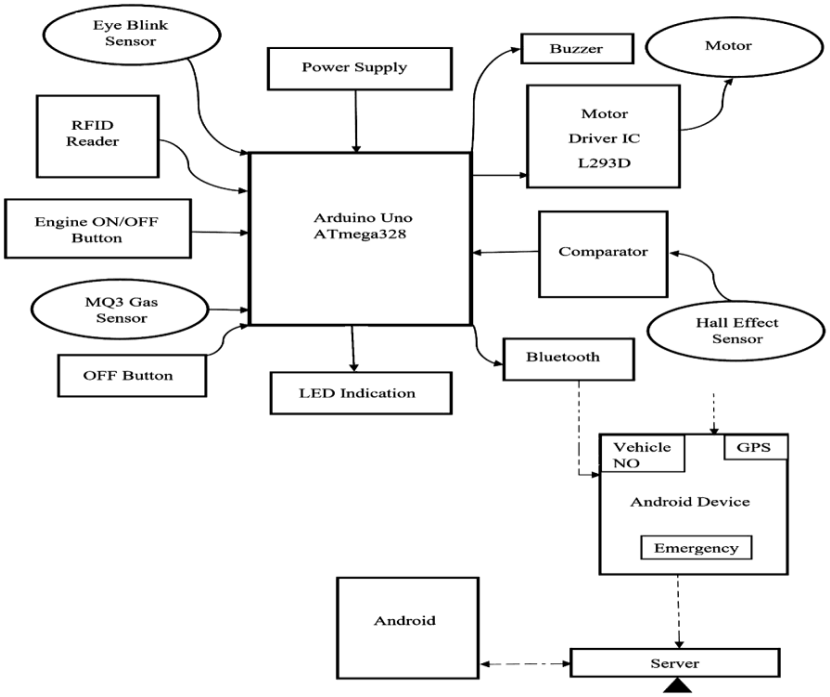

Fig 3.1: Block Diagram of IoT based digital system

The figure 3.1 shows the block diagram of the system. Arduino UNO is the brain of the system. The power supply of 12V DC will turn on the system. The RFID reader is connected to the microcontroller which is used to identify the verified license. Along with the RFID reader alcohol sensor- MQ3 for detecting intoxication, the Hall effect sensor for speed monitoring and the Eye blink sensor for drowsiness detection is also attached to the microcontroller. As the output from the hall effect sensor is small a comparator is affixed between the sensor and the Arduino board. To start/stop the system an ON/OFF button is connected. When the drowsiness is detected an alarm will be on. A buzzer is wired as an alarm to the driver. To turn off the alarm an OFF button is also connected to the board. An LED indication is also placed for the viewer to understand whether the power is given to the system and to understand whether the program is uploaded or not. To show the working, a motor is placed along with a motor driver IC L293D. The motor driver IC is to avoid the back EMF coming

from the motor. Bluetooth is the medium of communication between the Android app and the system. Android app collects and stores all details collected from the sensors. Any authorities like traffic police can access to this data.

3.4 Familiarisation of Components

3.4.1 Hardware

a) Arduino UNO

The Arduino UNO is a microcontroller board based on the Atmel's ATmega328. It has14 digital input/output pins (of which 6 can be used as PWM outputs) and 6 analog inputs. The Arduino Uno can be powered via USB connection or with an external power supply. It containseverything needed to support the microcontroller; simply connect it to a computer with a USB cable (not included). Arduino IDE supports Windows, Mac OS X or Linux.

Fig 3.2: Arduino UNO

b) MQ 3 Gas Sensor

MQ 3 gas sensor has high sensitivity to Alcohol, CO2 and has good resistance to disturb gasoline, smoke and vapour. The sensor provides an analog resistive output based on alcohol or CO2

concentration. In this system MQ3 Sensor is used to detect the presence of alcohol. To identify whether the person is drunken or not.

Fig 3.3: MQ3 Gas Sensor

c) Hall Effect Sensor

A Hall effect sensor is a type of sensor which detects the presence and magnitude of a magnetic field using the Hall effect. The output voltage of a Hall sensor is directly proportional to the strength of the field. Hall effect sensors leverage magnetic fields to determine factors such as positioning, proximity, displacement, speed, and current. Here Hall effect sensor is used for continuous speed monitoring of the vehicle.

Fig 3.4: Hall Effect Sensor

d) Eye Blink Sensor

Eye blink Sensor is a relatively simple sensor used to detect eye blinks. It uses a simple infrared sensor to detect if the person's eye is closed and the corresponding data received can further be processed by any logic as required for the application. In this project eyeblink sensor is needed to detect the drowsiness of the driver.

Fig 3.5: Eye Blink Sensor

e) Radio Frequency Identification (RFID)

The RFID reader is a network-connected device that can be portable or permanently attached. It uses radio waves to transmit signals that activate the tag. Once activated, the tag sends a wave back to the antenna, where it is translated into data. The transponder is in the RFID tag itself. The reader is a device that has one or more antennas that emit radio waves and receive signals back from the RFID tag. Tags, which use radio waves tocommunicate their identity and other information to nearby readers, can be passive or active. Passive RFID tags are powered by the reader and do not have a battery. Here the properties of RFID is used for identification of verified license.

Fig 3.6: RFID Reader

f) Motor

A motor converts electrical energy into mechanical energy. An electric motor (dc motor) works on the principle that when an electric current is passed through a conductor placed normally in a magnetic field. a force acts on the conductor as a result of which the conductor begins to move and mechanical energy is obtained. Motor is included to demonstrate the functioning of the system. A 12V motor is used here.

Fig 3.7: Motor

g) Motor Driver IC L293D

The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V. Both devices are designed to drive inductive loads such as relays, solenoids, DC and bipolar stepping motors, as well as other high-current/high-voltage loads in positive-supply applications. Motor driver IC is required to avoid back EMF from the motor.

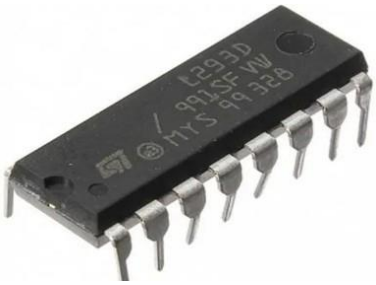

Fig 3.8: Motor Driver IC L293D

h) Comparator IC LM324

A comparator is a device that compares two voltages or currents and outputs a digital signal indicating which is larger. It has two analog input terminals and and one binary digital output. Due to the Hall effect sensor's small output, IC LM324 is required.

Fig 3.9: IC LM324

i) Bluetooth Module

Bluetooth is a wireless radio technology that allows many different devices to connect to each other and work together. For the communication between the prototype and the android device, Bluetooth is used.

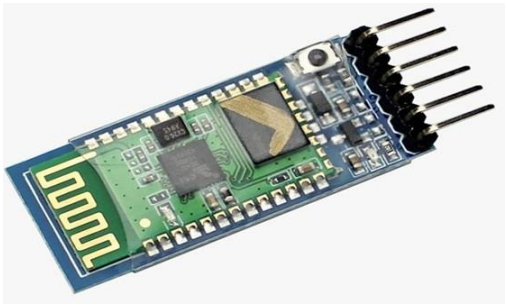

Fig 3.10: Bluetooth Module

j) Buzzer

A device that creates an audible tone under the influence of an applied external voltage. This output may either be in the form of a buzzing or a beeping sound. This is a result of the induced rapid movements created in the diaphragm of the buzzer. If the driver falls asleep, the buzzer serves as an alarm device to wake him up.

Fig 3.11: Buzzer

3.4.2 Software

a) Arduino IDE

Arduino IDE offers full compatibility to any Arduino- based software board. It makes it easy to write code and upload it to the board. Main features of Arduino are Sketch Editing Tools, Libraries, Serial Monitor, Programmer Functions, Burn Bootloader, Sketches Management, Sharing, and Auto Format.

Fig 3.12: Arduino IDE

b) Android Studio IDE

Android Studio is the official Integrated Development Environment (IDE) for Android app development.

Programming languages used are: Java, Kotlin, JavaScript, C++

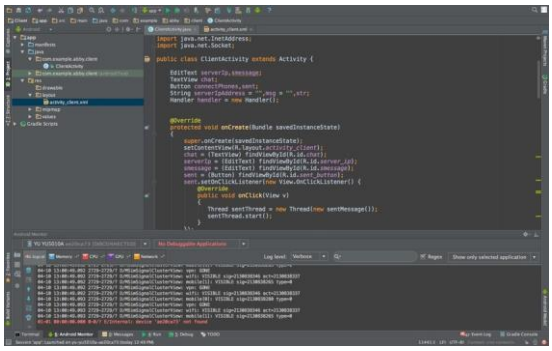

Fig 3.13: Android Studio IDE

c) PyCharm

PyCharm is an integrated development environment used for programming in Python. It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems, and supports web development with Django.

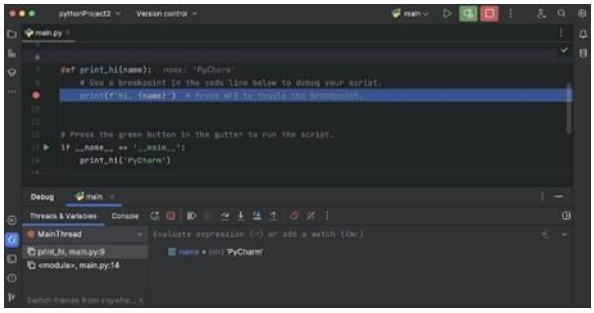

Fig 3.14: PyCharm

3.5 Circuit Diagram

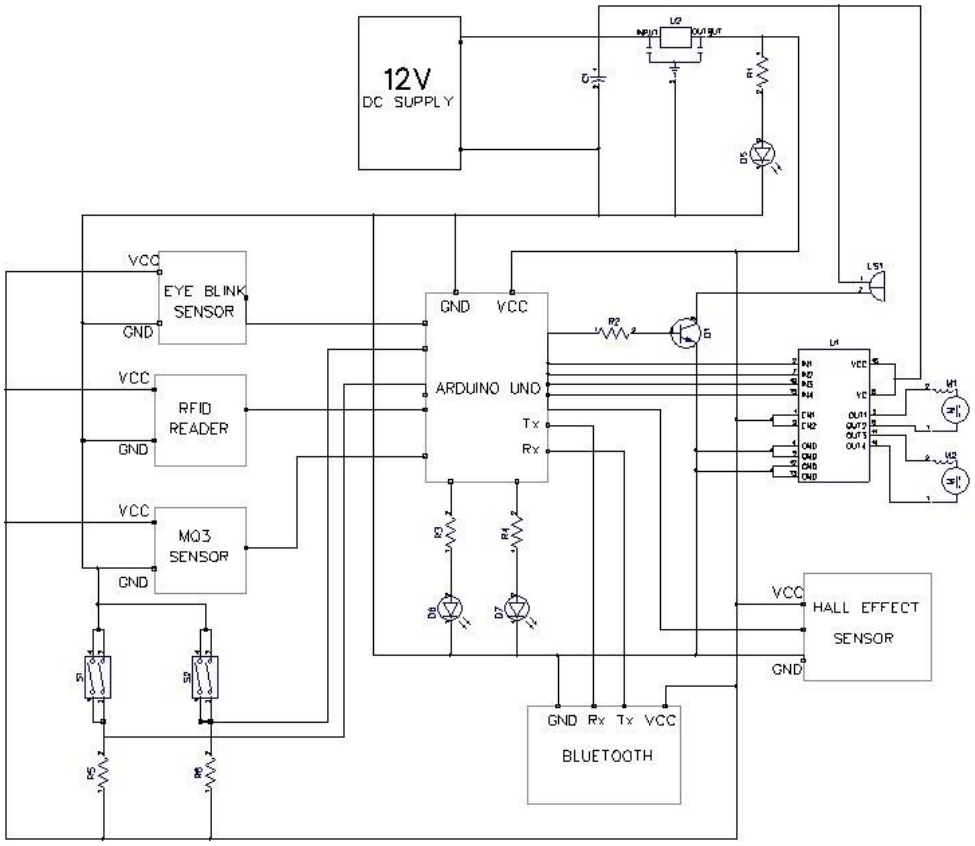

Fig 3.15: Circuit Diagram of IoT Based Digital System

The circuit diagram in Fig 3.15 shows the detailed electrical connections and components of the system. As there are components that need both 12V and 5V, a 12V DC supply is given to the system. Using a voltage regulator this 12V is step down to 5V. The buzzer and motor require a 12V power supply, whereas the Arduino board and sensors operate on a 5V power supply. The system will turn on upon giving power supply. To indicate that the power supply has been achieved, an LED is connected after the voltage regulator. Similarly, another LED is linked to Arduino to determine when the program is uploaded to the Arduino.

Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328 with 14 digital input and output pins and 6 analog input pins. Mainly four sensors are affixed to the Arduino board. The sensors have three pins – VCC for the power supply, Ground, and an output is connected to

the Arduino board. The output increases when the RFID reader recognises a validated licence, and the board will be able to detect it. At the same time, the MQ3 Gas sensor will detect alcohol, and if there is no alcohol present, the motor can be turned on by pressing the ON/OFF button wired to the Arduino. The switch has four pins, two of which are connected together and connected to ground, while the other pins are connected to the arduino and VCC.

The motor is not directly attached to the board. A motor driver IC is placed between them to prevent back EMF from the motor. The motor driver IC have four ground pins and four input pins which will be connected to the ground and Arduino respectively. The two VCC pins will be linked to the power supply, and the remaining four pins of the IC will be connected to the motor.

The hall effect sensor will begin monitoring speed as soon as the motor begins to rotate. Simultaneously the eyeblink sensor will start to detect eyeblink. If the eyelid is closed for longer than two seconds, the buzzer will sound. The two pins of the buzzer is connected to the 12V power supply and to microcontroller. An OFF button is also linked to turn off the buzzer.

Finally the bluetooth module is wired to act as a mode of communication between the system and Android device. Bluetooth module has four pins VCC, ground, transmitter and receiver. The VCC and ground is connected similar to others while the transmitter and receiver is conncted to the receiver and transmitter of Arduino board respectively.

3.6 Flowchart

Figure 3.16 shows the flowchart of IoT Based Digital System. The Microcontroller is turned on as the system begins to function. The RFID reader and MQ3 gas sensor are both activated at the same time. If there is no presence of alcohol and the license shown is verified then it will proceed to the next step. The engine will be turned on, and data from various sensors will be collected. The eyeblink sensor will be activated, and if drowsiness is detected, the alert will sound. If the alarm is on for more than fourty seconds the engine will automatically turned off. The data acquired by the sensors can be accessed on the Android app.

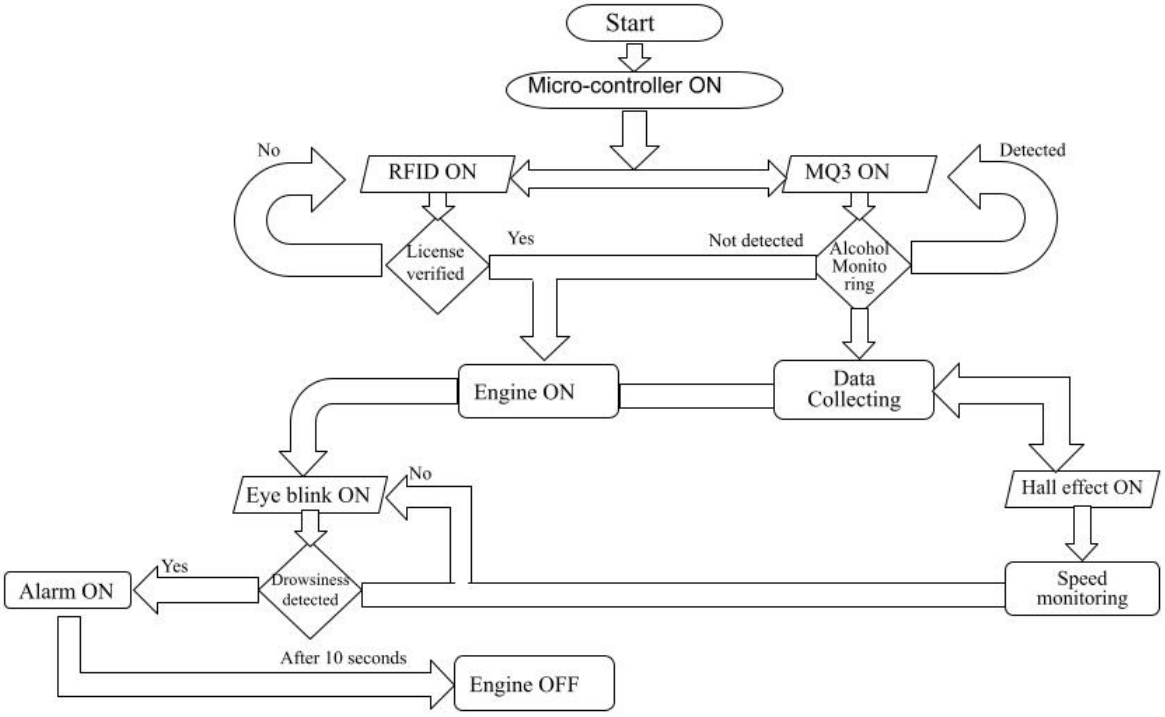

Fig 3.16: Flowchart of IoT Based Digital System

Chapter 4

EXPERIMENTAL RESULT

The IoT based digital system has been developed for the traffic police force to monitor the breach of traffic rules and thereby reducing the number of road accidents. The prototype has been tested and it functioned successfully. The following are the major results of the system:

- Only the validated digital licence is read by the RFID reader.
- The MQ3 gas sensor sensed alcohol within a range of 4 – 5 cm from the driver.
- If the eyelid is closed for longer than two seconds, the eye blink sensor detects tiredness, and an SMS is sent when the driver has been asleep for more than ten seconds.
- The Hall effect sensor monitored the real time speed of the vehicle.
- The smartphone application (Smart Drive) collected and stored all the data gathered from the sensors.

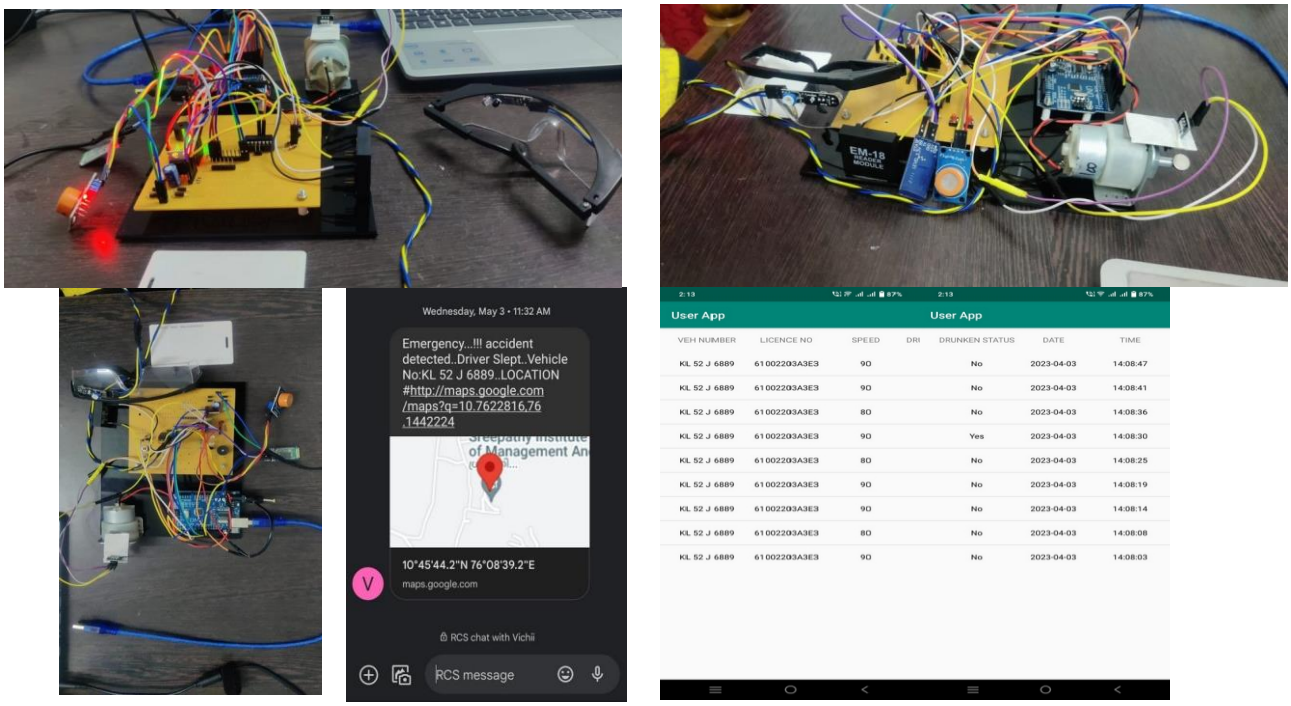

Fig 4: Photographs of Working Model

Chapter 5

CONCLUSION AND FUTURE SCOPE

In general, the project was a success. Each sensor worked on time. RFID reader identified the authorised license and MQ3 Gas sensor detected whether the person is intoxicated or not. The engine is only turned on when there is no alcohol present and an authorised licence is displayed. The hall effect sensor continuously monitored the speed of the motor. Eye blink sensor detected drowsiness when the eyelid is closed for more than 2 seconds. An alarm is turned on when drowsiness is detected. If the alarm is not deactivated or the person is still sleeping after 10 seconds, the engine shot down automatically and an SMS sent to the authorities. All the datas collected from the sensors are stored in the Android application. The location of the vehicle can also be tracked at anytime.

Here the system only tracks the vehicle and if any violation occurs the vehicle number is noted. However, because most of the time the driver is not the true owner of the car, another alternate method to track the driver may be implemented. A mechanism for issuing fines when traffic rules are broken can also be added to this system. When the vehicle's speed exceeds the standard limit, an automated braking system can be implemented.

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