

VIoT THE NOVEL DESIGN FOR APPROACH OF INTERCONNECTING VEHICLES USING IoT

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Abstract - The IOT based technology is the most important technology in today's world. The technology has been used to the different interconnection of the devices to provide the sophisticated life to the every human. This technology has been used for the vehicle which is known to be vehicular internet of things (VIoT). This VIOT can be implemented in the vehicles for the detection of the accident damages in the vehicles and to be informed the insurance company to overcome the wrong detection and misinterpretation of the data from the user's side to accident. This technology will play an important role in the interconnection for providing automatic information to the insurance company where the vehicle needs to meet an accident.

Index terms – Arduino uno R3, smoke sensor, mems sensor, IoT,

I. INTRODUCTION

You have spent lakhs on the car and to ensure it is protected against any kind of damage [accident or calamities] would be your number one priority. This will ensure you do away with those sleepless nights and anxiety attacks. Understanding the importance of having a good protection plan in place, company offers comprehensive Car Insurance packages. What is more we have gone one step further with our Car Shield options whereby customers can pick up add on covers as well [1-3].

The Car Insurance policies come with a wide range of features, from offering roadside assistance to cashless claims across several garages in the country to 100 percent insurance cover on your bill. To understand the policy or obtain a Car Insurance quote, you can simply fill out a form and obtain the information and a quote with a click of a button. One of our experts will also reach out to you to help clarify any queries or offer in-depth information.

The number one **cause** of **car** accidents is not a criminal that drove drunk, sped or ran a red light. Distracted drivers are the top **cause** of **car** accidents in the U.S. today. A distracted driver is a motorist that diverts his or her attention from the road, usually to talk on a cell phone, send a text message or eat food.

II. RELATED WORKS

With a new car comes a package of added expenses. Its maintenance and operating cost are part and parcel of these expenses. However, sometimes an unfortunate incident may occur that may damage your vehicle. The best way to deal

with such unforeseen circumstances is by getting cheap car insurance offering a good cover[1-5]. Getting a cheap auto insurance policy will relieve you from making bulky losses in

case of any unexpected incident. Check out the procedure for car insurance claims in India.

Call your insurance representative or the company as soon as possible even if you are away from home or even if someone else caused the accident.

Take guidance from your representative or insurance provider on how to proceed and what forms or documents will be required to support your claim.

Normally insurance company may require a "proof of loss" form as well as documents relating to your claim (such as medical and car repair bills and a copy of the police report). Supply all the information your insurer requires to process your claim.

Keep records of all your expenses as a result of the accident which may be reimbursed under your policy.

Keep copies of your paperwork intact. You may need for At the scene of the accident, you should stop and get help for the injured. Call the police and notify the nearest medical unit. Provide police with the information they require. Take steps to protect your car from further damage. Your Insurance Company will probably want to have someone inspect it and appraise the damage before you order the repair work done.

Claim is a legal statement to obtain money or the enforcement of a right against another party. The legal document which carries a claim is called a Statement of Claim. It can be any communication often expressed in amount of money the party should pay or reimburse. There are several issues of significance when filing a statement of claim. Although filing

a claim is fairly straight forward, it is important to do it properly or else the claim can become null and void.

Voluntary Excess

Generally we know that higher the excess, lower is the premium required to be paid. Voluntary Excess is certain amount of money an insured opt to bear in case of an accident and the rest is insured under the policy. At times the cost of damage caused in an accident is low and is even less than the excess amount you have volunteered to pay. In such cases, it is not advisable to claim as it is equivalent to the excess amount the insured anyways has to pay. But if the damage is big and the cost to repair is huge, then you should definitely file the claim.

No Claim bonus

Generally, all the insurance companies offer a no claim bonus to the policy holders who have not made any claim on there last policy. However, the bonus amount varies from company to company. It is great if you have no accidents and you naturally have a claim free year. But on the other hand, in case of an accident, you can still save on your no claim bonus.

Damage Caused

Before repairing the damage privately, confirm the costs involved and that it is covered by insurance. Once you are aware about the costs involved and the coverage, decide if the claim is required. If the damage is big and can cost you huge sum then go ahead and file the claim. However, if the cost is nominal and affordable to your pocket avoid claiming. This will save you some discount on the premium at renewal. Get in touch with our customer service if you have queries or if you need any further assistance.

III. ARDUINO UNO

Arduino Uno R3. The Arduino Uno R3 is a microcontroller board based on a removable, dual-inline-package (DIP) ATmega328 AVR microcontroller. It has 20 digital input/output pins (of which 6 can be used as PWM outputs and 6 can be used as analog inputs). ... The R3 is the third, and latest, revision of the Arduino Uno.

Input and Output

Each of the 14 digital pins on the UNO R3 can be used as an input or output (they operate at 5 Volts and provide/receive a maximum of 40mA and has an internal pull-up resistor (disconnected by default) of 20-50 K ohms), we can using functions as below:

- Pin Mode ()
- Digital Write ()
- Digital Read ()

In addition, some pins also have specialized functions:

Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the

corresponding pins of the ATmega8U2 USB-to-TTL Serial chip.

External Interrupts: 2 and 3. These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value.

PWM: 3, 5, 6, 9, 10, and 11. Provide 8-bit PWM output with the analog Write () function.

SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK). These pins support SPI communication using the SPI library.

LED: 13. There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off.

The UNO R3 has 6 analog inputs, labelled A0 through A5, each of which provide 10 bits of resolution (i.e. 1024 different values). By default they measure from ground to 5 volts, though is it possible to change the upper end of their range using the AREF pin and the analog Reference () function. Additionally, some pins have specialized functionality:

TWI: A4 or SDA pin and A5 or SCL pin. Support TWI communication using the Wire library.

There are a couple of other pins on the board:

AREF: Reference voltage for the analog inputs. Used with analog Reference ().

Reset: Bring this line LOW to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.

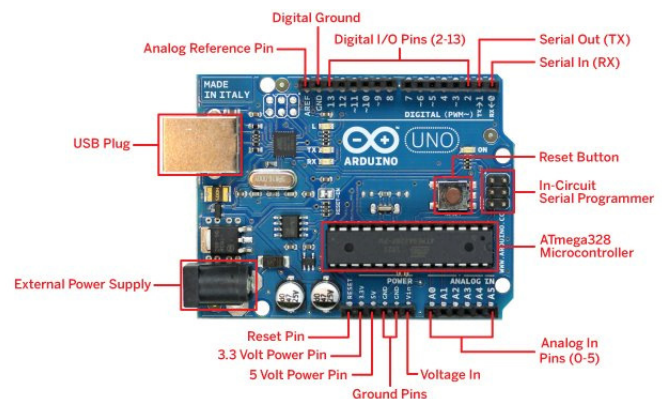


Figure 1 - Arduino Uno R3 Board

IV. EXISTING SYSTEM

No global interference between the insurance company and vehicles. Interconnection between the vehicles and the public organization has not been established [6].

V. PROPOSED SYSTEM

Intelligent interconnect between the vehicles and public using IoT. To overcome the forest live update of the status of vehicles.

VI. BLOCK DIAGRAM

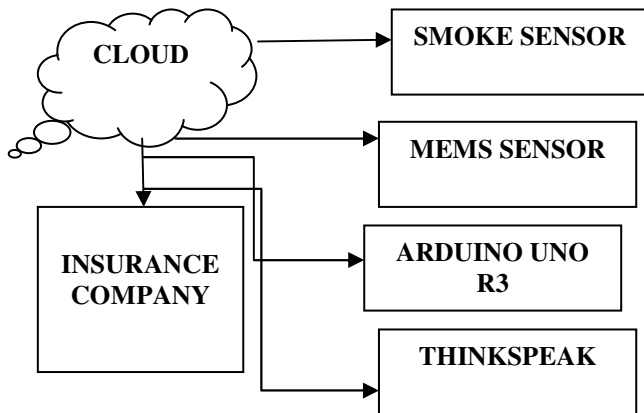


Figure 2 – Block diagram of system

VII. SENSORS

A. SMOKE SENSOR

The Optical **Smoke Detector**, also referred to as a Photoelectric Type Device, uses a light source to **detect smoke**. The Infra-Red LED is a lens that shoots a beam over a large area. If **smoke** is present in the room, it enters the optical chamber, having **smoke** particles scatter and sensor sets of the **alarm**.

A **smoke detector** is a device that senses **smoke**, typically as an indicator of fire. ... **Smoke** can be detected either optically (photoelectric) or by physical process (ionization), **detectors** may use either, or both, methods. Sensitive **alarms** can be used to detect, and thus deter, **smoking** in areas where it is banned.

Gas sensors are available in wide specifications depending on the sensitivity levels, type of gas to be sensed, physical dimensions and numerous other factors. This Insight covers a **methane gas sensor** that can sense gases such as ammonia which might get produced from methane. When a gas interacts with this sensor, it is first ionized into its constituents and is then adsorbed by the sensing element.



Figure 3 - Gas Sensor

B. MEMS SENSOR

Micro-Electro-Mechanical Systems, or **MEMS**, is a technology that in its most general form can be defined as miniaturized mechanical and electro-mechanical elements (i.e., devices and structures) that are made using the techniques of micro fabrication.

In early MEMS systems a multi-chip approach with the sensing element (MEMS structure) on one chip, and the signal conditioning electronics on another chip was used. While this approach is simpler from a process standpoint.

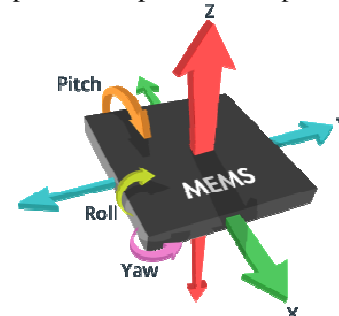


Figure 4 – MEMS Sensor
VIII. THINKSPEAK

ThingSpeak is an open data platform for the Internet of Things. **ThingSpeak** provides an online text editor to perform data analysis and visualization using MATLAB®. You can also perform actions such as running regularly scheduled MATLAB code or sending a tweet when your data passes a **defined** threshold.

ThingSpeak is a platform providing various services exclusively targeted for building IOT applications. It offers the capabilities of real-time data collection, visualizing the collected data in the form of charts, ability to create plugins and apps for collaborating with web services, social network and other APIs. We will consider each of these features in detail below.

The core element of ThingSpeak is a 'ThingSpeak Channel'. A channel stores the data that we send to ThingSpeak and comprises of the below elements:

8 fields for storing data of any type - These can be used to store the data from a sensor or from an embedded device.

3 location fields - Can be used to store the latitude, longitude and the elevation. These are very useful for tracking a moving device.

1 status field - A short message to describe the data stored in the channel.

IX. IoT

Internet of Things (IoT) is an environment in which objects, animals or people are provided with unique identifiers and the

ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT board featured with SIM900 GPRS modem to activate internet connection also equipped with a controller to process all input UART data to GPRS based online data. Data may be updated to a specific site or a social network by which the user can able to access the data.

These vehicles are equipped with Internet access and can share that access with others, just like connecting to a wireless network in a home or office. More vehicles are starting to come equipped with this functionality, so prepare to see more apps included in future cars.

X. GSM

GSM (Global System for Mobile communication) is a digital mobile telephony system that is widely used in Europe and other parts of the world. **GSM** uses a variation of time division multiple access (TDMA) and is the most widely used of the three digital wireless telephony technologies (TDMA, **GSM**, and CDMA).

GSM is a circuit-switched system that divides each 200 kHz channel into eight 25 kHz time-slots. GSM operates on the mobile communication bands 900 MHz and 1800 MHz in most parts of the world. In the US, GSM operates in the bands 850 MHz and 1900 MHz

GSM owns a market share of more than 70 percent of the world's digital cellular subscribers. GSM makes use of narrowband Time Division Multiple Access (TDMA) technique for transmitting signals. GSM was developed using digital technology. It has an ability to carry 64 kbps to 120 Mbps of data rates. Presently GSM supports more than one billion mobile subscribers in more than 210 countries throughout the world.

GSM provides basic to advanced voice and data services including roaming service. Roaming is the ability to use your GSM phone number in another GSM network.

XI. CONCLUSION

We use vehicular internet of things the novel design for approach of interconnecting vehicles using IOT. The damage caused in vehicles is automatically intimated to the insurance company. Which make the customer to claim the insurance easily. By using the smoke sensor and mems sensor the damage in the vehicle can be identified easily. The information also passes through GSM to the insurance company.

XII. REFERENCES

- [1] S. Stradling, M. Carreno, T. Rye, and A. Noble, "Passenger perceptions and the ideal urban bus journey experience," *Transp. Pol.*, vol. 14, no. 4, pp. 283–292, 2007.
- [2] B. Gardner and C. Abraham, "What drives car use? A grounded theory analysis of commuters' reasons for driving," *Transp. Res. F, Traffic Psychol. Behav.*, vol.2,2010.
- [3] T. D. Camacho, M. Foth, and A. Rakotonirainy, "Pervasive technology and public transport: Opportunities beyond telematics," *IEEE Pervasive Compute.*, vol. 12, no. 1, pp. 18–25, Jan 2013.
- [4] J. Hare, L. Hartung, and S. Banerjee, "Beyond deployments and testbeds: Experiences with public usage on vehicular Wi-Fi hotspots," in *Proc. 10th Int. Conf. Mobile Syst. Appl. Serv. (MobiSys)*, Ambleside, U.K., 2012, pp. 393–406.
- [5] S. Foell, R. Rawassizadeh, and G. Kortuem, "Informing the design of future transport information services with travel behaviour data," in *Proc. Workshop SenCity Uncovering Hidden Pulse City*, Zürich, Switzerland, 2013, pp. 1343–1346.
- [6] B. Ferris, K. Watkins, and A. Borning, "OneBusAway: A transit traveler information system," in *Mobile Computing, Applications, and Services*. Heidelberg, Germany: Springer, 2010, pp. 92–106