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Implementation of Vehicle Starting Using Fingerprint Sensor & Accident Detection with Accelerometer, GSM & GPS

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Abstract *-This project is implemented for protecting the vehicle from the theft. Now-a-day's vehicle theft is increasing rapidly, So people have started to use the theft control system which is installed in their vehicles. The commercially available anti-theft vehicular systems are very expensive & this project is developed as low cost vehicle theft protection system using a ARDUINO UNO. By using fingerprint sensor we will start our vehicle only by the authorized users, which provides more security to the vehicles[2]. In this project we also used keypad system, which it gives access to new persons to start the vehicle in the absence of the original person. In this project RF transmitter and RF receiver are used to get notification if any theft action occurs this will be happen when vehicle got theft the RF receiver which is held by vehicle owner gives an indication of vehicle theft by switching of the LED so that vehicle owner can recognized that theft action get occurred. For driving the vehicle DC motor is used. In this project GPS is used for location of the vehicle and GSM is also used, which it will send an emergency alert message to police, family and ambulance along with exact location[4]. LCD is used for monitoring respectively.*

keywords: *Arduino Microcontroller, Accelerometer sensor, Fingerprint Module, GPS Module, GSM Module, LCD, RF transmitter & RF receiver.*

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I. INTRODUCTION

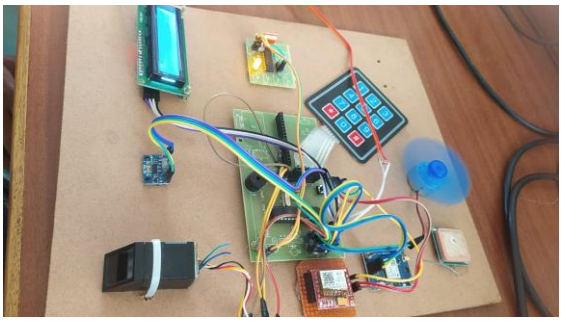
The Vehicle theft is increasing widely, simultaneously the theft ratio is also increased. Because of increasing number of theft cases of the vehicle there is a need to enhance the security level of the vehicles. Traditional and commonly used key locks available in the vehicles are easily unlocked by the professional thieves. With the help of master key, it becomes very easy to unlock the lock of the vehicles by the thieves. This project explores how to avoid this kind of stealing & provide more security to the vehicles. The implemented system contain single board embedded system which is equipped with Global system for mobile communication (GSM) and global Positioning System (GPS) along with a microcontroller installed in the vehicle. The use of GSM & GPS technologies allows the system to track the vehicle & provide the most up-to-date information about ongoing trips. Moreover, fingerprint sensor is done in the implemented system to ensure the driving of correct person. The implemented system is very simple with greater security for vehicle anti-theft protection & low cost technique compared to other. If the vehicle is met with an accident, an immediate alarm is sent to the family, ambulance & police with the current location of the vehicle.

II. LITERATURE SURVEY

In this research of this system it helps the people from the vehicle thief and accident detection of the vehicle. This research proposal is based on the very simple concept that where we can capture the finger by using the finger print module by authorized persons and vehicle gets started[1]. This project is placed in two wheeler vehicle security system so that it provides security to this vehicle[2]. The microcontroller which is inbuilt in the Arduino, the Arduino will perform all the operations in this system, if the Arduino is failed the project is also failed. By using this microcontroller in the Anti-Theft security system using GSM networks it sends message to the authorized person[3].By using the GPS module we can find the exact location of the vehicle of the vehicle theft and if any accident occurs we can also find the location easily by using GPS, multi-tracking system can also be done by the GSM & GPS[4].The road accidents is also increased rapidly, if any

accident occurs there is a long reaction time which increments the number of deaths, therefore an automatic accident detection must exit to overcome this situation[5].The main goal is to identify where the accident occurred, sends the information to the rescue teams in considerably less time, so that they can take the necessary actions, to save the life of the victim[6].The approach is that to detect an accident ,GSM is used to send an alert message and location of accident traced by the GPS module[7]. These system measure change of tilt angle by means of an accelerometer sensor, speed by means of GPS and sends an alert on detection of the accident[8].In this system we can also place the eyeblink sensor and automatic braking system to slow down the bike. The IR sensor are used to monitor the eye blink and detect the state of drowsiness, which placed the RF module it sends an alert message to the nearby vehicles in the range[9].

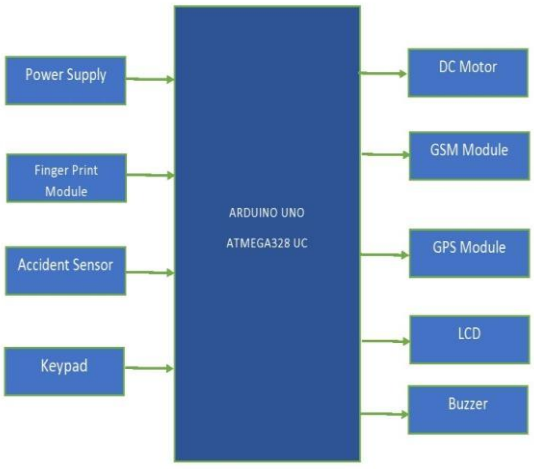
III. PROPOSED SYSTEM



In this project we have interfaced the finger print module so that placing finger in this module vehicle can be started by the authorised persons only, which it is provides more security[1]. We have provided a keypad in project that unknown persons can also access the vehicle by entering the password, so then the vehicle can also started with the use of keypad[3]. We also placed accelerometer for accident detection, if an accident occurs then it sends immediate message to the ambulance, family and police by using GSM module[8]. By using GPS it sends the exact location of the vehicle so that we can easily identify[12]. The DC motor is used for driving the vehicle and by placing RF transmitter and RF receiver we can also detect our vehicle. The vehicle can be tracked in multiple paths. This system not only used in two wheeler vehicles, we can also use in automobiles, financial, banking and military etc…

IV. MPLEMENTATION SYSTEM

BLOCK DIAGRAM



This is the proposed system of our project, firstly the sim is inserted in the GSM module it will be activated. By placing the finger in the finger print module, it will take the input of only authorized persons only and displays the output on the LCD and vehicle gets started. By using keypad we can also start the vehicle by entering the correct password[11]. The DC motor is used for the driving of the vehicle. If an accident occurs

then the buzzer gives the beeep sound & GSM will sends immediate message and GPS will sends the exact location of the vehicle to the family, police, and ambulance[7]. The output can be viewed by the LCD.

V. RESULTS

The result which we expect from our project is that the vehicle will be initiated only by the authorized person scans his/her finger on the finger print module then the vehicle gets started. If any other person put finger on the module, the data provides the unauthorized person and vehicle will not start it sends a message using GPS& GSM module to authorized person. If the vehicle has been theft authorized can easily track the location of the vehicle by using GPS which sends an immediate message to authorized phone number. Here the design of the hardware components are done and processed by the ATMEGA328P. The software implementation is done by Arduino IDE tool.

VI. CONCLUSION

The development of a smart vehicle security using GPS, Fingerprint authentication and GSM technologies was tested and result showed that it functions as expected. With the integration of the fingerprint authentication unit, the vehicle security was improved due to the fact that only authorized users can start the vehicle. The ability to be able to reduce the random occurrence of vehicle theft in our society is of utmost importance for protection of vehicles in our society. Additional technology like Radio Frequency (RF) also be adopted. This work is a well operating prototype of a fingerprint based vehicle staring system. The system intelligent agents were able to communicate well and appropriate output is given under user input. The system requests for user's finger, process it and give appropriate output based on if the finger is stored in the fingerprint module or not. Hence, fingerprint technology improves the security of an automobile making it possible for the bike to be used by only authorized users. Therefore implementing this system on vehicles makes the achievement of our bike security system comes in a cheap and easily available form. The output is viewed with the use of an LCD.

VII. FUTURE SCOPE

In our project we developed a vehicle starting with finger print sensor and accident detection by using GSM & GPS. In future we can add more features like OTP option for starting the vehicle by entering the number and switch option if small accident occurs if there is no problem for that person it sends message no problem to the family and ambulance. We can also implement this system by using wireless technology and also with WIFI module. The various features can also be added in the bike that efficiently identification and alerting unit in the vehicle. As a part from enhancement, this system can be implemented not only in bikes but also in other vehicles as well as in various other sectors like financial, banking, military and so on. So by adding these additional features in future the project will work more and more efficient.

REFERENCES

[1]. Yang S. and Verbauwhede I. (2003) "A Secure Fingerprint Matching Technique", http://www.emsec.ee.ucla.edu./pdf/2003acm.pd

[2]. Prashant Kumar R. (2013) "Two Wheeler Vehicle Security System" Published in International Journal of Engineering Sciences & Emerging Technologies, Dec. 2013. ISSN: 2231 – 6604 Volume 6, Issue 3, pp: 324334 ©IJESET

[3]. Visa M. Ibrahim "Microcontroller Based Anti Theft Security System Using GSM Networks with Text Message as Feedback" Published in International Journal of Engineering Research and Development e-ISSN: 2278-067X, p-ISSN: 2278-800X, www.ijerd.com Volume 2, Issue 10 (August 2012), PP. 18-22.

[4]. K. Yuvraj, G. Suraj, G. Shravan and K. Ajinkya, Multi-Tracking System for vehicle using GPS and GSM, International Journal of Research in Engineering and Technology (IJRET), vol.3, no 3, pp 127-130, 2014.

[5]. F. Bhatti, M. A. Shah, C. Maple, and S. U. Islam, ''A novel Internet of Things-enabled accident detection and reporting system for smart city environments,'' Sensors, vol. 19, no. 9, p. 2071, May 2019.

[6]. R. N. Nayan Kumar, V. R. Navya, N. Ganashree, K. U. Pranav, and N. Ajay, ''Intelligent vehicle accident detection and ambulance rescue system,'' Int.J. Advance Res., Ideas Innov. Technol., vol. 5, no. 3, pp. 685–687, 2019

[7]. P. Berade, K. Patil, P. Tawate, and M. U Ghewari''Intelligent accident identification and prevention system using GPS and GSM modem,'' Int.Res. J. Eng. Technol., vol. 5, no. 2, pp. 1915–1919, 2018.

[8]. A.B.Faiz, A. Imteaj, and M. Chowdhury, ''Smart vehicle accident detection and alarming system using a smartphone,'' in Proc. Int. Conf. Comput.Inf. Eng. (ICCIE), Rajshahi, Bangladesh, Nov. 2015, pp. 66–69.

[9]. S. Eduku, M. O. Alhassan, and J. Sekyi-Ansah, ''Design of vehicle accident prevention system using wireless technology,'' Int. J. Sci. Res. Publications, vol. 7, no. 10, pp. 397–403, 2016.

[10]. K.S.Alli, C.Ijeh-Ogboi and S.L .Gbadamosi, Design and Construction of a Remotely Controlled Vehicle Anti-Theft System via GSM Network, International Journal of Education and Research, vol. 3(5), pp 405-418, 2015.