



International Journal of Innovative Research in Computer and Communication Engineering

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Real Time Vehicle Tracking System for Theft Prevention

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ABSTRACT: A Vehicle security system has become an essential part for all bike owners as it ensures safety to their properties. This system is necessary because the Vehicle is an expensive property so the loss due to theft is not compensable. The technologies for bike security systems nowadays are evolving very fast each year. These Vehicle security systems almost cover controlling and managing appliances where the safety issue is the top priority. A major problem today for Vehicle owners is that they are in constant fear of having their vehicles stolen from a common parking lot or from outside their home. After successful registration, the owner can start the vehicle.

KEYWORDS: Vehicle anti-theft system; GPS; GSM

I. INTRODUCTION

The rise in bike theft incidents poses a significant challenge for bike owners worldwide, necessitating the development of robust security solutions. An anti-theft alarm system for bikes emerges as a crucial tool in safeguarding these valuable assets against unauthorized access and theft. This innovative system leverages technology to provide proactive protection, alerting bike owners and deterring potential thieves in real-time. By integrating sensors, alarms, and connectivity features, this anti-theft system offers peace of mind to bike owners, allowing them to confidently park their bikes in various locations without fear of theft. In this introduction, we explore the pressing need for such a solution, the underlying principles behind its operation, and the benefits it brings to bike owners in enhancing security and minimizing the risk of theft.

II. EXISTING SYSTEM

In the existing system, high-end vehicles lack robust security measures. Users typically secure their bikes using a wireless transmitter, but this system falls short in providing effective theft prevention. If someone other than the authorized user attempts to open the vehicle, there is no mechanism to trigger an alert. In the unfortunate event of vehicle theft, the current system does not offer any means to alert the user, leaving them unaware and unable to take immediate action. This lack of comprehensive security measures underscores the need for an advanced and proactive vehicle security solution to better protect users and their valuable assets.

III. PROPOSED SYSTEM

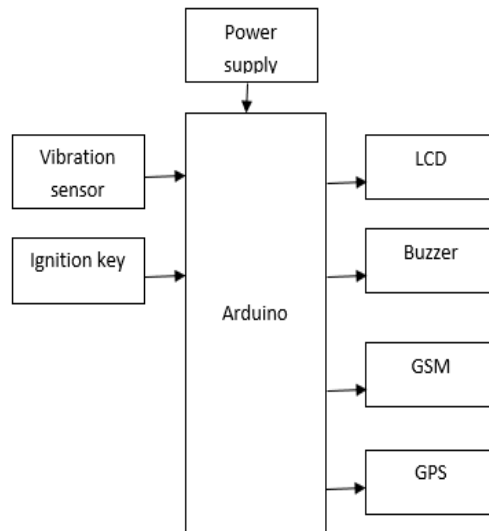
In this innovative anti-theft bike security project, a Vibration sensor plays a pivotal role in detecting unauthorized activities. The system is designed to enhance bike security by incorporating a multi-layered approach. When initiating the bike, the ignition key must be switched ON and recognized; only then will the engine start. If the Vibration sensor detects any irregularities during this ignition ON phase, indicating an attempt at theft, the system remains inactive. However, if the Vibration sensor is activated when the ignition key is in the OFF position, indicating an unauthorized attempt to tamper with the bike, the system responds swiftly. In such a scenario, a buzzer alert is triggered, creating an audible deterrent for potential thieves. Simultaneously, the system sends an immediate alert message to the user, providing real-time notification of the security breach. This dual-response mechanism ensures that the bike remains safeguarded both during ignition and while parked, offering comprehensive protection against theft and unauthorized access. The integration of these security features not only acts as a deterrent but also provides users with timely information to take appropriate action in the event of a security threat.



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BLOCK DIAGRAM



IV. MODULE DISCRIPTION

a. ARDUINO UNO:

The open-source microcontroller card known as Arduino Uno is based on the organization's Microchip ATmega328P microcontroller. The card has both complicated and simple information/yield (I/O) pin groups that can be connected to other development cards (safety) and different circuits. It has six simple I/O sticks and 14 advanced I/O pins, six of which have PWM yield work. It can be modified using the Arduino IDE (Integrated Development Environment) via a USB Type B cable. It can be powered by a USB link or a 9-volt battery from the outside, but it can accept voltages between 7 and 20 volts. It is similar to Leonardo and the Arduino Nano. Similar to the Creative Commons Attribution 2.5 license, the equipment reference configuration has been granted permission. It could very well be on the Arduino website. For some equipment adaptations, plan and assembly documents are also available.

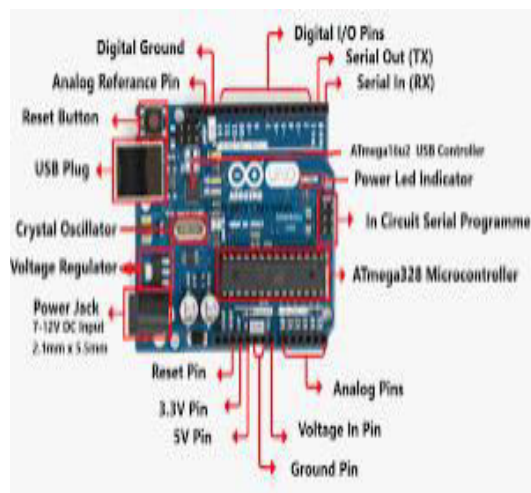


Fig 1: Hardware component Arduino UNO



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b. VIBRATION SENSOR MODULE

Vibration sensor module alarm Motion sensor module vibration switch SW-420 module based on the vibration sensor SW-420 and Comparator LM393 to detect if there is any vibration that beyond the threshold. The threshold can adjust using an onboard potentiometer. When this no vibration, this module output logic LOW the signal indicates LED light, and vice versa. If the module does not vibrate, the vibration switch was on the close state, the output of low output, the green indicator light. The product vibrates, vibration switches momentary disconnect, the output is driven high, the green light does not shine. the output can connect to the microcontroller, which to detect high and low level; so as to detect whether the environment exists vibration, play a role in the alarm.



Fig 2: Vibration Sensor

c. GSM MODULE:

The SIM900A is a ready-to-use GSM/GPRS module used in many mobile phones and PDAs. This feature can also be used to develop IoT (Internet of Things) and embedded applications. The SIM900A is a dual-band GSM/GPRS device operating at EGSM 900MHz and DCS 1800MHz. The SIM900A includes multiple GPRS Class 10/Class 8 slots (optional) and supports GPRS CS-1, CS-2, CS-3 and CS-4 coding schemes.



Fig 3: GSM Module

d. GPS MODULE:

A GPS (Global Positioning System) module called NEO-6MV2 is used for navigation. This module simply determines its longitude and latitude by checking its position on the ground. In a small package measuring just 16 x 12.2 x 2.4 mm, this straightforward and inexpensive transmitter provides numerous connectivity options. The NEO-6 module is ideal for low-cost and space-saving mobile devices due to its compact architecture, power supply, and memory options. The NEO-6MV2 has excellent navigational performance due to its innovative design. even in the most challenging environments.

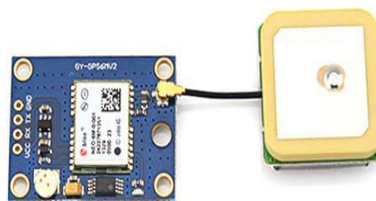


Fig 4: GPS Modem



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V. RESULTS

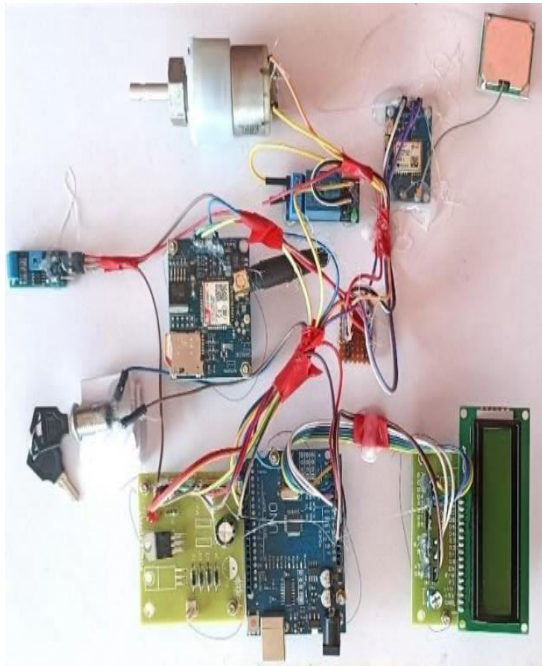


Fig 5: Ignition key is OFF

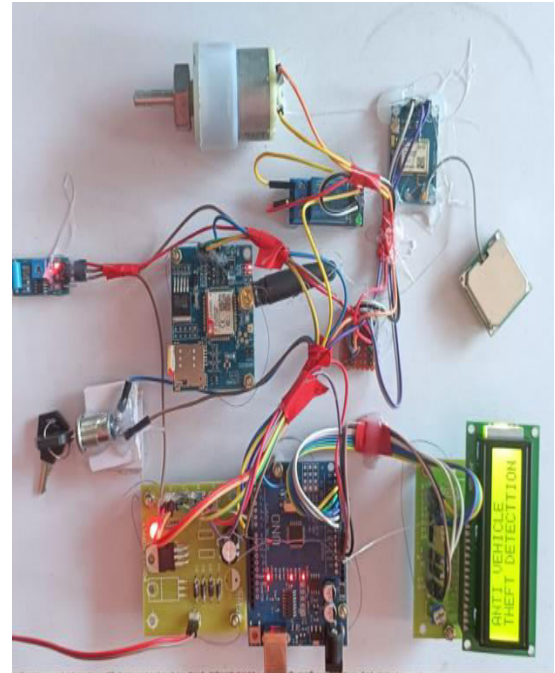


Fig 6: Ignition key is ON



Fig 7: Key Turned OFF Vibration Detect



Fig 8: message sends to vehicle owner



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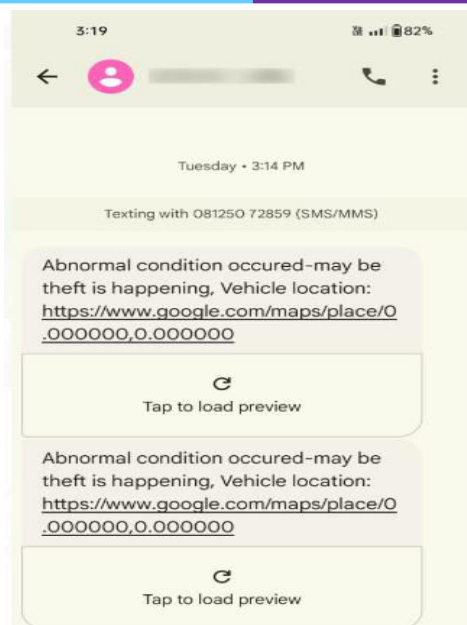


Fig 9: SMS Alert of Abnormal Condition

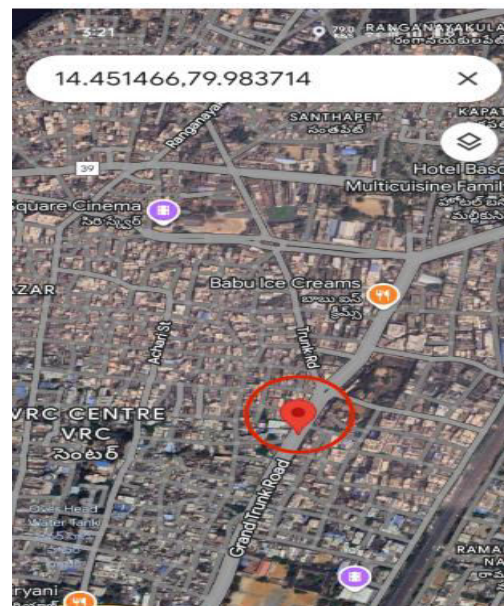


Fig 10: Location of the vehicle

VI. CONCLUSION

Vehicle theft detection is of paramount importance in societies reliant on transportation infrastructure. This system offers a robust solution for ensuring safety and security while maintaining affordability with minimal maintenance costs. By employing advanced theft detection mechanisms, it not only safeguards vehicles but also instills confidence in communities. Furthermore, this system serves as a foundation for developing future applications in the realm of IoT (Internet of Things), fostering innovation and enhancing overall security measures. Its integration within IoT-oriented systems underscores its significance in addressing contemporary security challenges and advancing technological solutions for the greater good.

REFERENCES

- [1] LEE, Sangwon; YOON, Dukhee; GHOSH, Amitabha. Intelligent parking lot application using wireless sensor networks. In: Collaborative Technologies and Systems, 2008. CTS 2008. International Symposium on. IEEE, 2008. p. 48-57.
- [2] TANG, Vanessa WS; ZHENG, Yuan; CAO, Jiannong. An intelligent car park management system based on wireless sensor networks. In: Pervasive Computing and Applications, 2006 1st International Symposium on. IEEE, 2006. p. 65-70.
- [3] BENSON, Jonathan P., et al. Car-park management using wireless sensor networks. In: Local Computer Networks, Proceedings 2006 31st IEEE Conference on. IEEE, 2006. p. 588-595.
- [4] C. Nandakumar, G. Muralidaran and N. Tharani "Real Time Vehicle Security System through Face recognition" Division of Mechatronics, Department of Production Technology, Madras Institute of Technology, Anna University, Chennai, INDIA.
- [5] A. Pazhampilly Sreedevi, B. Sarath S Nair "Image Processing Based Real Time Vehicle Theft Detection and Prevention System".
- [5] Otegbulu B A 2015 Economic Valuation of Poor Road Infrastructure Lagos: A Focus on Urban Households Economic Valuation of Poor Road Infrastructure Lagos A Focus on Urban Households January 2011
- [6] Mishra A and Foundation R 2016 Int. Reaserch J. Soc. Sci. 5, 3 p. 67-73
- [7] Elwakil E Eweda A and Zayed T 2012 Modelling the effect of various factors on the condition of pavement marking May
- [8] Christie N 1831 A review of accidents and injuries to road transport drivers January



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