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IOT – BASED THEFT DETECTION DEVELOPMENT

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ABSTRACT :

Every building, be it residential, commercial, or otherwise, is insecure. Security and safety are highly valued by all people. Particularly with the current environment where crimes are increasing daily, we need to feel more secure. This paper presents the development of the theft detection using PIR sensor with the aid of Internet of Things (IoT). The main parts of this project are an Arduino, an ESP8266 Wi-Fi module, and an PIR sensor for user identification and notification. In this project, an PIR sensor is used to identify the motion of person. The user's receives notifications via the ESP8266 Wi-Fi module. The primary controlling device for the project is an Arduino. An Arduino is linked to an ESP8266 Wi-Fi module and an PIR sensor. The Arduino is reading data from the PIR sensor continually. The sensor will identify theft when it happens and communicate the processed data to the Arduino.

Key words: PIR sensor, Arduino, theft detection, Internet of things, ESP8266 Wi-Fi module.

Introduction :

The rising prevalence of theft in our society has major worry, involving a wide range of settings such as homes, workplaces, and public spaces, underscoring the vital need for stronger security measures [1]. Currently, where criminal activity is on the rise, guaranteeing safety and security is critical to protecting persons and their belongings. Also, security is becoming the hardest task these away from home, worries about the security and safety of their belongings while they are away especially common. These houses must have an extremely effective and initiative-taking theft detection system. Any attempt by trespassers to enter the property must away from home, worries about the security and safety of their belongings while they are away especially common. These houses must have an extremely effective and their ability to effectively detect and prevent theft scenarios [3]. Many of the infrastructures that are now in place suffer from issues with response time, the ESP8266 Wi-Fi module examines the information quickly [5]. As a result, a visible indicator, such as an LED lighting up, is activated to call rapid attention to the potential hazard. Simultaneously, an auditory alert is activated to notify individuals in the area of the suspicious activity.

Furthermore, the ESP8266 Wi-Fi module connectivity to communicate with the user's Blynk mobile application. This enables real-time alerts and warnings to be delivered directly to the user's smartphone or linked device. Users receive fast warnings via the Think Speak Server,allowing them to take required actions or contact authorities in the event of a theft or security breach [5].

Including modern technology into a theft detection system, such as the PIR sensor and ESP8266 Wi-Fi module, serves as a proactive method to fortifying accurate alarm mechanisms, and real-time monitoring. As the security threat landscape changes, advanced technologies are becoming more and more important for enhancing home security.

Using IoT technology and PIR sensors, these goals seek to develop and improve current home security systems, guaranteeing thorough

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surveillance and quick reactions to security breaches [4][5].

The ESP8266 Wi-Fi module, which serves as the central control unit, is at the heart of this project. It communicates with an PIR sensor, which detects the presence and location of things within its range. The ESP8266 Wi-Fi module is attentive for any odd activity or unauthorised movement by continuously monitoring the data received from the PIR sensor [4].

ESP8266 Wi-Fi module with an PIR sensor to develop a powerful theft detection and warning system [4]. This revolutionary device intends to identify probable theft incidents in its surroundings and instantly notify the user via a Blynk mobile application.

An PIR sensor and an Arduino were the two main instruments used in this research. An PIR sensor is a device that detects objects at a distance using PIR sound waves [6]. Using a transducer, this PIR sensor sends and receives PIR pulses to convey information about an object's proximity. If someone is within range, it will be determined by the PIR sensor at the input [6]. The PIR sensor was connected to the Arduino, which was used to identify objects and receive input signals. It will then read the input signal and send a signal to the Server via an ESP8266 Wi-Fi module.

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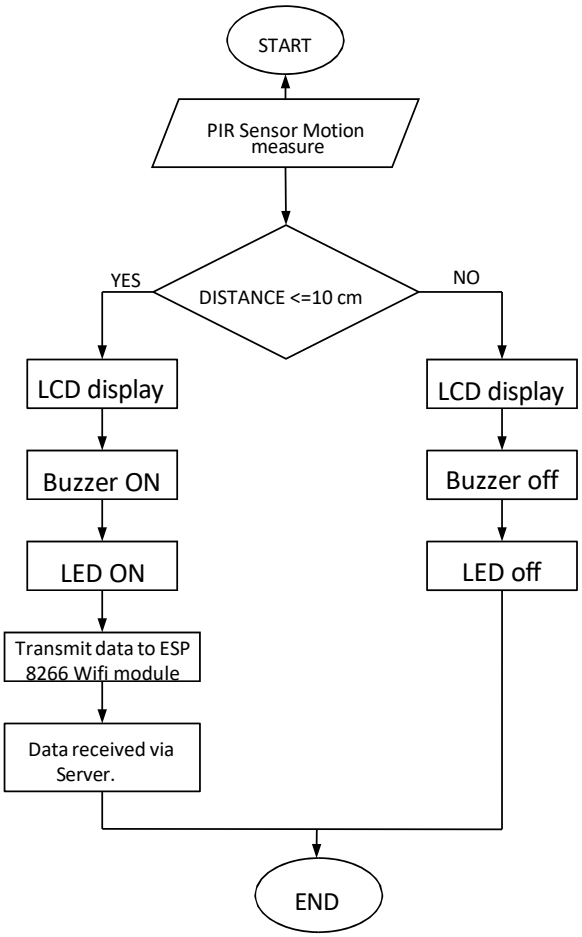

Hardware implementation :

The completed circuit connection of the project is depicted in Fig. 3 which is placed in PVC box. While final prototype of the project is depicted in Fig. 4. House are modeled in the final prototype. The front door of the house had an PIR sensor installed above it for object detection. The PIR sensouse Regular and Italic styles to distinguish different fields as shown in the References section. Number the reference items consecutively in square brackets (e.g. [1]).

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[2] First Author and Second Author. 2002. International Journal of Scientific Research in Science, Engineering and Technology. (Nov 2002), ISSN

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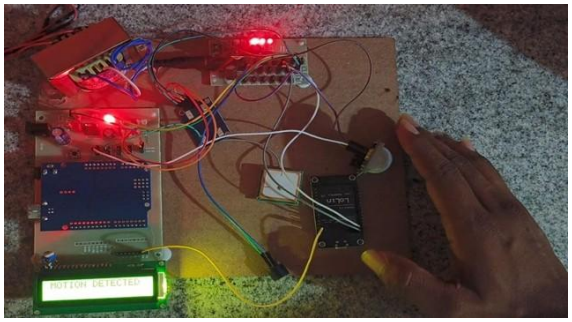

Results and Discussion :

When the system is turned on, the buzzer, LCD, LED, and PIR sensor all turn on. When an object is detected, the PIR sensor will send a signal to the Arduino. Table 1 show results of PIR range, LCD display and output notification. When the PIR sensor did not detect any motion in the surrounding area, the buzzer and LED in OFF condition, while LCD display “Home is safe!”, “Have a nice day!” When the PIR sensor in the range of 201cm-300cm, the green LED and buzzer are in ON condition, while LCD display “Warning!”, “Someone Coming!” When PIR sensor detects any object in range 0cm-200cm, the LED green and red are in ON condition simultaneously, and the buzzer also ON with loudly sound, while LCD display “Dangerous!”, “Someone Here!” The information is then transmitting data to ESP8266 Wi-Fi module, and the data will received via Think Speak Server, where it is shown so that the user can monitor their security. Until the system is shut off, the message "Home is safe" will continuously show up on the LCD panel.

TABLE I

Show PIR range, LCD display and output notification.

PIR range	LCD Display	Output
Out of range	“HOME IS SAFE”	buzzer OFF.
	“HAVE A NICE DAY”	
1 cm-5 cm	"WARNING!" "SOMEONE COMING”	buzzer
5 cm -10 cm		ON
	“DANGEROUS! ” “SOMEONE IS HERE”	buzzer
		ON

To ensure the successful execution of the project depicted , where the Think Speak Server initiates a "CALL THE POLICE NOW!" notification on the Think Speak Server upon detecting an object within the 0–10 cm range, a connection must be made between the ESP8266 Wi-Fi module. This is an important stage because a stable Wi-Fi connection is necessary for the project to functioning well. Make sure the ESP8266 module connects to the Wi-Fi network properly by implementing the necessary code, before proceeding to the core functionality of the project.

Conclusion :

In conclusion, thief detector using PIR sensor with the aid of IoT has fully functioned and accomplished the objectives. Achieving the many benefits of wireless network connections is made possible by the application of IoT. An Arduino is used in the design of an embedded security system that monitors theft to identify potential home invaders.

References :

[1] A. N. Mustafa, S.R.M. Sakip, “High Raised Buildings in Urban Area Contributes to the Snatch Theft Incidents,” Malaysian Journal of Sustainable Environment, Vol. 3, No. 2, pp. 65-79, 2017.

[2] R. Pimpalkar., S. Kute, Vaibhav More, M. R Gorbal “Theft Detection System,” Iconic Research and Engineering Journals, Vo. 4, No. 10, pp. 53-58, 2021.

[3] Y. Chu, K. Cetin, “Sensing systems for smart building occupant- centric operation. “The Rise of Smart Cities,” pp. 431-461, 2021.

U. Sirisha "IOT based anti-theft detection and alerting system using raspberry PI," International Research Journal of Engineering and