



Artificial Intelligence Based Threat Intrusion Detection

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ABSTRACT: Technology has presented many security frameworks to society of which IoT based security is more populous. For many security purposes, sensors and camera act as backbone of the system which look no more than an alarming system detecting movement. This work investigates the potential of full security control which is the aim of the automation systems in near future. An automated security system using Internet of Things along with alert text is presented in this project.

KEYWORDS: Internet of things, alert message, sensors.

I. INTRODUCTION

In the modern era, security and surveillance are important issues. Recent acts of theft/terrorism have highlighted the urgent need for efficient video surveillance and on-the-spot notification of ongoing thefts to house owners and other household members. A number of surveillance solutions are currently available on the market, such as CCTV cameras and digital video recorders (DVRs) that can record the unauthorized activities of a trespasser, but cannot distinguish between human and non-human objects. It is also challenging for old systems to detect the intruder in the dark using a CCTV camera without night vision capability. The major flaw with this kind of arrangement is that it demands the 24/7 availability of a house owner or member, or manual video surveillance, which is almost impossible. A system should be designed which can overcome all the downside of the existing systems in practice currently. This paper overcomes the shortcomings of above mention technique to find of crime taking place.

II. LITERATURE SURVEY

Intelligent border security intrusion detection using IOT and Embedded system uses thermal imaging camera (FLIR) for detection of various objects and infiltrators. It also captures video, the intrusion detection and also includes sound sensor to detect specific sounds and motion sensors to sense suspicious movements.

REWARD-WideAreaproject:Real time wide area radiation surveillance system is a novel mobile system for real-time radiation surveillance. REWARD will be useful for many different scenarios such as nuclear terrorism threats, lost radioactive sources, radioactive contamination or nuclear accidents. It can be deployed in emergency units and in general in any type of mobile or static equipment, but also inside public/private buildings or infrastructures. French HFSWR contribution to the European Integrated maritime surveillance system focuses on long range detection with the new High Frequency Surface Wave Radar (HFSWR).

Security issues in the IoT based CPS (Cyber – Physical Human Systems) are exacerbated with human participation in CPHS to mitigate the vulnerabilities in both the technologies and the human involvement.

The Intelligent Home Security system using Agent based IOT Devices is capable of monitoring sensors and autonomously controlling actuators to flexibly construct security services. It describes a design of IHSS and some prototype systems.

Now-a-days most of the theft crimes occurs in shops, malls, etc. Secondly in such areas CCTV is used. But work of normal CCTV camera requires continuous human resource to surveillance the area which is nearly impossible and because of this, crimes are found out after it is being committed. By observing all these parameters, we decided to



make an intelligent security system which will detect crime or any kind of misdeed action and required action will be taken at that instant. This paper overcomes the shortcomings of above-mentioned techniques and provides a solution to capture the thieves.

III. METHODOLOGY

In the proposed system, we are doing normal surveillance in the shop or bank with the help of camera during working hours. During the closure time of the shop or bank, the authorized person will turn on the security mechanism through the webpage. Once the security mechanism is turned on, then the microcontroller will activate the PIR sensor for detecting any human presence in that area. And if any such uncertainty like human presence is detected an alert message along with the captured image will be sent to the police and authorized person through email with the help of IOT. And in addition to that, to avoid the escape of burglar, the microcontroller will produce the irritating sound, laser and the slightly harmful gas to make sure the person doesn't exit. The security mechanism will be turned off by the authorized person when the police arrives then gas remover will remove the gas from the area so that the police can capture the thief. By implementing this method we are able to stop the theft and also able to capture the thief.

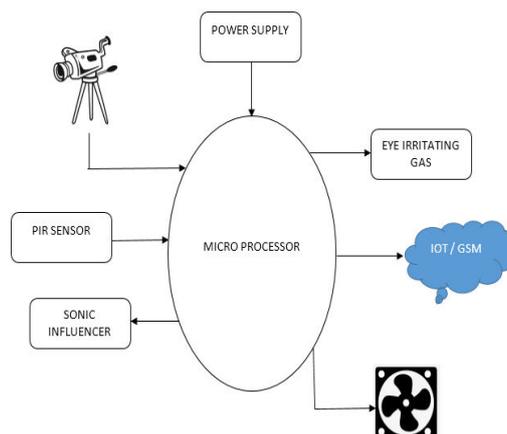


Figure 1.1. Block diagram of proposed model.

Technology has presented many security framework to society of which IoT based security is more populous. For many security purposes, sensors and camera act as backbone of the system which look no more than an alarming system detecting movement. This work investigates the potential of full security control which is the aim of the automation systems in near future.

Raspberry Pi3 B+ is a tiny computer board that comes with CPU, GPU, USB ports, I/O pins, WiFi, Bluetooth, USB and network boot and is capable of doing some functions like a regular computer. The model B+ stays ahead in terms of processing speed and comes with an improved wireless capability. The dual-band WiFi 802.11ac runs at 2.4GHz and 5GHz and provides a better range in wireless challenging environments and Bluetooth 4.2 is available with BLE support. This B+ model is three times faster than Pi 2 and 3 which is a major development in terms of speed, capable of executing different functions at a decent pace. The ethernet port comes with 300 Mbit/s which is much faster than earlier version with 100 Mbit/s speed. It is known as gigabit ethernet based on USB 2.0 interface. Four pin header is added on the board that resides near 40 pin header. This allows the Power over Ethernet (PoE). PoE works only in the presence of PoE hat.

A PIR sensor is generally known to the world as motion sensor or motion detector. We can actually build motion sensors or motion sensing lights we get on market with the help of Arduino and PIR sensors. So this tutorial is also a beginning guide to build motion sensor or a motion detector based on Arduino. PIR is a PYROELECTRIC (“Passive”)



INFRARED SENSOR. It is based on infrared technology, automatic control module, high sensitivity, high reliability, ultralow-voltage operating mode, widely used in various auto-sensing electrical equipment, especially for battery-powered automatic controlled products.

A pump motor is a DC motor device that moves fluids. A DC motor converts direct current electrical power into mechanical power. DC or direct current motor works on the principal, when a current carrying conductor is placed in a magnetic field, it experiences a torque and has a tendency to move. This is known as motoring action. Pumps operate by some mechanism and consume energy to perform mechanical work by moving the fluid. Pumps operate via many energy sources, including manual operation, electricity, engines, or wind power, come in many sizes, from microscopic for use in medical applications to large industrial pumps.

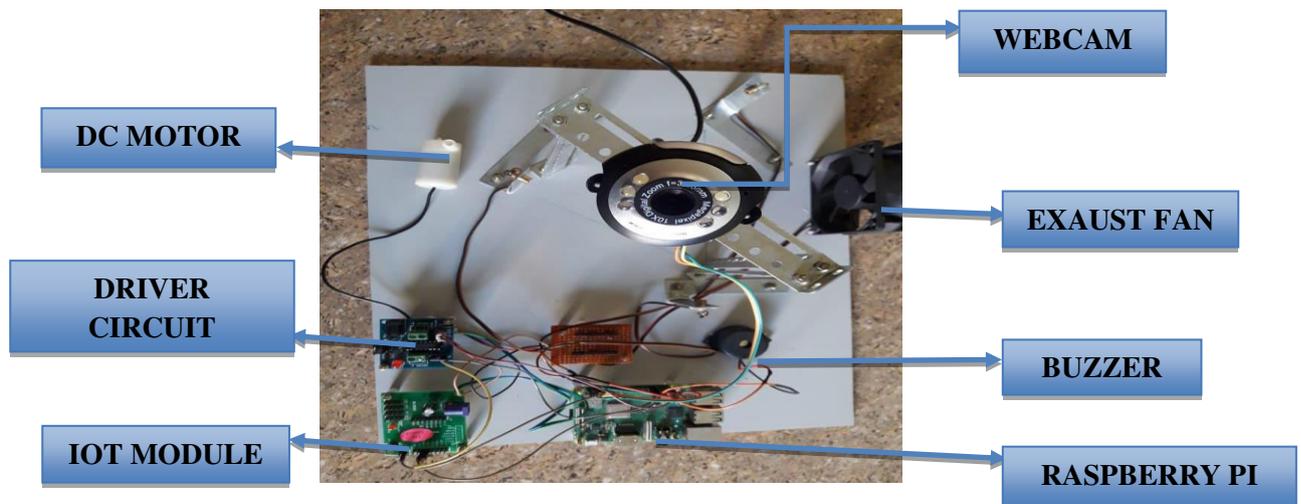


Figure 1.2. Working kit for the Proposed model.

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke. It generates consistent single tone sound just by applying D.C voltage. Using a suitably designed resonant system, this type can be used where large sound volumes are needed.

LCD stands for liquid crystal display. They come in many sizes 8x1, 8x2, 10x2, 16x1, 16x2, 16x4, 20x2, 20x4, 24x2, 30x2, 32x2, 40x2 etc. Many multinational companies like Philips Hitachi Panasonic make their own special kind of LCD'S to be used in their products. All the LCD'S performs the same functions (display characters numbers special characters ASCII characters etc.). Their programming is also same and they all have same 14 pins (0-13) or 16 pins (0 to 15). Alphanumeric displays are used in a wide range of applications, including palmtop computers, word processors, photocopiers, point of sale terminals, medical instruments, cellular phones, etc.

The Internet of Things (IOT) is the network of everyday objects which includes physical things with electronics, software, sensors and connectivity enabling data exchange.

Basically, a little networked computer is attached to a thing, allowing information exchange to and from that thing. Be it light bulbs, toasters, watches, fans, planes, trains, or anything else can be combined with it to accept input or to gather and generate informational output typically object status or other status data. This means computer will be permitting every device around us interconnected across the internet.

The ULN2003 is a monolithic high voltage and high current Darlington transistor arrays. It consists of seven NPN Darlington pairs that feature high-voltage outputs with common-cathode clamp diode for switching inductive loads. The collector-current rating of a single Darlington pair is 500mA. The Darlington pairs may be paralleled for higher current capability. Applications include relay drivers, hammer drivers, lamp drivers, display drivers (LED gas



discharge), line drivers, and logic buffers. The ULN2003 has a 2.7kΩ series base resistor for each Darlington pair for operation directly with TTL or 5V CMOS devices.

Exhaust fans are used to suck hot or humid air out of a room and to allow fresh air to enter from outside to replace the hot or humid air. The effectiveness of these depends on the size of the room and the airflow rate necessary for that area. Most fans are powered by electric motors, but other sources of power may be used, including hydraulic motors, hand cranks, internal combustion engines, and solar power.

Python is a widely used high-level programming language. python has a design philosophy that emphasizes code readability and a syntax that allows programmers to express concepts in fewer lines of code. Python features a dynamic type system and automatic memory management and supports multiple programming paradigms, including object-oriented, imperative, functional programming, and procedural styles. It has a large and comprehensive standard library.

Python interpreters are available for many operating systems, allowing Python code to run on a wide variety of systems. CPython, as the main reference implementation of Python, is an open source software and has a community-based development model, as do nearly all of its variant implementations. CPython is managed by the non-profit Python Software Foundation.

IV. RESULT

This project provides a wireless sensing system for the surveillance and detection of a human intruder as well as instant notification of the intrusion to the authorized person and the police to prevent theft. In the meantime, to prevent the escape of the robbers, certain techniques are proposed in this project.

V. DISCUSSION

The Major flaw with the previous kind of arrangement is that it demands the 24/7 availability of a house owner or member, or manual video surveillance, which is almost impossible.

This project overcomes the above mentioned defect and provides a support for the cops to easily identify and stop the threat.

Since we have mailing mechanism we can ensure if its really a threat and the message in it contains the location updated in the web page.

Since this system updates the real location of theft this system can be used in systems like vehicle theft in future.

This system can be developed in such a way that the owners can track the movement of goods through roadways and any interruption or problem in transport will be reported to the respective person.

If this system is integrated in the doors it can be used to even protect the house when the members of house are far away and it reduces the chance of theft.

VI. CONCLUSION

This project presents an innovative method to prevent theft by providing spontaneous notification of ongoing intrusion. This project provides a wireless sensing system for the surveillance and detection of a human intruder as well as instant notification of the intrusion to the authorized person and the police to prevent theft. In the meantime, to prevent the escape of the robbers, certain techniques are proposed in this project.

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