International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 09 Issue: 06 | Jun 2022 www.irjet.net p-ISSN: 2395-0072

IoT Based Smart Surveillance System

Adarsh Kumar[1], Sudhir Kashyap[2], Bahadur Singh Simar[3], Ganesh Patil[4], Shashank kumar Singh[5], Prashant Pal[6]

[1,2,3] B.Tech(ESE)NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA, INDIA
[4]PROJECT ENGINEER ,NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA, INDIA
[5,6] SCIENTIST B, NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA, INDIA

Abstract - The theme of this task is shrewd visual surveillance systems. In latest times, we used surveillance cameras for monitoring and recording moments, however manual surveillance and real-time monitoring is one of the most important and difficult branches of laptop vision, which has been broadly utilized in peoples' life, such as monitoring security. The presence of surveillance cameras and a warning sign indicating that the region is underneath monitoring can serve as a significant deterrent to criminals and thieves, as the recorded footage can be used to pick out humans and hint their activities. It can be extra superior with Wi-Fi, which is a nearby area network going for walks in a neighborhood surroundings or in a distributed setting. Wi-Fi community protocol is one of the leading communication applied sciences used in the IoT world which supports low transmit energy alongside with low cost. ESP32 is the second technology of Express if employer IoT answer and it includes Wi Fi. ESP32 reduces excessive community site visitors and computing load. This machine enables the person to receive notifications on every occasion the intrusion is detected with the assist of sensors linked with the surveillance cameras.

Key Words: Surveillance, Security, Intrusion, Wi-Fi, User, Notification ...

1. INTRODUCTION

An embedded machine is a special-purpose pc machine that is designed to execute one or a few unique functions, often under time limitations. It's often located as phase of a larger gadget that consists of each hardware and mechanical components. A general-purpose computer, such as a personal computer, on the different hand, can do Avast vary of functions depending on the programming. Embedded structures have become increasingly more full-size in modern-day world, as they manage many of the gadgets we use on everyday basis. An embedded machine is a set of pc hardware and software that is both a constant in the skills programmable and is constructed for a sure kind of utility device. Embedded systems can be discovered in a range of places, which includes industrial machines, automobiles, clinical equipment, cameras, household appliances, aero planes, merchandising machines, and toys (In addition to the extra seen cell cellphone and PDA). A programming interface is supplied for programmable embedded systems, and embedded structures programming is a specialist vocation. Embedded Java and Windows XP Embedded, for example, are running systems and language platforms specifically designed for the embedded market. The safety paradigm has shifted from "investigation of occurrences" to "prevention of doubtlessly catastrophic incidents" as a end result of latest world events. Existing digital video surveillance structures without a doubt grant the science for capturing, storing, and distributing video, leaving danger detection to human operators alone. Surveillance video monitoring with the aid of human beings is a time-consuming task. It's widely acknowledged that monitoring video feeds necessitates a higher level of visible focal point than most different tasks. Specifically, vigilance, or the capability to pay interest and react to unusual events, is highly tough and susceptible to inaccuracy due to attention lapses

2. LITERATURE SURVEY

1. Smart surveillance monitoring system. This paper is presented by Akshat Jain, Owais Kazi Computer Engineering Department, Pune Institute of Computer Technology, Pune, India. The primary goal of this article is to reveal that in modern day world, when everyone desires to preserve their property secure and secure, video surveillance for viewing a precise location has turn out to be a need. To address this issue, we developed a clever monitoring device for locations such as financial institution vaults and homes the place human presence is not available. It is now not crucial to consistently reveal the area with cameras in such situations. This consumes each the power and the storage area required for the footages. Using a PIR sensor, our device will become aware of human presence. For faraway sensing and surveillance, Raspberry Pi operates and controls motion-detecting sensors and video cameras, transmits stay video and records it for later viewing.

2. IoT Based Facial Recognition Security System. This paper is introduced by using Prashanth Balraj Balla, K.T. Jadhao. The main purpose of this paper is to set as an alert for domestic traffic and provide data about the site visitors in a dynamic internet site and phone application. The signals are dispatched based totally on

the data acquisition the usage of sensors and the signals of intrusion or thefts, will be dispatched to the registered person alongside with the photo of the incident using a digi cam module

3. WORKING

In this project, we are going to use the ESP32-CAM to create a surveillance system that detects the presence of unlawful people. With theESP32-S chip, the ESP32-CAM is an extraordinarily compact camera module. We can construct a face attention device the usage of the ESP32-CAM module besides any complicated programming or additional components. We're going to use an ESP32 digital camera with IR sensors and an Arduino Uno in this system. If the sensors observe an illegal person entering, an alarm will be despatched to the humans through GSM module, as properly as buzzer indicators at the surveillance system's premises. The proposed functionalities of the design; we divide the system into two principal units: facts acquisition and machine control. The data acquisition is modelled the use of the Arduino, IR sensor. Control system is via single-chip microcomputer controlling the GSM Module , SIM900A, ESP Camera, then the real-time display of the obtained statistics is carried out the use of ESP Camera.

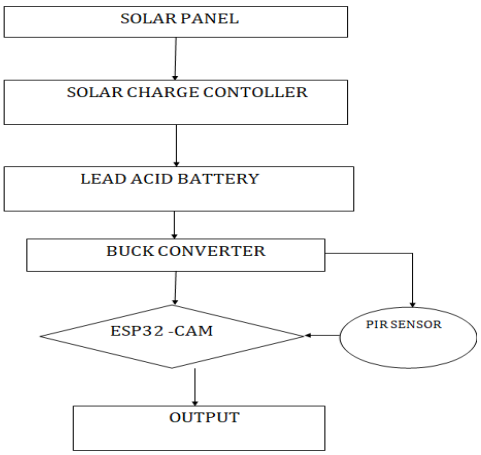

Fig -1: Block Diagram

3.1 ESP-32 CAM MODULE

The ESP32-CAM development board includes an ESP32-Sprocessor, an OV2640 camera, a microSD card slot, and various GPIOs for connecting peripherals. The ESP32-CAM is a small camera module that runs on the ESP32-S microcontroller and costs around $10. Aside from the OV2640camera and many GPIOs for connecting peripherals, it also has a micro SD slot for storing photographs. The AI-Thinker ESP32-CAM

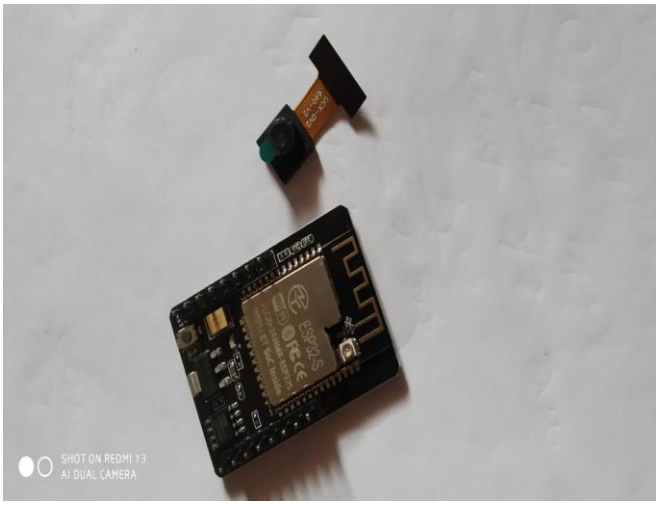

Fig -1: ESP-32 CAM

3.2 BATTERY

The lead–acid battery is a kind of rechargeable battery first invented in 1859 via French physicist Gaston Planté. It is the first kind of rechargeable battery ever created. Compared to modern-day rechargeable batteries, lead–acid batteries have particularly low electricity density. Despite this, their capacity to furnish excessive surge currents capacity that the cells have a surprisingly massive power-to-weight ratio. These features, alongside with their low cost, make them eye-catching for use in motor automobiles to furnish the excessive modern12V 1.3Ah Rechargeable Lead Acid Battery is normally use for robots in competition. Wired or Wireless Robots runs for a long time with high speed with this type of battery. Seal Lead Acid (SLA) Rechargeable battery is the most common general purpose battery. Low cost, robust and less maintenance required are the advantages of SLA. But it is considered heavy weight for certain robotic application. To charge SLA batteries, you can use any general DC power supply as long as it provides the correct voltage to our battery.

Fig -2 : Lead Acid Battery

3.3 HARDWARE

Fig- 3: Components

3.4 PIR SENSOR

PIR sensors allow you to sense motion. They are small, inexpensive, low-power, easy to use and don't wear out. For that reason they are commonly found in appliances and gadgets used in homes or businesses.

Fig-4: PIR Sensor

4. SOFTWARE

IDE, which stands for Integrated Development. Environment is an official Arduino.cc software that is primarily used for authoring, building, and uploading code to the Arduino device. Almost all Arduino modules are compatible with this open source software, which is simple to install and begin compiling code on the fly.

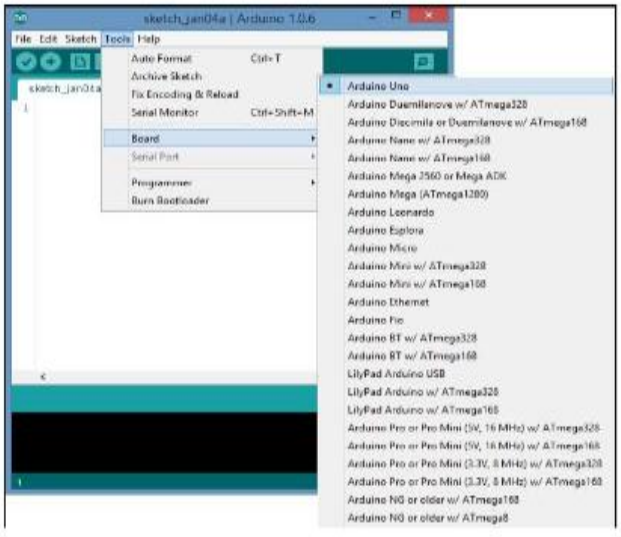

Fig- 5: IMPLEMENTATION OF SOFTWARE

5. WORKING AND IMPLEMENTATION

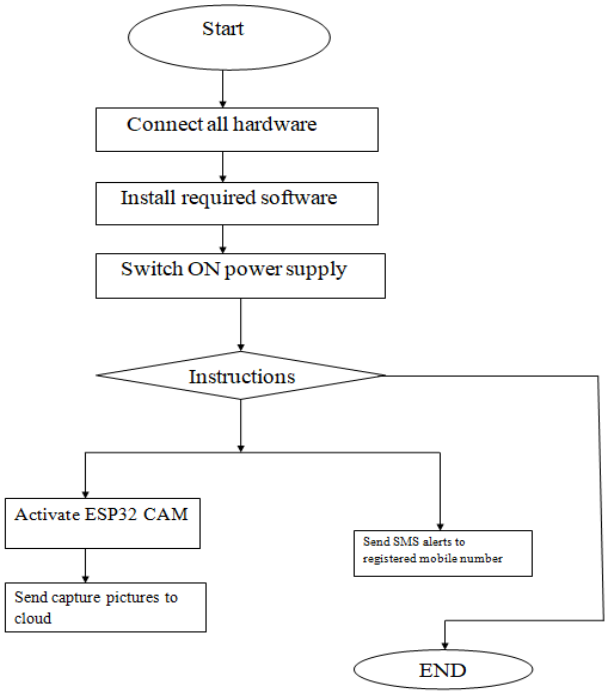

Fig -6: Flow Chart

6. RESULTS

By this project, we are enforcing a clever surveillance system the usage of ESP32-CAM module. So, by using the usage of this system, if an intruder is entered into the domestic or any suspects have been walking around your domestic one can get an on the spot alert to their mobile through SMS alongside with-it buzzer will generate an alarm. This system is carried out based totally

on Arduino UNO that procedures and detects the presence of an intrusion Captured pics are dispatched to the registered Email account.

7. CONCLUSION

As a result, we may infer that our system is capable achieving all of the aforementioned goals and of overcoming the existing system's challenges. With our proposed system, surveillance is vastly improved. The designed system enabled us to achieve the following goals: real-time monitoring, reduced human intervention, and use of active sensors in the field.

FUTURE SCOPE

More domestic home equipment will be managed with the aid of incorporating various sorts of sensors in the subsequent years. Sensor fusion, low-power digital components, and smartphone mobile competencies can all be used to prolong the lifestyles of such devices. Physically handicapped persons will advantage significantly from this tools in the future.

REFERENCES

1. https://probots.co.in/12v-1-2ah-rechargeable-lead-acid-battery-for-robotics.html
2. https://www.electronicscomp.com/esp32-cam-wifi-module-bluetooth-with-ov2640-camera-module-2mp-for-face-recognization?gclid=EAIaIQobChMIkfuZvvGs-AIVrplmAh0ypQdyEAQYAyABEgKl-PD_BwE
3. https://robu.in/product/pir-motion-sensor-detector-module-hc-sr501/?gclid=EAIaIQobChMIgKfU3fGs-AIVFtdMAh1EKwF2EAQYAiABEgJHR_D_BwE
4. https://www.electronicscomp.com/solar-panel-12v-12w?gclid=EAIaIQobChMIp7-b_fGs-AIVE5_CCh3Y-Q7HEAQYAyABEgL-9_D_BwE
5. https://www.indiamart.com/proddetail/mppt-solar-charge-controller-12v-5a-22707096848.html
6. https://www.electronicscomp.com/ft232rl-usb-ttl-serial-adaptor-module-for-arduino?gclid=EAIaIQobChMI__LivfKs-AIVyxErCh2rLwCuEAQYAyABEgKfV_D_BwE
7. https://www.electronicscomp.com/lm2596-dc-dc-adjustable-step-down-power-supply-module?gclid=EAIaIQobChMIusGAhfOs-AIVCJlmAh0UNQC4EAQYASABEgK2rPD_BwE

BIOGRAPHIES

ADARSH KUMAR
B.Tech(ESE)NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA, INDIA

SUDHIR KASHYAP
B.Tech(ESE)NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA, INDIA

BAHADUR SINGH SIMAR
B.Tech(ESE)NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA, INDIA

PROJECT ENGINEER NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD , MAHARASHTRA , INDIA

SCIENTIST B NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA , INDIA

SCIENTIST B NATIONAL INSTITUE OF ELECTRONICS AND IT AURANGABAD, MAHARASHTRA,