WIRELESS MOVING CAMERA BASED SURVEILLANCE SYSTEM

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Abstract

The epidemic growth of wireless technology and mobile services in this epoch is creating a great impact on our life style. Some early efforts have been taken to utilize these technologies in surveillance. The purpose of the project was to build a motion detection AV camera, using simple Passive Infra-Red (PIR) sensors, micro controller, stepper motor and camera. In this AV Camera with Bluetooth terminal used which used for surveillance system which captures the Intruders and alert through the Bluetooth terminal. The captured Intruders are viewed in the systems by camera receiver. The system provides high reliable working with low cost and low power consumption.

Index Terms: PIR Sensor, AV Camera, Bluetooth Terminal.

I.INTRODUCTION

The Motion in any living object due to its body temperature can be figured out in any direction with or without speed. This can be achieved either by mechanical devices that physically interact with the field or by electronic devices that observe and measure changes in the given environment. Motion sensors are used in indoor spaces.

A motion detector i.e. Passive Infrared sensor (PIR sensor) is an electronic device that is being used to measure the Infra-Red (IR) light radiating from objects. PIR sensors are used in the construction of PIR-based motion detectors. All objects above absolute zero emit energy in the form of radiation. Usually infrared radiation is invisible to the human eye but can be detected by electronic gadgets. "Infra" means below our ability to detect it visually and "Red" is because of its Colour representation which shows the lowest energy level of the colour RED and applies to many sources of invisible energy.

II. EXISTING SYSTEM

A. Surveillance Based Drones

The existing system is drone based. This system is used mostly in Surveillance. In this, camera is fixed in drones to capture the Intruders. In some places drones are not convenient to travel because of critical environment. In such cases surveillance is complicated. Privacy law has not kept up with the rapid place of drone technology, and policy may believe they can use drones with spy on citizens with legal process. Drones cannot communicate with civilians for more detailed intelligence.

In these process some approaches are used. They are 1. Appearance-Based Approaches 2.Motion-Based Approaches 3.Hybrid Approaches

Drones cannot capture surrendering military personnel, abandoned hardware or military bases. They cannot go from door to door at least, not yet Finally the worst case scenario is when drones are a fleet of drones have been commandeered or taken control by the enemy. While security measures help make this possibility more difficult, It will never be impossible.

B. *Appearance-based methods*

It rely on Machine Learning and proved to be powerful even in the presence of complex lighting variations. They are typically based on Deform-able Part Models (DPM), Convolution

Neural Networks (CNN), or Random Forests. Among them the Aggregate Channel Features (ACF) algorithm is considered as one of the best.

These approaches work when the target objects are sufficiently large and clearly visible in individual images, which is often not the case in our applications. For example, in the images of Fig. 1, the object is small and it is almost impossible to make out from the background without motion cues.

C. *Motion-based approaches*

It subdivided into two sub classes. The first comprises those that rely on background subtraction and determine objects as groups of pixels that are different from the background. The second includes those that depend on optical flow.

Background subtraction works well when the camera is static or its motion is small , which is not the case for the on-board camera of a fast moving aircraft.

Flow-based methods are more reliable in such situations but still critically dependent on the quality of the flow vectors, which tends to be low when the target objects are small and blurry. Some methods combine both optical flow and

D. *Hybrid approaches*

It combine information of object appearance and motion patterns and are therefore the closest in spirit to what we propose. For example, in histograms of flow vectors are used as features in conjunction with more standard and are statistical learning method. This approach was refined in by first aligning the patches to compensate for motion and then using the differences of the frames, which may or may not be consecutive, as additional features. The alignment relies on the Lucas-Kanadeoptical flow algorithm. The resulting algorithm uses very well for pedes-trian detection and outperforms most of the single-frame methods. However, when the target objects become smaller to see, the flow estimates become unreliable and this approach, like the purely flow-based ones, becomes less effective.

III. PROPOSED METHOD

A. Introduction

The Proposed System Consists Of AT-MEGA 328 P Micro controller, AV Camera, PIR Sensor, Bluetooth Terminal and Motor, The devices which are connected to the micro controller are operated by micro controller through AT-MEGA 328 P .

background subtraction algorithms. However, in our case there may be motion in different parts of the images, for example people or treetops. Thus motion information is not enough for flying object detection. Other methods that combine optical flow and background subtraction, such as still critically depend on optical flow, which is often estimated with and thus may suffer from the low quality of the flow vectors. In addition to optical flow dependence, makes an assumption of camera motion is translation, which is violated in aerial videos.

In this system AT-MEGA 328 P updates information about the moving object around a distance using AV Camera and Sensor. Again the information are updates about the position through Bluetooth terminal.

The below figure shows the diagrammatic representation of proposed system.

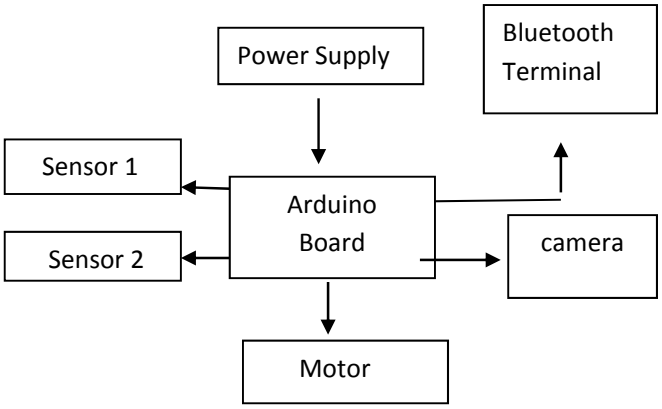

Figure 1: Block Diagram for Transmitter System

From Transmitter

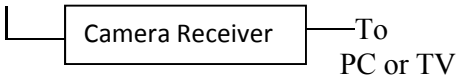

Figure 2: Block Diagram for Receiver System

When our application starts running it first check all the devices and resources which it needs are acailable or not. After that it checks the connection with their devices and gives control to the user.

IV. HARDWARE IMPLEMENTATION

A. Arduino uno board

Figure 3: Arduino uno board

Arduino is a computer hardware and software company, project, and user community that designs and manufactures micro controller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License permitting the manufacture of Arduino boards and software distribution by anyone.

The project board designs use a different type of microprocessors and controllers. These systems provides set's of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards and other circuits. The boards feature is serial communications interfaces, including Universal Serial Bus (USB) on some model. The micro controllers are mainly programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler tool chains, the Arduino project provides an integrated development environment (IDE) based on the Processing language.

At a conceptual level, when using the Arduino integrated development environment, all boards are programmed over a serial connection. Its implementation varies according to the type of hardware. Some serial Arduino boards contain a level shifter circuit to convert between RS-232 logic levels and transistor–transistor logic (TTL) level signals. Current Arduino boards are programmed via Universal Serial Bus (USB), implemented using USB-to-serial adapter chips such as the FTDI FT232. Some boards, such as later-model Uno boards, substitute the FTDI chip with a separate AVR chip containing USB-to-serial firmware, which is re-programmable. Other variants, such as the Arduino Mini and the unofficial Boarduino, use a detachable USB-to-serial adapter board or cable, Bluetooth and other method, When used with traditional micro controller tools instead of the Arduino IDE, standard AVR in-system programming (ISP) programming is used.

B. PIR Sensor

A Passive Infra-Red sensor (PIR sensor) is an electronic sensor that measures Infra-Red (IR) light radiating from objects in its view. They are most often used in motion detectors.

Infrared radiation enters through the front of the sensor, known as the 'sensor face'. At the core of a PIR sensor is a solid state sensor or set of sensors, made from pyro electric materials which generate energy when exposed to heat. The sensors are approximately 1/4 inch square , and take the form of a thin film. Materials commonly used in PIR sensor aregalliumnitride (GaN), caesiumnitrate (CsNO3), polyvinyl fluorides, derivatives of phenylpyridine, and cobalt phthalocyanine. The sensor is often manufactured as part of an integrated circuit.

The PIR sensor is typically mounted on a printed circuit board containing the electronics required to interpret the signals from the sensor. The complete assembly is usually contained within a housing, mounted in a location where the sensor can cover area to be monitored.

C. *Bluetooth*

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band in range of 2.4 to 2.485 GHz from fixed and mobile devices, and building personal area networks (PANs).Telecom vendor Ericsson in 1994, it was originally conceived as a wireless alternative to RS-232 data cables. It can connect several devices, overcoming problems of synchronization. Bluetooth is controlled by the Bluetooth Special Interest Group (SIG), which has more than 30,000 member in the areas of telecommunication, computing, networking, and consumer electronics. The Bluetooth SIG development in specification, manages the qualification program, and protects the trademarks. A manufacturer must meet Bluetooth SIG standards to market it as a device of Bluetooth. A network of apply to the technology, which are licensed to individual qualifying devices.

Figure 4: **Transmitter of surveillance**

Figure 5: **Receiver of surveillance**

V. SOFTWARE IMPLEMENTATION

A.IDE

An Integrated Development Environments (IDE)are designed to maximize programmer productivity by providing components with similar user interfaces. The IDE program typically provides many features for authoring, modifying, compiling, deploying and debugging software. This contrast with software development using mismatch tools, such as vi, GCC or make.

The aim of IDE is to reduce the configuration to multiple development utilities, instead of providing the same set of utilities. Reducing the setup time can increase the productivity, in cases where learning to use the IDE is faster than manually integrating all of the individual tools. Tighter integration of all development tasks has the potential to improve overall productivity.

Some IDEs are used to a specific programming language, allowing a feature set that most closely matches the programming paradigms of the language. However, there are many multiple-language IDEs such as Turbo Pascal were in popular use before the widespread availability of windowing systems like Microsoft Windows and the X Window System (X11). They commonly use function keys are hot keys used commands.

VI RESULT

Figure 5: **Camera obtained the Inducer**

When the inducer enters into the unauthorized place, the camera detects the inducer with the help of AV Camera and motion sensor which is connected along with the arduino board and motor. While the inducer is detected the information is passed through the Bluetooth terminal to the surveillance area by using of mobile phones whether it is in right, left or centre. Although with the help of AV Camera receiver, the video of the inducer is obtained in pc or televisions.

VII CONCLUSION

The design system provides a low cost, convenient and easy to use system for surveillance purpose. It is easy to capture the intruders.

It will be easy and much comfortable to any kind of places. This system also ensures good quality of service. Apart from this the captured image can be viewed.

FUTURE ENHANCEMENT

In future, the project used in several applications by adding additional components such as trigger gun, buzzer. By using gps, we can directly have a communication with the inducers.

Also by connecting a Raspberry pi instead of arduino for getting for more information about the intruders entry. So there is no need for continuous monitoring of human.

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