PROJECT ON: THEFT DETECTION USING IOT

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ABSTRACT

Security and safety is important as well as basic necessity of the people everywhere. For the same reason only the usage of CCTV cameras were introduced. In surveillance, CCTV cameras are considered to be exorbitant since computers are being used and also manpower is required to detect unauthorized activity.

To overcome, we came across with Raspberry PI using IOT. Compare to Existing System Raspberry Pi is much cheaper with better resolution and low power consumption features.

This Project "IOT based theft detection project using Raspberry Pi" where we use image processing on live video to detect theft using motion and also highlight the area where motion occurred.

In this system, we use a camera along with raspberry pi along with a circuit with LCD display IR for night vision and USB drive for storage. As soon as camera motions are detected in camera, the system uses image processing to detect an exact area of motion occurrence and highlights it.

Since a lot of IoT devices and systems are still being under the threat of the hacking, this project aims to provide the network security to the device.

In the network security, there is a wider range of communication protocols, standards, and device capabilities, all of which pose significant issues and increased complexity.

Key capabilities include traditional endpoint security features such as anti virus and antimalware as well as other features such as firewalls and intrusion prevention and detection systems.

Problem Statement

- A lot of question mark is being raised about the security and safety of people especially living in urban areas.

- Various methods were initiated such as CCTV camera surveillance , various technical and non technical securities and police patrolling. But these activities just had a temporary impact.

- Various safety and security threats includes theft, bulgaring,robbery, murders etc.

Hardware and Software Requirements:

<u>**Hardwares Required:**</u>

1. Raspberry Pi development Board

2. Camera

3. IR Sensor

Software Required:

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1. Linux Operating System

2. C++

3. Open Source Computer Vision

Raspberry pi

the Raspberry Pi has the ability to interact with the outside world, and has been used in a wide array of digital maker projects, from music machines and parent detectors to weather stations and tweeting birdhouses with infra-red cameras. We want to see the Raspberry Pi being used by kids all over the world to learn to program and understand how computers work.

 IR Sensor

An infrared **sensor** is an electronic instrument which is used to sense certain characteristics of its surroundings by either emitting and/or detecting infrared radiation. Infrared **sensors** are also capable of measuring the heat being emitted by an object and detecting motion.

Software Material

For implementing this project, we are using the following concepts

1. Linux Operating system

2. C++ & Qt for Embedded Linux

 3. Open CV .

Linux Operating System Linux is one of the popular version of UNIX Operating System. Linux or GNU/Linux is a free and open source software (FOSS) operating system for computers. Since Linux is free software it means that none of the software will put any license restrictions on users.

C++ & Qt for Embedded Linux QT is Cross platform application framework. The 'QT' is a widely used platform for creating GUIs in Linux environment. Qt is an application which helps in developing the UI framework using the Qt IDE. Qt uses standard C++ but it also supports support many compilers, including the GCC C++ compiler and the Visual Studio suite.

 Open CV Open CV (Open Source Computer Vision) is a library of programming functions for real time computer vision. Open CV is an open source c/c++ library for Image processing and Computer Vision developed by Intel. The library is written in C and C++ and runs under Linux, Windows and Mac OS X. It now supported by Willow Garage, which is also the organization behind the famous Robot Operating System (ROS). It is free for both commercial and non-commercial use.

Block diagram
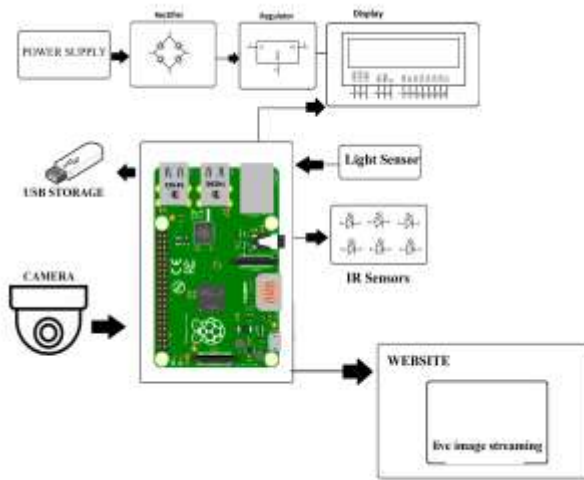
Implementation

- In this project, the image processing on live video for theft detection using motion and highlight the area where the motion has been used.

- The camera is used along with the raspberry pi along with a circuit with LCD display IR for night vision and USB drive for storage.

- As soon as camera motion is detected in camera, the system uses image processing to detect an exact area of

- motion occurrence and highlights it accordingly.

- The system now transmits the images of the occurrence over IOT to be viewed by the user online. Also, it stores the footage in a USB drive for further reference.

- The user can now decode the data sent online using IOT, IOT system to view the images of the motion occurrence live remotely over the internet. Thus, the system provides an innovative approach to Theft Detection using IOT.

CONCLUSION

The project "IOT Based Theft Detection Using Raspberry PI" has demonstrated how to get a fully functional embedded product developed from scratch. This included the cross compilation and deployment of essential libraries, the configuration of embedded Linux and cloud computing technology. This system is suitable for small personal area surveillance. i.e. personal office cabin, bank locker room, parking entrance. Whenever the motion is detected through. The main Advantage of the project is Easy to implement, Low cost with High quality.

Future enhancement

- • Since a lot of IoT devices and systems are still being under the threat of the hacking, this project aims to provide the network security to the device.

- • In the network security, there is a wider range of communication protocols, standards, and device capabilities, all of which pose significant issues and increased complexity.

- • Key capabilities include traditional endpoint security features such as antivirus and antimalware as well as other features such as firewalls and intrusion prevention and detection systems.