

SMART SECURITY CAMERA

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ABSTRACT

*This paper proposes a mechanism for smarter security called as Smart Security Camera. This security system makes use of raspberry pi and **raspberry pi** camera module. Due to so many threats today, questions related to security arise. Monitoring peoples' behavior everywhere has become a necessity. CCTV (Closed Circuit Television) systems are being used largely to avoid any theft and to monitor peoples' actions. Burglars and thieves can damage the CCTV camera on purpose and can easily escape. The spy camera that this paper proposes proves to be more advantageous, also in terms of cost. The **IoT** smart Security Camera runs **motion detection** for object detection. The camera sends an email with a captured image of any object it has detected. The camera is designed in a way such that you can stream the live video from the camera when you cannot be there.*

Keyword: - raspberrypi¹, motion detection², live video³, Iot⁴

1. INTRODUCTION

The smart security camera has many benefits. The CCTV camera uses expensive components that make it comparatively costlier. But raspberry pi will solve many of our issues and will not disappoint the customers. Surveillance is very important starting from homes to industries. Due to its easy to handle also is much cheaper with high resolution and low power consumption feature accords extra leverage. Which deals with complication.

It provides additional features like remote control through web. Controlling camera make it more effortless only effort required is to power raspberry pi and that's it

2. MOTIVATION

The system aims at providing advanced security over the owner's property by notifying the owner about every suspected unpleasant activity within no time

3. SYSTEM OVERVIEW

3.1 Raspberry Pi Zero Wireless

It has Wireless LAN and Bluetooth connectivity. Its connectivity consists of

- 1GHz, single-core CPU
- 512MB RAM
- Mini HDMI and USB On-The-Go ports
- Micro USB power

- HAT-compatible 40-pin header
- Composite video and reset headers
- CSI camera connector
- 802.11 b/g/n wireless LAN
- Bluetooth 4.1
- Bluetooth Low Energy (BLE)

3.2 Raspberry pi Camera Module

The camera works with all models of Raspberry Pi 1, 2, and 3. It can be accessed through the MMAL and V4L APIs, and there are numerous third-party libraries built for it, including the Pi-camera Python library



Fig - 2: Raspberry pi Camera Module

3.3 Digitek Micro USB Cable

This cable is one of good quality in its price range. Which reduces system price in all. It has multipurpose usage like data transfer and charging. It is used on any smartphone with D type charging port



Fig - 3: Digitek Micro USB Cable

4. PROJECT IMPLEMENTATION

Let us assume we gathered all hardware parts required for project. For connections simply connect camera to raspberry and that is part of hardware. In software section SD-card is used by flashing raspberrypi-os (desktop) '.img' file into SD-card with "ETCHER" software used to flash operating systems into portable devices. Etcher made it easy and faster. Some modifications were made before un-mounting SD-card. Modifications like enabling 'ssh' manually and configuring Wi-Fi. After some tweaks and modifications, SD-card was placed in raspberry-pi and it was done implementations with raspberry-pi and camera. Once user logged in raspberry-pi user could capture images and record images and videos.

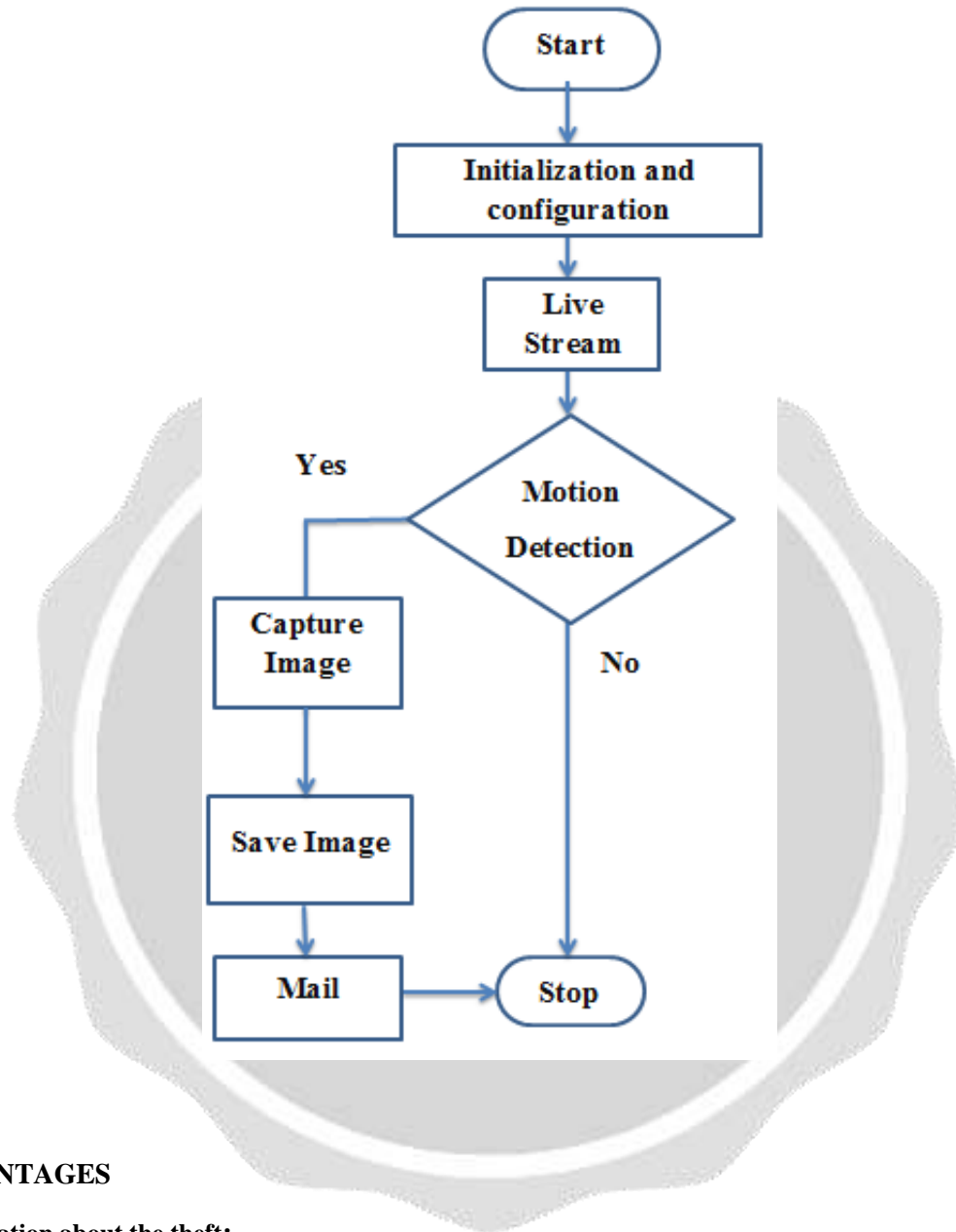
5. HOW IT WORKS?

Raspberry-pi Camera works on motion lib. Which were installed manually which help in detecting motion and streaming live video's over the network. With some configuration's with motion settings like setting height, width, frame-rate, target directory to store data captured by camera & we are ready to go and capture some footage by running motion file. Once it detects any motion captures images and save them to target directory. For mail purpose packages like 'ssmtp', 'mailutils' & 'mpack' is installed. Configuring ssmtp with sender and receiver mail-id allows to send notifications to end user with an attachment from target directory.



Fig - 3: Raspberry pi Wireless with camera module

6. FLOW CHART



7. ADVANTAGES

7.1 Notification about the theft:

If any theft is suspected, an email is sent to the end user with images captured by the system. This increases security to its maximum potential than the normal surveillance cameras.

7.2 Affordable:

It is not too costly because it does not use more of expensive material.

7.3 Easy for installation:

Just give power source to system and you're done.

7.4 Future Expansion:

Newer features can be added to the smart security camera to obtain better performance and improved security.

8. CONCLUSIONS

The project should meet all the requirements of a surveillance area. The smart security camera really proves to be a boon. A user can also perform live streaming of the activities perceived by the camera and hence can track any suspected motion. Since the camera will send a mail to the owner immediately after detecting some motion, the users property will not be left at risk and the owner will be kept alert all the time. It has many applications. It can be used for security near bank lockers.

9. ACKNOWLEDGEMENT

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At this level of understanding it is difficult to understand the wide spectrum of knowledge without proper guidance and advice. Hence we take this o to express our sincere gratitude to our respected Project Guide Mrs. P.P Chavan who as a guide evolved an interest in us to work and select an entirely new idea for project work.

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