**Smart surveillance using Raspberry pi.**

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Smart surveillance 1.1

**Table of Contents**

1. **Objective**

1.1 Goals and motivations

1. **Background**

2.1 Frontend Perspective

2.2 Backend perspective

1. **Overview**
2. **Existing Resources, Standards, APIs**

4.1 Technologies Involved

4.2 Existing Resources

1. **Detailed Design**

**6. UI / Mocks**

**7. References**

**1. Objective**

This project will implement Face recognition using Raspberry pi camera module to identify intruders into a particular household by comparing authorized faces in the database and alerting the owner by making a call.

Alerting mechanism will be implemented using Raspberry pi GSM board. The entire product will be implemented using Raspberry Pi zero and IoT Raspberry Pi security camera running openCV for object detection.

* 1. **Goals and motivations**
* Create a more secure and unified mechanism for providing close observation of a particular area.
* To identify anyone who enters a facility.
* Alert on account of any intrusive activity during owner’s absence.

**2. Background**

Normally, Surveillance cameras are used to record just present happenings and store it for later emergencies. There are also options to view the live streaming over internet from an authorized person’s mobile using certain application.

This project suggests to alert the owner on account of any intrusive movement into the facility during their absence. This alerting can be done using email or more conveniently by making a call.

**3. Overview**

Under the current system, users can only access the streamed video on account of emergencies or the chances of the owner watching the live streaming during any suspicious intrusion are pretty slim.

Our goal is to alert the user on spot or just at the time of any intrusion or anyone whoever it may be entering the facility.

This leads to prevention and quicker action.

**4. Resources, Standards, APIs**

**4.1 Technologies Involved**

Raspberry Pi zero :

The Raspberry Pi resembles a tiny circuit board and is a popular Single Board Computer (SBC).The Zero features a single mini HDMI port, which is a reduction from the full HDMI port on previous Raspberry Pi devices. Despite this, it’s still capable of outputting video at 1080p and 60fps.

The Raspberry Pi comes in an even smaller form factor. The introduction of the Raspberry Pi Zero allowed one to embed an entire computer in even smaller projects. This guide will cover the latest version of the Zero product line, the Raspberry pi zero-wireless, which has an onboard WiFi module. While these directions should work for most any version and form factor of the Raspberry Pi, it will revolve around the Pi Zero W.There are two microUSB ports, one of which handles the Raspberry Pi Zero’s power (just use a standard phone charger), while the other acts as a USB out for hooking up a keyboard, mouse, WiFi dongle.

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**1.Detailed Design**

Phase 1: Phase 2 Phase 3:

Install Open CV using Python to detect objects.

Create a database with authorized faces.

*Install Raspberry Pi in 64 bit system*

In phase 1, download the Raspbian lite zip file from the raspberry pi official website. Extract the zip file and start installing the Raspbian lite with debian library.

In phase 2, when the electronics construction is over the owner has to create a database of authorized users for allowing them to enter a particular facility.

In phase 3, to configure the raspberry pi camera module in the raspbian the open cv must be installed with python. This OpenCV helps in supporting streaming of videos using camera module.

**References**

* <https://www.raspberrypi.org/>
* <https://www.pyimagesearch.com/2018/06/25/raspberry-pi-face-recognition/>