SURVEILLANCE SYSTEM VIA FACE RECOGNITION

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PROBLEM STATEMENT : Devising an *I*OT based security cameras capable of performing facial recognition and identifying members of the association.

MOTIVATION :

To device an easy to interface ,reliable security system at a reasonable cost.

APPROACH : The main aim of this project is to make an advanced surveillance system with face recognition enabled. The whole procedure will be autonomous.

HARDWARE

The core of the system is ''**RASPBERRY PI**'', basically a linux based small sized single board computer which performs the whole of processing required(the programming part).

Interfaces : *Motion Sensor , Pi Camera.*

Motion Sensor : Passive infrared **motion** detectors (PIR) detect emitted infrared energy – given off by humans and animals in the form of heat. They have a good accuracy upto 6-7m.
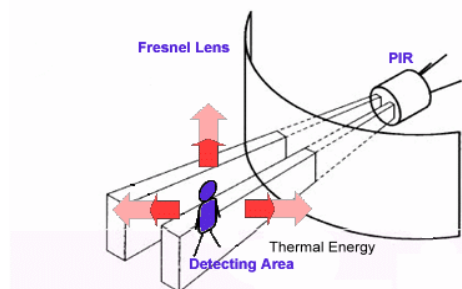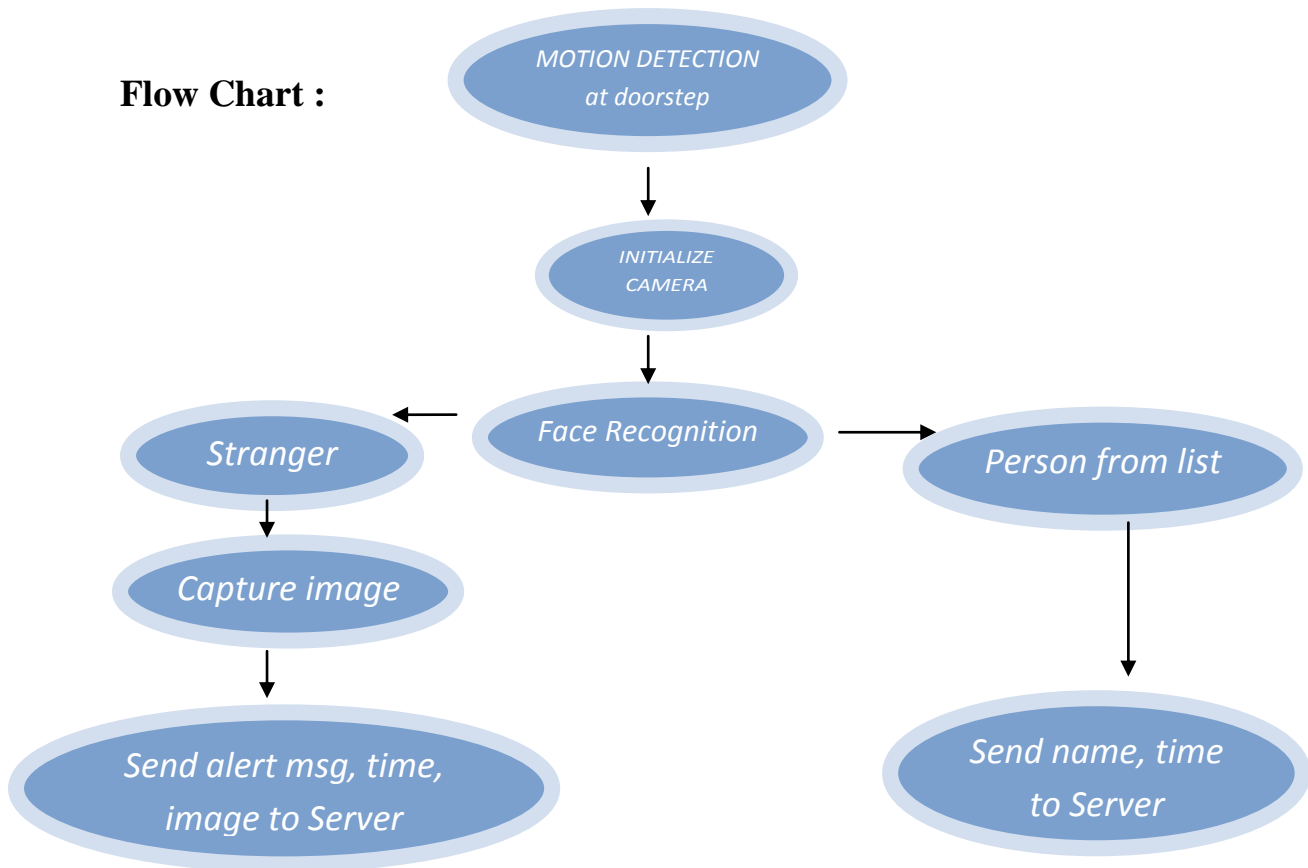

Camera : Device to capture images and perform real time facial recognition . It has 5MP fixed focus that supports 1080p30,720p60 and VGA90 videos.

SOFTWARE

- **LANGUAGE** : PYTHON(easy to use with no. Of libraries for CV)
- **LIBRARIES** : OPENCV (Computer Vision)
                SQlite (database management)
- **CLASSIFIER** : HAARCASCADE

Flow Chart :

MOTION DETECTION
at doorstep

INITIALIZE
CAMERA

Face Recognition

Stranger

Person from list

Capture image

Send alert msg, time,
image to Server

Send name, time
to Server

Procedure

1. Configuring motion sensor and camera
2. Creating database of listed people
3. Training the system
4. Recognition
5. Server interface

PROS : Size : small enough (can be easily fitted in a box 12cm x 10cm x 10 cm)

Cost : Raspberry pi (Rs .2800)

Motion sensor (Rs. 150),   Webcam (Rs 999)

Total = Rs 4000 Approx

Face recognizer in Market : Starts from 9000(source Aamzon)

Power comsumption : It can even be powered by mobile chargers.

Future Scope :

In future it can replace biometric system for identification such as fingerprint scanner, retina scanner etc.