GPS BASED VEHICLE THEFT DETECTION UISNG GSM TECHNOLOGY

Under the guidance of:

D.ANJI REDDY
ASST.PROFESSOR
Department of Electronics and Communication Engineering ,MGIT

BATCH NO:19

BATCH MEMBERS:

M.RANGABABU -202261A04F6

VAMSI KRISHNA -20261A04G5

S.KRISHNA KARTHIK -20261A04G6

INDEX

- ✓ INTRODUCTION
- ✓ LITERATURE REVIEW
- ✓ CRITICAL STUDY AND ANALYSIS OF PROBLEM IDENTIFIED
- ✓ PROPOSED METHOD FOR PROBLEM SOLUTION
- ✓ DETAILED DESCRIPTION OF PROPOSED METHOD
- ✓ RESULT
- ✓ TOOLS USED
- ✓ CONCLUSION
- ✓ REFERENCES

INTRODUCTION

- To ensure security of a vehicle to a greater extent, the system in the vehicle has to be upgraded technologically. At present, people are buying vehicles that are technologically futuristic with more options for comfort and safety. For once, comfort of the vehicle can be put hold but when it comes to safety then it becomes a crucial factor for the buyer/owner of the vehicle. Safety of the vehicles is challenged when it is tried to be stolen in absence of the owner and that is why many companies and technicians are trying to implement new techniques to conquer the theft of vehicles getting stolen from parking spots of public areas .

LITERATURE REVIEW

S.NO	JOURNAL WITH YEAR	TITLE	AUTHOR	OUTCOMES
1.	• March 2020	Vehicle Security Systems using Face Recognition based on Internet of Things	Ahmed Elngar	Nowadays, the automobile sector is one of the hottest applications, where vehicles can be intelligent by using IoT technology. But unfortunately, these vehicles suffer from many crimes. Hence it has become a big challenge for the IoT to avoid such these crimes from professional thieves. This paper presents a proposal for the development of a vehicle guard and alarm system using biometric authentication based on IoT technology.
2.	• March 2020	A Novel Technique for Vehicle Theft Detection System Using MQTT on IoT	K. Aishwarya	Automobile theft is a worldwide immense problem. A vehicle of top-notch security features is usually higher in the cost, and it cannot be afforded by middle-class people. By considering all these parameters, we aimed to design a low-cost, real-time, robust security system for vehicles. The main purpose of this project is to notify the vehicle owner, when the vehicle is moved/theft from the parking area and to monitor the movement of the vehicle in real time.

CRITICAL STUDY AND ANALYSIS OF PROBLEM IDENTIFIED

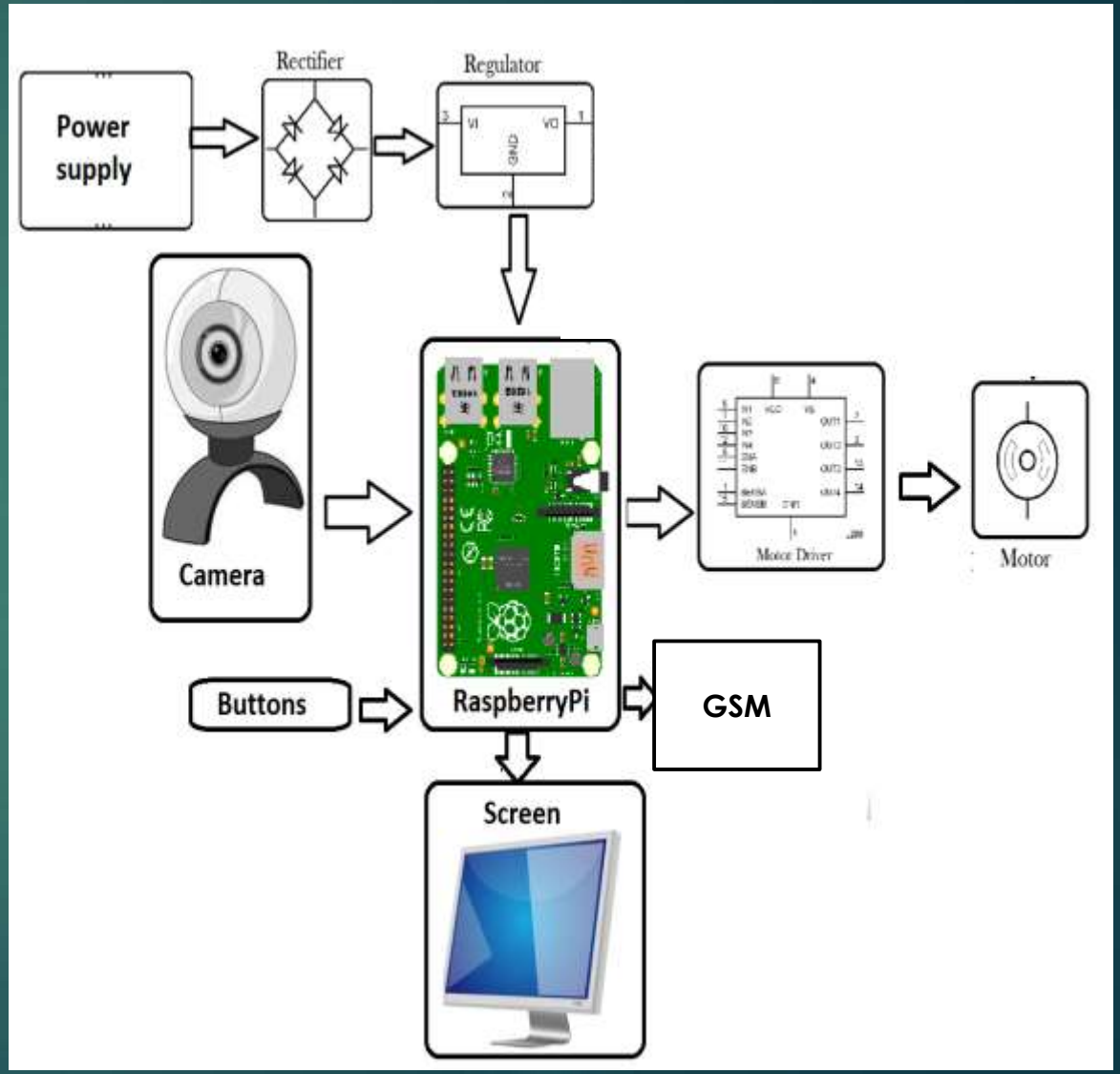
- Car alarm techniques are used to prevent the car theft with the help of different type of sensors like pressure, tilt and shock & door sensors. These systems however bear some limitations such as high cost, high false alarm rate, and easy to be disabled.
- In order to solve these problem recent advancements in computer hardware and software have enabled automobile industry to develop affordable automated biometrics based identification and verification systems. Many biometrics, including face detection, facial features, hand geometry, handwriting and voice have been used for the identification and verification of individuals.
- But biometric has its own disadvantages such as the systems are not 100% accurate, they require integration and/or additional hardware and cannot be reset once compromised, you can always change your password if somebody learns it, but there’s no way to modify your iris, retina or fingerprint. Once somebody has a working copy of these, there’s not much you can do to stay safe, other than switching to passwords or using another finger.

DRAWBACKS

- due to longer distance (range), siren cannot be heard
- Cost is high

PROPOSED METHOD

- In vehicle security system, major concern is to prevent the theft of vehicle and ensure safety of vehicle by avoiding the means of theft. One level of ensuring authentication of driving is through face recognition system that authenticates a user being an authorized person to have access to the ignition system. Face is detected and recognized using algorithm overcoming the pose and illumination constraints. The recognized image is compared with the authorized image of users in the database. When theft enters the vehicle the laser led will ON and sends a latitude and longitude through GSM



BLOCK DIAGRAM

POWER SUPPLY

USB CAMERA

GSM

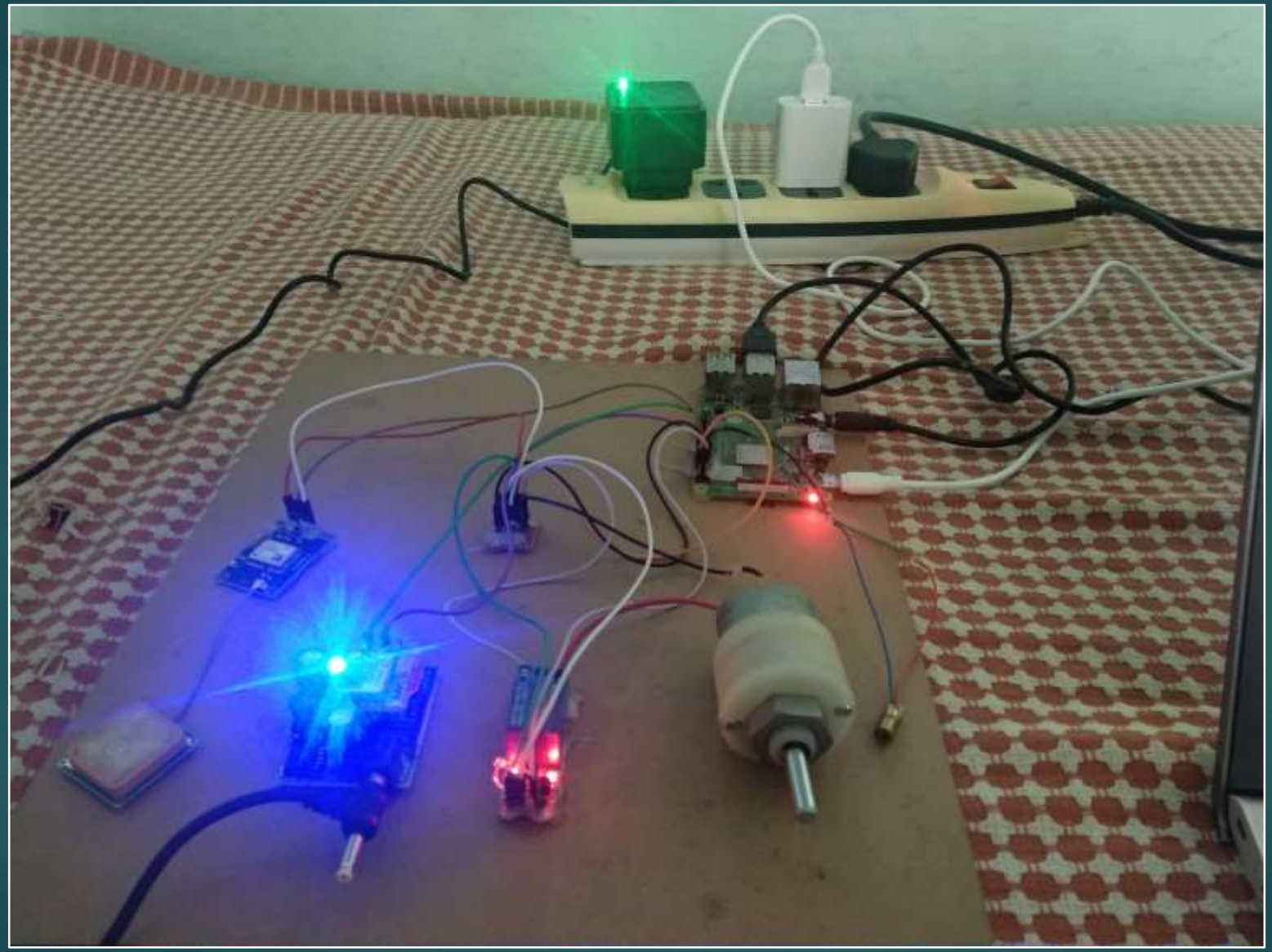
GPS

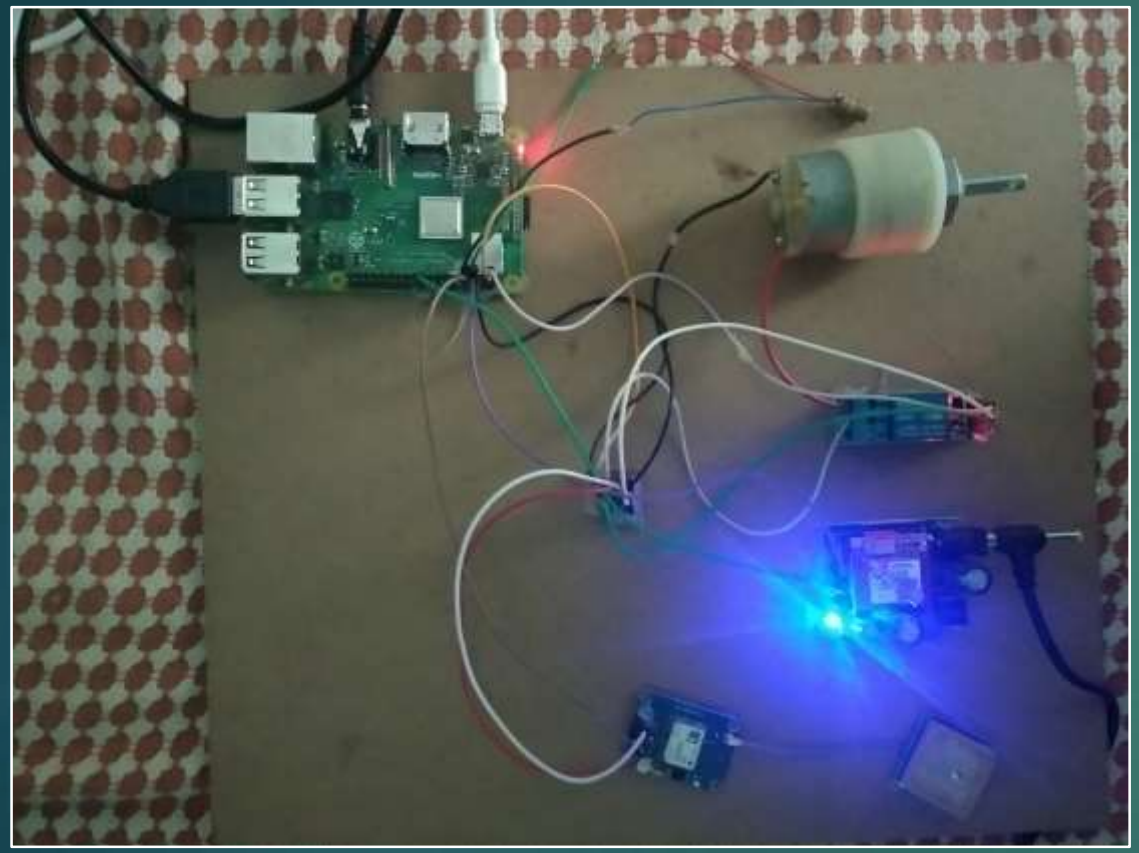
RASPBERRY PI

RELAY

DC MOTOR

Working Model



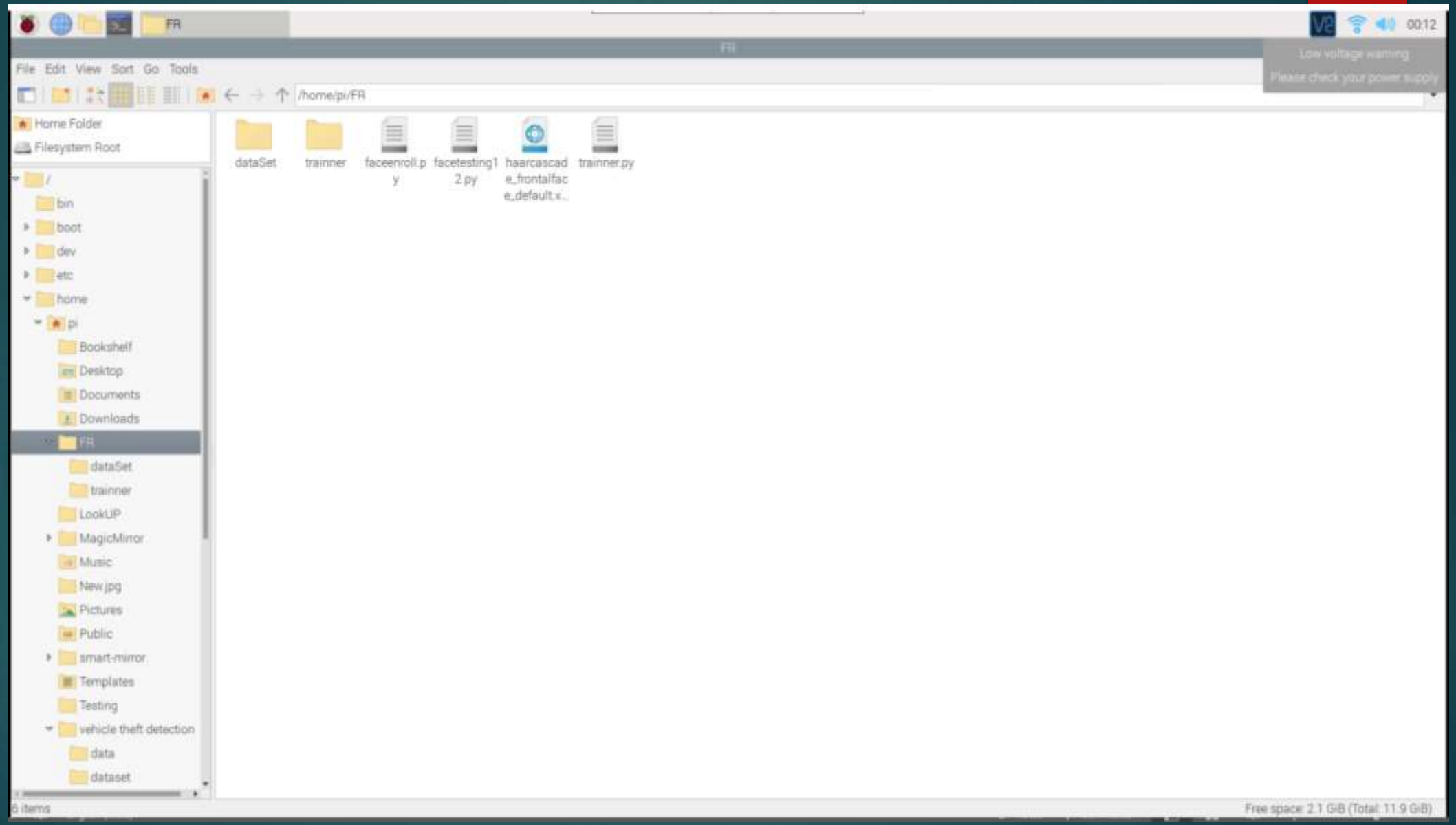


Work Flow

Files

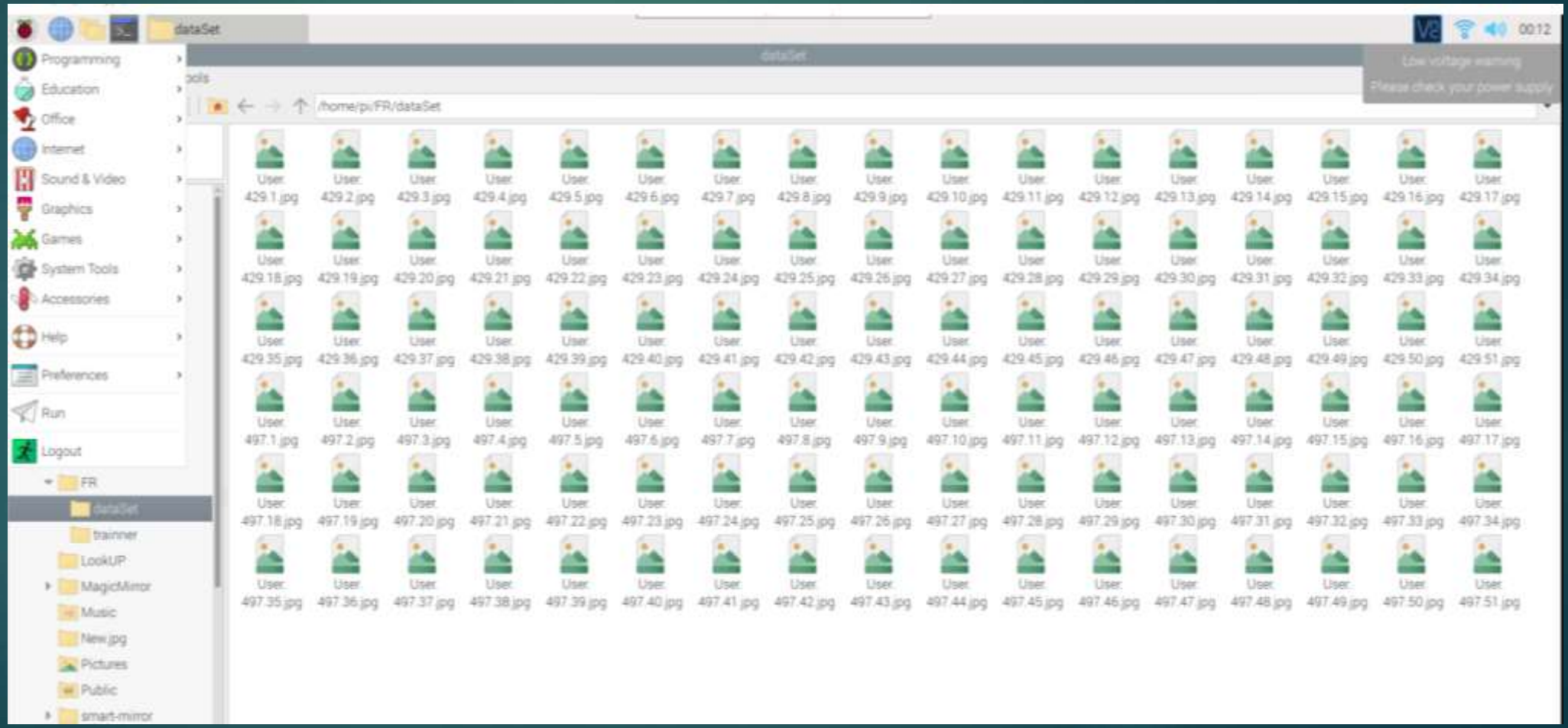
- faceenroll.py to enroll new users which creates dataset of user faces
- trainner.py to train with the dataset
- testing.py For recognition of valid user or not
- haarcascade_frontalface_default.xml classifier

File structure of the project



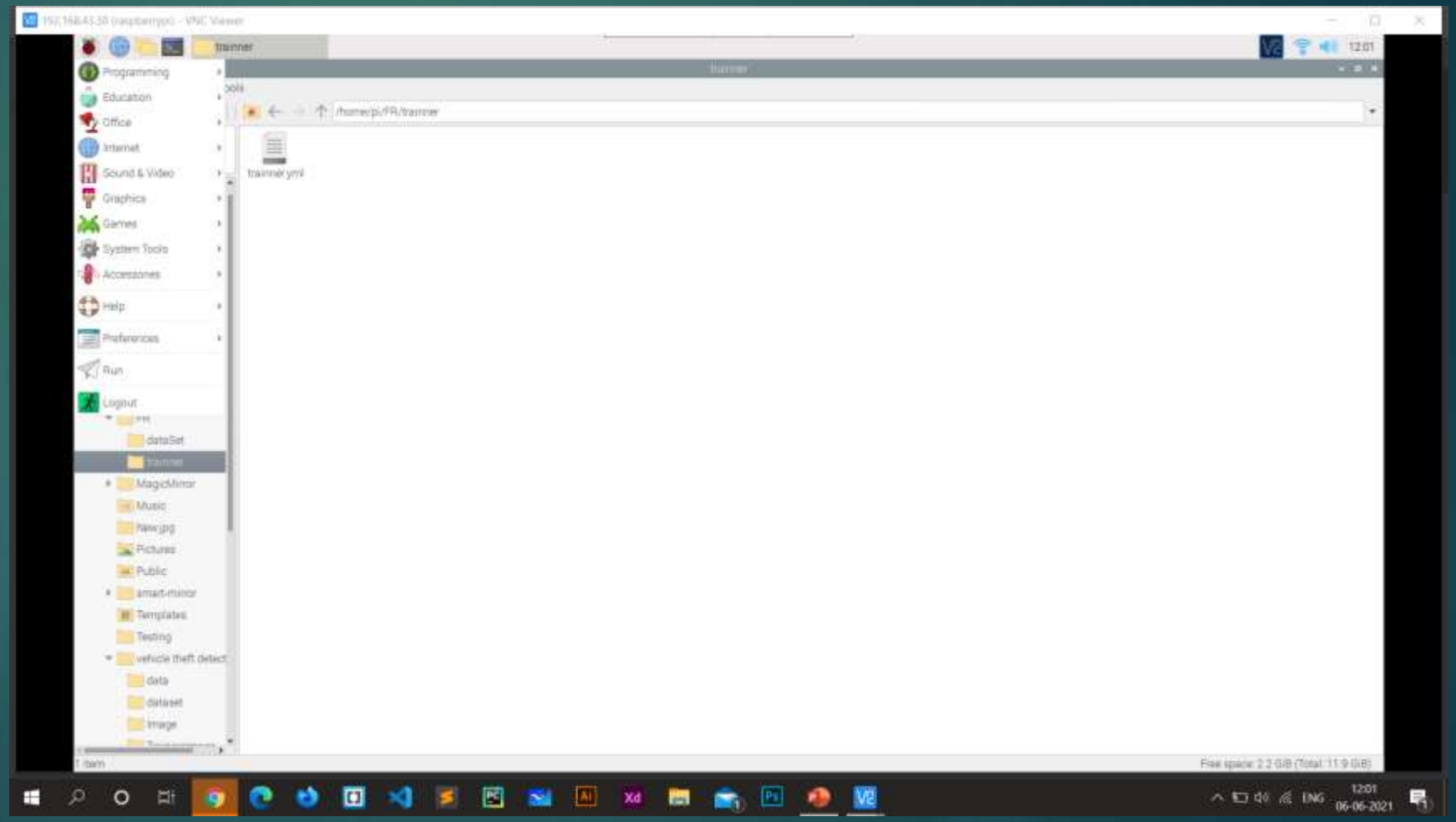
Creating Data Set

- Execute the command **python faceenroll.py**
- It open a camera window and take live photos of required number and store it using the id mentioned by the user
- Data Set is created



Training Data Set

- Execute the command **python trainner.py**
- It iterates to all the images in the Data Set
- We get trainner.yml file.



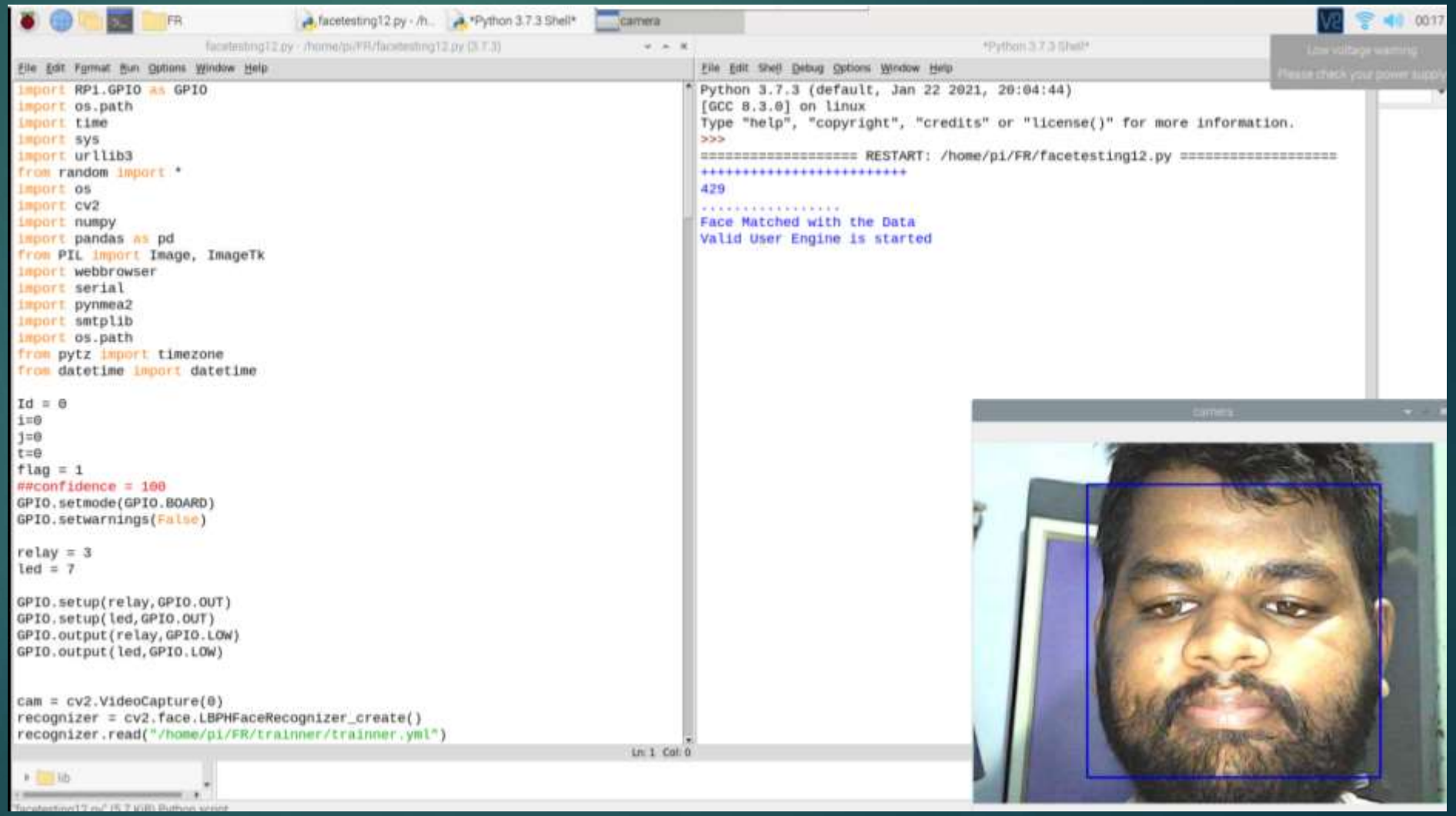
Testing the model

- Execute the command **python testing.py**
- It starts the camera and keep detecting face

RESULT

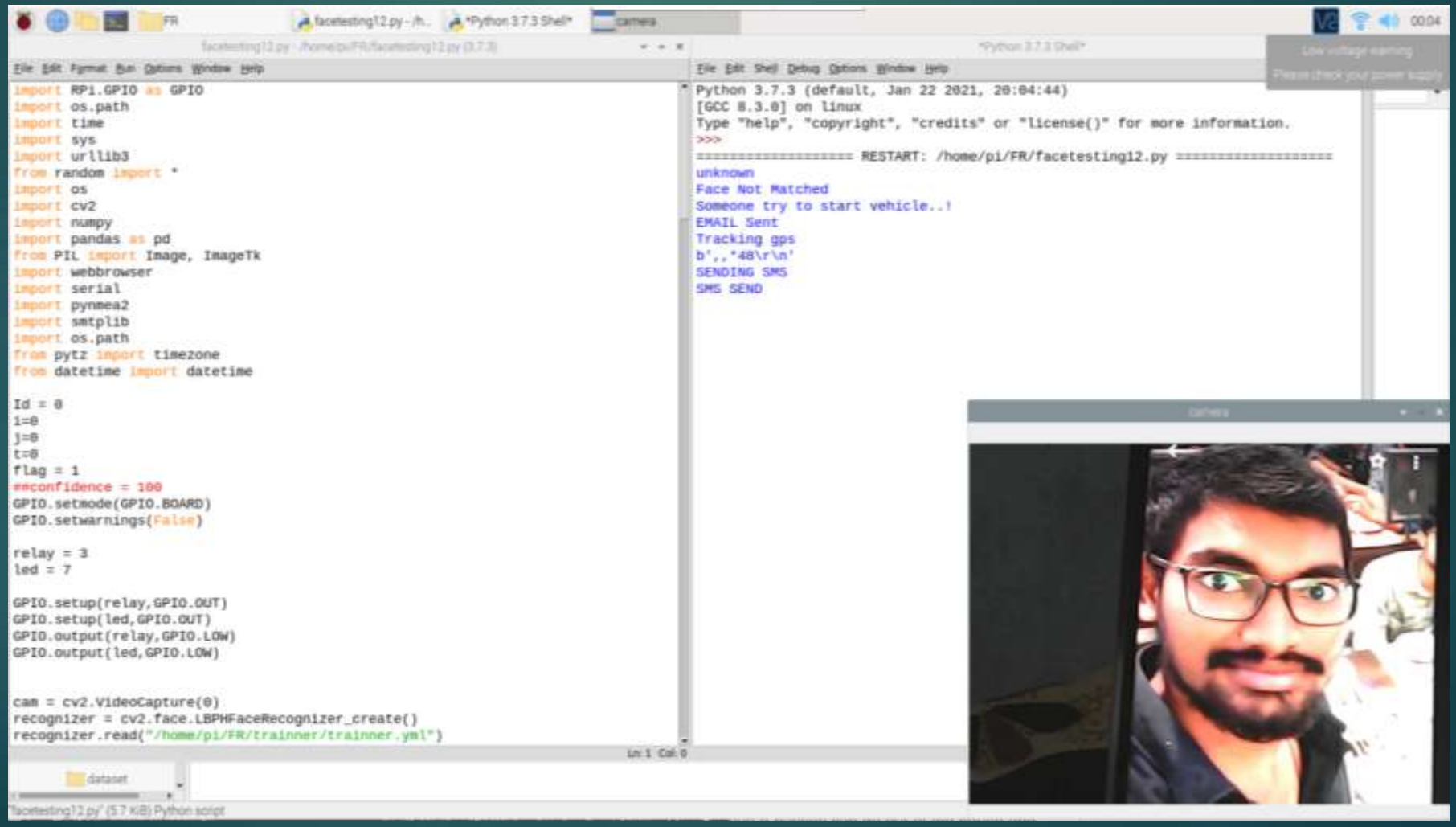
- IF Person Is Valid Owner

- Engine is turned on
- Laser is off

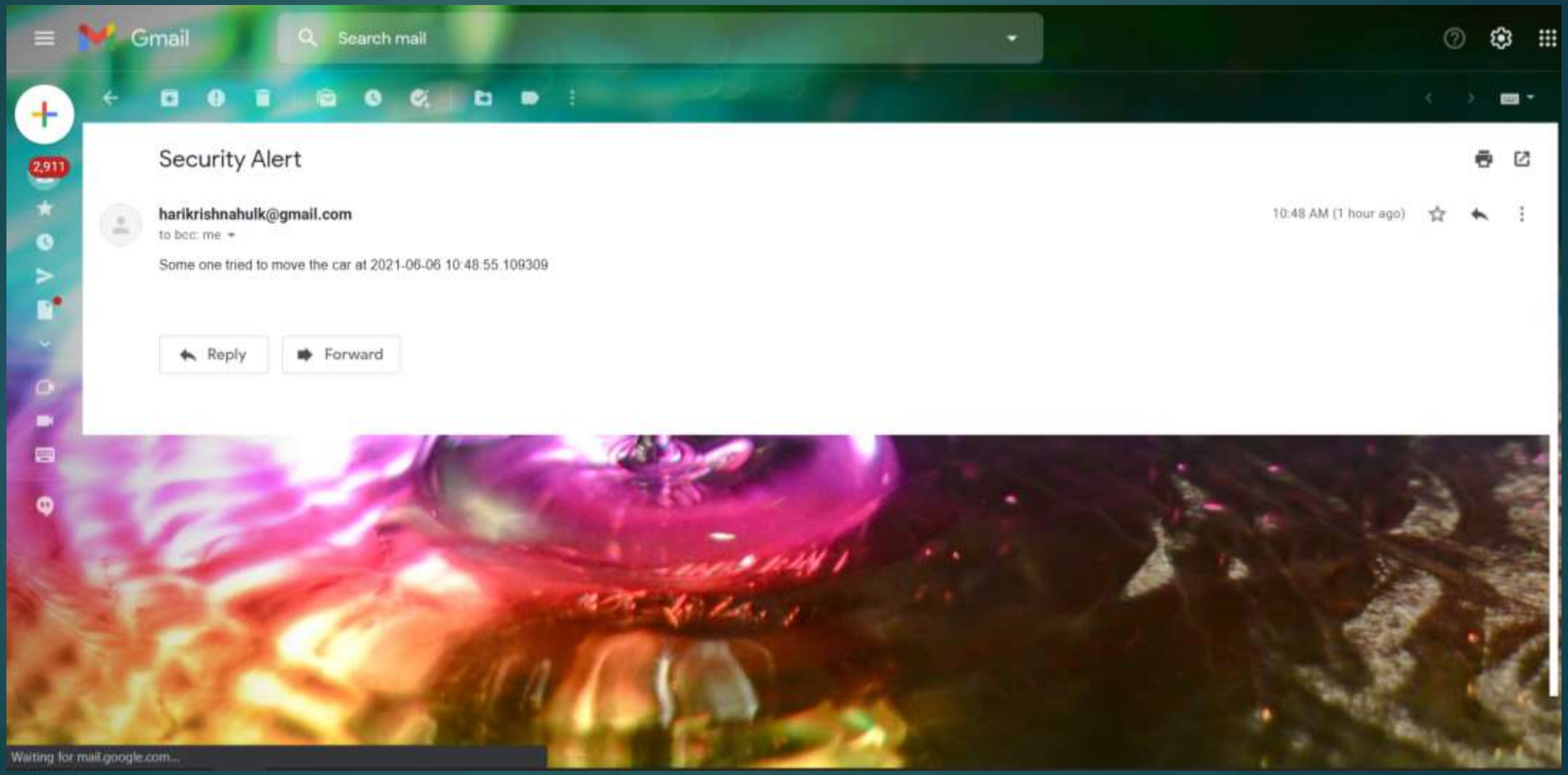


IF the Person is not a Valid Owner

- Engine is Does not star
- Laser is Turned on
- Email is sent to the owner of vehicle
- SMS is sent with the location of the vehicle



A mail is sent to the owner with Date and current Time



TOOLS USED

HARDWARE REQUIREMENTS

- Raspberry Pi is a credit-card sized computer manufactured and designed in the United Kingdom by the Raspberry Pi foundation with the intention of teaching basic computer science to school students and every other person interested in computer hardware, programming and DIY-Do-it Yourself projects.

WEBCAMERA

- A webcam is a video_camera that feeds or streams an image or video in real time to or through a computer to a computer network, such as the Internet. Webcams are typically small cameras that sit on a desk, attach to a user's monitor, or are built into the hardware.
- Webcams can be used during a video chat session involving two or more people, with conversations that include live audio and video.

GSM

- GSM is a mobile communication modem; it is stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. It is widely used mobile communication system in the world. GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands. We used SIM800L

GPS

- Global Positioning System (GPS) is a satellite-based system that uses satellites and ground stations to measure and compute its position on Earth.
- GPS is also known as Navigation System with Time and Ranging (NAVSTAR) GPS.
- GPS receiver needs to receive data from at least 4 satellites for accuracy purpose. GPS receiver does not transmit any information to the satellites.
- This GPS receiver is used in many applications like smartphones, Cabs, Fleet management etc.
- GY-NE06MV2

RELAY

A relay is an electromagnetic switch that is used to turn on and turn off a circuit by a low power signal, or where several circuits must be controlled by one signal.

Most of the high end industrial application devices have relays for their effective working. Relays are simple switches which are operated both electrically and mechanically. Relays consist of an electromagnet and also a set of contacts. The switching mechanism is carried out with the help of the electromagnet.

DC MOTOR

- A **DC motor** is any of a class of rotary electrical motors that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor.

POWER SUPPLY

- A power supply is a component that provides at least one electrical charge with power. It typically converts one type of electrical power to another, but it can also convert a different Energy form in electrical energy, such as solar, mechanical, or chemical.
- A power supply provides electrical power to components. Usually the term refers to devices built into the powered component. Computer power supplies, for example, convert AC current to DC current and are generally located along with at least one fan at the back of the computer case.

SOFTWARE REQUIRERMENTS

- **1. PYTHON:**

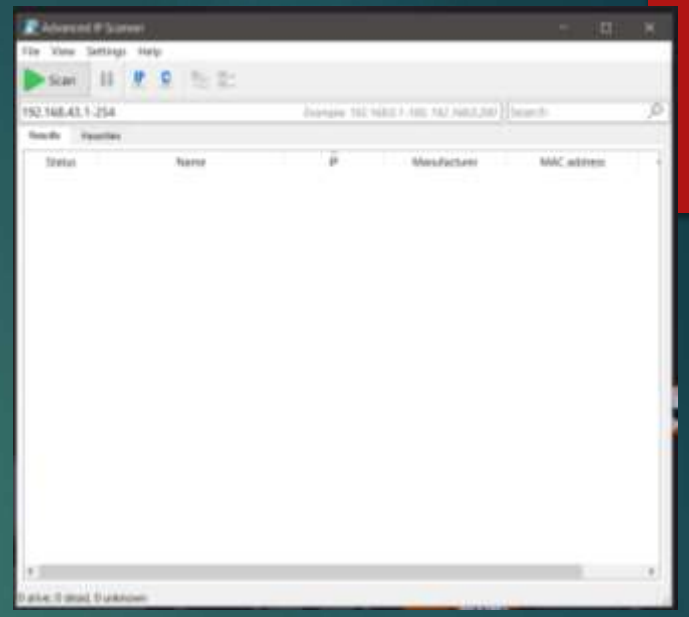
- Python is a general purpose, dynamic, high level and interpreted programming language. It supports Object Oriented programming approach to develop applications.
- It is simple and easy to learn and provides lots of high-level data structures.
- It is easy to learn yet powerful and versatile scripting language which makes it attractive for Application Development.
- It supports multiple programming patterns, including object oriented, imperative and functional or procedural programming styles

2. NOOBS (New Out Of Box Software) :

- Despite its success, there is something about the Raspberry Pi that might just put people off: until now, setting it up has not been particularly user friendly. NOOBS aims to change that!
- Intended for youngsters to get to grips with computing in countries where IT skills are a rarity, the Raspberry Pi has proved to be a surprisingly popular device – especially considering the relatively low specification.

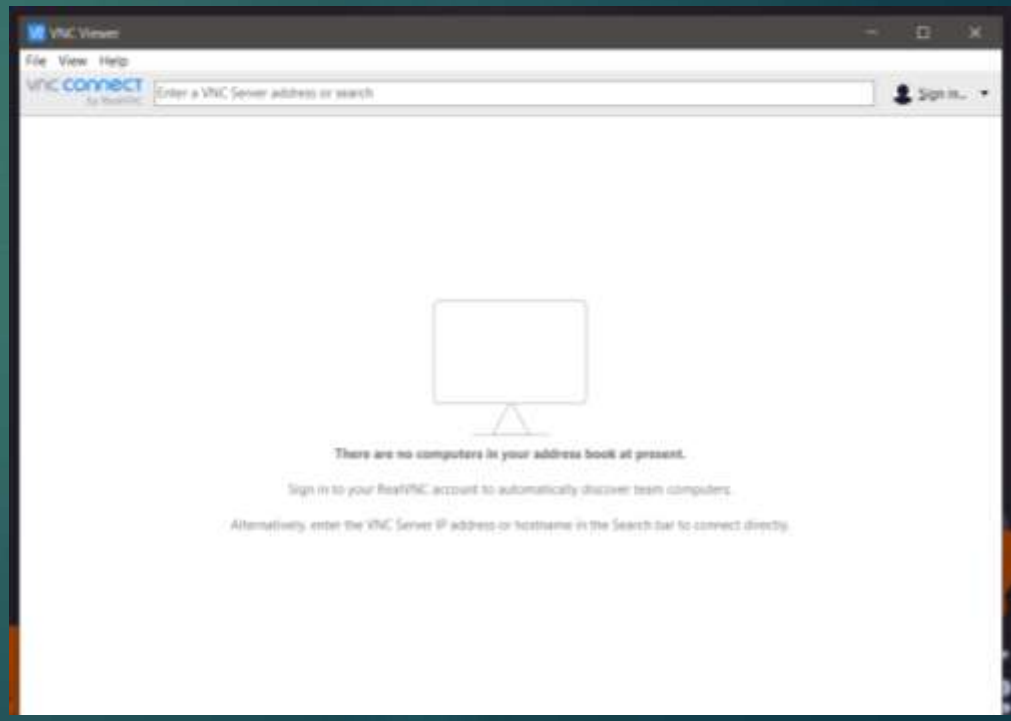
3. Advance IP Scanner:

To scan all the devices connected to router or hotspot



4. Vnc viewer and Vnc server:

Remote Desktop to view Raspberry pi file system



ADVANTAGES

- 1.More convenient, sensed as soon as one is seated in position.
- 2. Low cost and a better approach to be used with existing methods.

APPLICATIONS

- Jewelry Shops
- Shopping malls
- Apartments
- Theatres

CONCLUSION

- In this project, it is expected that as soon as a face is sensed by the webcam face recognition algorithm will start working and it will detect and recognize the person’s face saved in the database. If face does not get recognized, Laser light is on and message is sent to user and email notifying the time it has taken place. This is very helpful to secure the vehicle from theft.

REFERENCES

[1]Nagaraja, B.G.; Rayappa, R.; Mahesh, M.; Patil, C.M. and more authors, “Design & Development of a GSM Based Vehicle Theft Control System”, International Conference on Advanced Computer Control, 2009. ICACC ‘09, Page(s):148 - 152, 2009

. [2] D.Narendar Singh, K.Tejaswi (M.Tech), “Real Time Vehicle Theft Identity and Control System Based on ARM 9”, International Journal of Latest Trends in Engineering and Technology (IJLTET), Vol. 2 , Issue-1 January 2013, Page(s): 240-245, 2013.

[3] R.Ramani, S.Valarmathy, Dr. N.SuthanthiraVanitha, S Selvaraju, R Thangam, M Thiruppathi, “Vehicle tracking and locking system based on GSM and GPS”, I.J. Intelligent Systems and Applications, Vol. 5, Issue-9 August 2013, Page(s): 86-93, 2013.

[4] “A vehicle is stolen every 13 mins in Delhi; rate up 44% since last year”-Timesofindia.

[5] Champa Bhagavathi.R , Gowri.B.R , Kasturi.R , Pooja.C,”Vehicle Theft Detection and Prevention Using GSM and GPS”, International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization) Vol. 4, Issue 5, May 2016.

THANK YOU