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# Face Recognition System Using Machine Learning With OpenCV and Telegram BOT

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**ABSTRACT :** In today's world of internet, security is an important factor. So instead of using any traditional security method, users face majorly focus on real time detection like immediate alert by face detection and recognition. Therefore, there is a huge use of immediate alerting devices like ESP-CAM, Arduino-Uno etc. In the world of computer IOT refers as a most demanding technology ever. This paper includes face recognition system using of OpenCV & Telegram bot. Where Open-CV is a machine learning methodology used for face detection & recognition. Telegram bot is use as content management system which performs crud operations to manage users. In this system image is captured ESP-CAM 32 and recognize by OpenCV (Open-Source Computer Vision Library) & the response will be fetch by using Arduino Uno & displays the output as valid or invalid person. Telegram can manage the users by insert, update, delete operations.

**KEYWORDS:-**Telegram, Arduino-Uno, ESP-CAM32, Open-CV, Face-Recognition

## I. INTRODUCTION

The rapid growth of innovations in science gives us many ways to perform different activities based on the technology which is able to detect and recognize face of human entering in society using ESP-CAM32 and OpenCV algorithm which is a face recognition algorithm in python. The title of paper is "Face recognition algorithm using machine learning with OpenCV and telegram bot". the person entering in society which is captured by ESP-CAM32 these captured image is forward to database through Arduino-Uno. These images are stored in database in tuple form, further OpenCV algorithm recognize that, the given image/photo of person is present in database or not, and based on that output will display as person is known or unknown. Telegram is used as content management system to perform crud operations on database like add, delete, insert etc

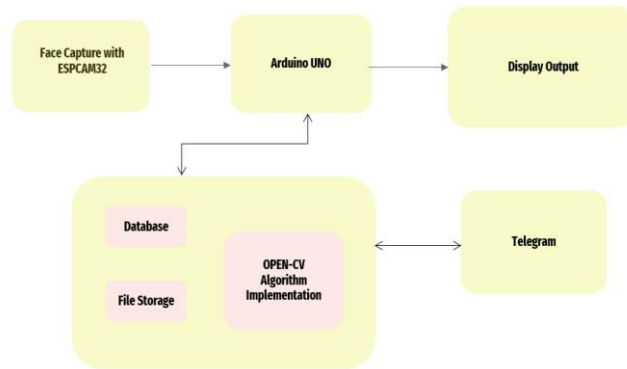
## II. LITERATURE SURVEY

It is well known security system, which is proposed/developed for society or office security problems. The previously developed systems have some drawbacks & advantages this system as compared to this system.

The paper "Intrusion detection system using Raspberry pi and telegram integration"<sup>[3]</sup>. In this paper, the technology used were histogram of oriented gradients Open-CV, Raspberry-Pi having advantages like high accuracy in face recognition used in application of intrusion detection system. But in this system there are some limitations as compared to this proposed system, as there is no logging of activities, telegram can't perform crud operations (update, delete, insert). Another disadvantage/limitation is the database stored on Raspberry-Pi hardware, so there is high chance of loss of data if the hardware is stolen by someone. This drawback is overcome by newly developed face recognition system using machine learning with Open-CV & Telegram-Bot, where database is stored separately on local host which provide security of data.

Another paper is "Face Recognition and Home Automation using Telegram Bot"<sup>[2]</sup> used in applications like home automation. The technology used by the system was MQTT Protocol, Node-MCU. The advantages of the system were affordable hardware & telegram integration and the drawback of the system is no logging of activities

**Proposed System Architecture :-**



**Fig 1. System Architecture**

**Implementation:-**

The project is implemented by using through following modules.

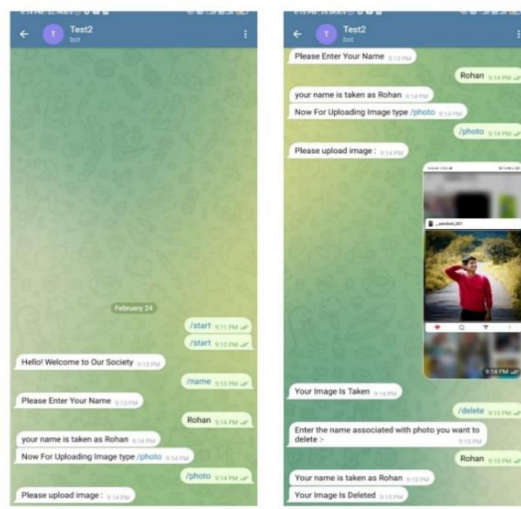
**1. Database setup:-**

Database stores data/information about members of Society in the form of tables like person-info, flat-info, time, the table person-information stores data such as name, photo, flat-info contain data such as id, flat-no, contact number and time

contain in-time & out time of person who enters in society. This database is stored on local host.

**2. Telegram Bot :-**

Telegram Bot is used to perform crud operations (update, delete, insert) by giving Specific commands by the user persons data/into is added in database



**Fig 2. Telegram Chat-Bot-1**

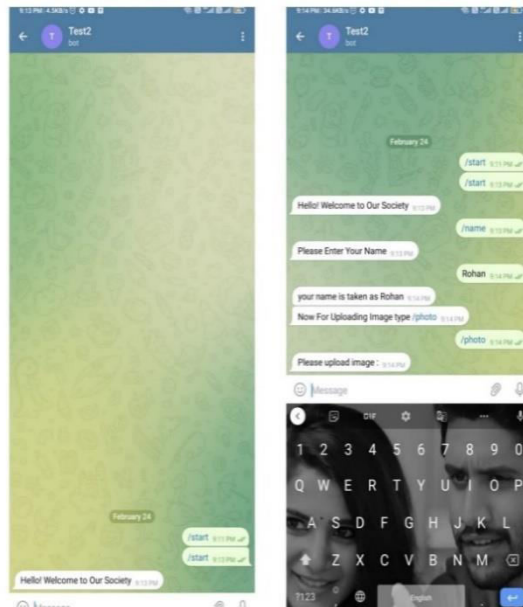


Fig 3. Telegram Chat-Bot-2

### 3. Open-CV :-

A Python package called OpenCV makes it possible to carry out image processing and computer vision tasks. Many functions are offered, including tracking, face recognition, and object detection. An open-source computer vision software library is called OpenCV. It is an open-source library for computer vision. OpenCV is one of the pre-installed packages and libraries that simplify our lives.

Python is a user-friendly and simple language, however this benefit comes at the expense of speed, as Python is slower than languages like C or C++. As a result, we add C/C++ support to Python, making it possible to create computationally complex programmes in the original C/C++ language. Python is also easier to code in than C/C++. The original OpenCV C++ implementation has a Python wrapper called OpenCV-Python.

#### 3.1 Tkinter Library

The default Python interface for the Tcl/Tk GUI toolkit is the tkinter package. The majority of Unix systems, including macOS, as well as Windows machines support Tk and tkinter. You may check if tkinter is correctly installed on your system by typing `python -m tkinter` from the command line. It should also display the version of Tcl/Tk that is installed, allowing you to access the documentation for that version of Tcl/Tk..

Tkinter supports a range of Tcl/Tk versions. The official Python binary release bundles Tcl/Tk 8.6. `threadedTkinter` is not a thin wrapper, but adds a fair amount of its own logic to make the experience more pythonic.

#### 3.2 Face\_recognition algorithm

The world's most straightforward face recognition library lets you recognise and work with faces from Python or the command line. Moreover, a straightforward face recognition command line programme is provided, allowing you to perform face recognition on a folder of photographs directly from the command line. Human faces are made up of



several lines and features that must be compared. The face recognition algorithm is now the most demanding in machine learning since it uses Python to identify the face into numerous lines and bit sizes. To identify the face of a human in a picture, OpenCV employs machine learning methods..

### 3.3 NumPy Algorithm

The cornerstone Python module for scientific computing is called NumPy. A multidimensional array object, different derived objects, shape manipulation, sorting, choosing, I/O, and much more are all provided by this Python module.

A division of the NumPy library is nd-array. This contains homogeneous, n-dimensional arrays of data. Only understanding how to utilise Python's built-in sequence types is not sufficient for effectively using today's mathematical Python-based applications; users must also understand how to use it.

### 4. Arduino-UNO & ESP-CAM32:-

The hardware used is Arduino-UNO&ESP-CAM32. ESP-CAM32 is powered from the Arduino-UNO 5v and pins connected to same orESP-CAM32.

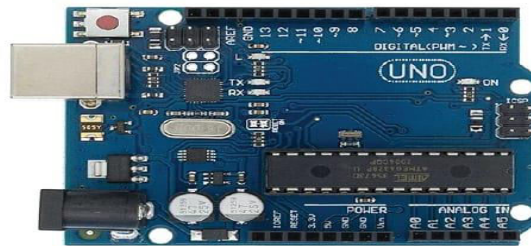


Fig 4 . Arduino



Fig 5 . ESP Cam-32

### III. RESULT

The database is kept on local system so, there are less chances of its stealing . The image data is stored in blob format in the database rather than storing it directly in database , due to this computation time and fetching time of data from dataset is less.The logs such as intime and out time of every entering person is recorded.

#### IV. CONCLUSION

Thus we created "Face Recognition System using machine learning with Open-CV&Telegram-Bot. It is designed to developed & test the facial identification technology by using Open-CV libraryof python & telegram instantmessenger app for management of users & as a logger.

#### V. FUTURE SCOPE

##### 1. Improve the Hardware :-

We want to create a portable version of scanning hardware (ESP-CAM32) which will improve efficiency of current hardware. It is not battery operated, so we can add battery module.In our proposed system the major drawback is steady internet connection.

##### 2. Integration with other applications :-

Similar to telegram we intent to integrate other applications such as, whatsapp, Twitter who support infrastructure of bots

#### REFERENCES

- 1.Namrata Harke, Aishwarya Patil, Yash Nimbalkar, Sandesh Khore4 , Prof. Sunil Rathod, (May 2022) , Smart Door Lock System Using Face Recognition
2. V. Subba Reddy, Sreevardhan Cheerla, Syed Inthiyaz,(December 2021) Face recognition and home automation using Telegram Bot.
- 3.Kehinde Odeyemi, Vusi Malele, Pius A Owolawi, Mfundo Zuma (December 2021), Intrusion Detection System using Raspberry Pi and Telegram Integration.
- 4.Dr. N V R Vikram, Navya, Sai Teja, Sunandini (September 2021), Secure Home Entry with Face Recognition and Notification via Telegram.
- 5.K. Mahender, Rajeshwarrao Arabelli, (December 2020), Automatic Door Lock System by Face Recognition.
- 6.V. Ramanath , Implementation of Improved Face Recognition Technique for Car Ignition Access Control Using Raspberry Pi, Microcontroller International Journal of Emerging Science and Engineering Volume-3 (July 2015)
- 7.Fabio Leccese,Marco Cagnetti and Daniele Trinca A Smart City Application: A Fully Controlled Street Lighting Isle Based on Raspberry-Pi Card, a ZigBee Sensor Network and WiMAX Sensors , (Aug-2014)
8. Mukesh Kumar, Sanjeev Sharma, Mansav Joshi, Design of Real Time Data Acquisition with Multi Node Embedded Systems, IJCA vol. 42, (May-2012)



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