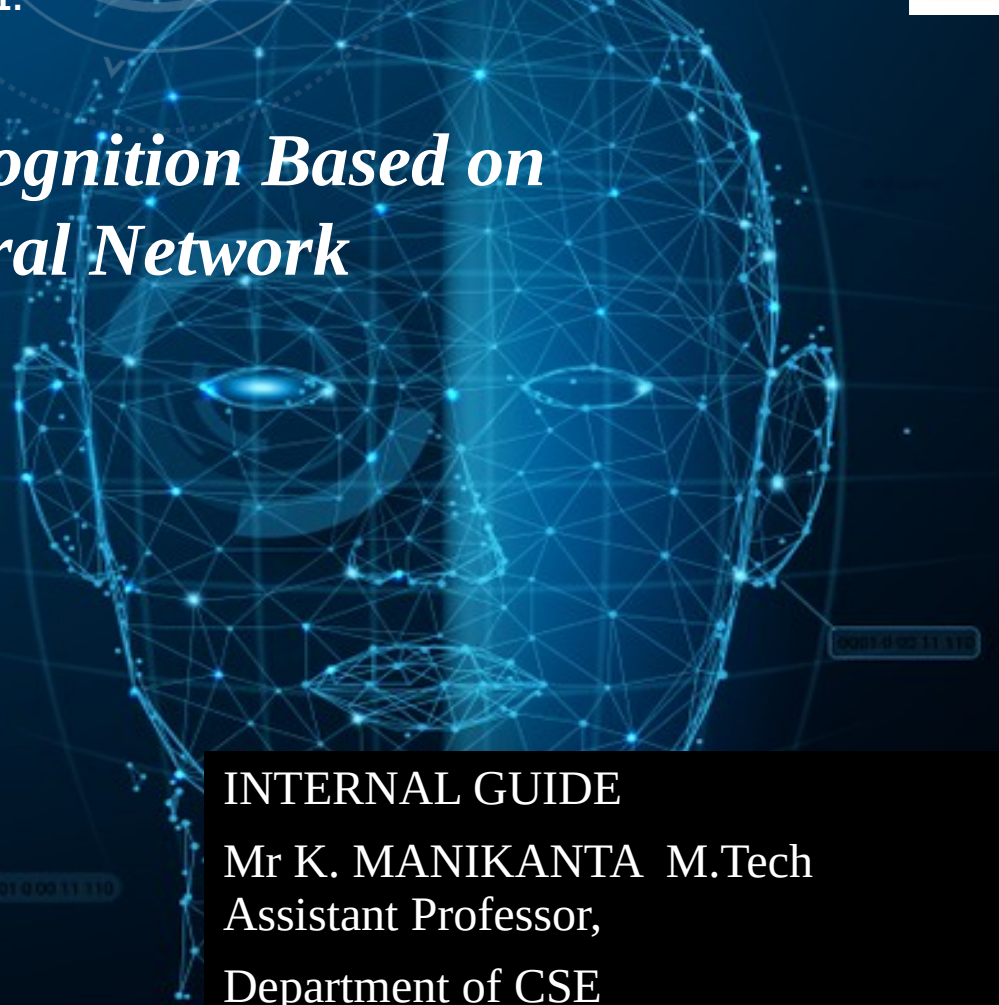
TADIPATRI ENGINEERING COLLEGE

Approved by AICTE and Affliated to JNTUA, Kadapa Road, Veerapuram Village, Tadipatri, Andhra Pradesh-515411.

ISO 9001:2015

Deep Unified Model For Face Recognition Based on Convolutional Neural Network



GROUP NAME: A6

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B. RAJITHA	17HU1A0533
D. ANITHA	17HU1A0501
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INTERNAL GUIDE

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ABSTRACT

Face recognition is of great importance to real world applications such as video surveillance, human machine interaction and security systems. As compared to traditional machine learning approaches, deep learning based methods have shown better performances in terms of accuracy and speed of processing in image recognition. This paper proposes a modified Convolutional Neural Network (CNN) architecture by adding two normalization operations to two of the layers. The normalization operation which is batch normalization provided accelerating the network. CNN architecture was employed to extract distinctive face features and Navi Bayes, Softmax classifier was used to classify faces in the fully connected layer of CNN. In the experiment part, Georgia Tech Database showed that the proposed approach has improved the face recognition performance with better recognition results.

INTRODUCTION

AS WE ARE MAKING A SYSTEM WHICH CAN RECOGNIZE FACE AND MATCH WITH ITS OWN DATABASE. IT WILL MAKE THE ATTENDANCE SYSTEM MORE AUTHENTIC. OUR PRIMARY GOAL IS TO HELP THE LECTURERS, IMPROVE AND ORGANIZE THE PROCESS OF TRACK AND MANAGE STUDENT ATTENDANCE AND ABSENTEEISM.

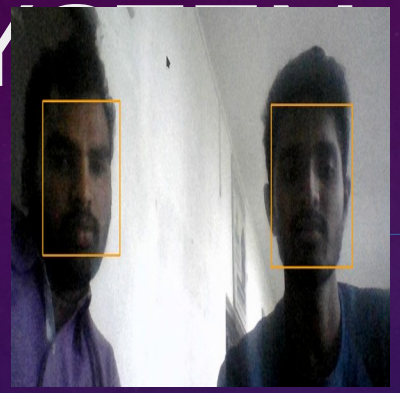
WHAT IS FACE DETECTION?

Face detection is a type of computer vision technology that is able to identify people’s faces within digital images. This is very easy for humans, but computers need precise instructions. The images might contain many objects that aren’t human faces, like buildings, cars, animals, and so on.

LITERATURE SURVEY

AUTHORS	YEAR	PROPOSED	CONS
A.L Rekha , H.K.Chethan	2014	Automated Attendance System using face Recognition	The face represented as a three dimensional object that is subject to varying illumination
Anil K Jain	2004	Biometric identification	Time consuming and Less accurate Compared to other.
H.Shim	2003	Face detection	Detection process is slow and computation is complex.

PROPOSED SY



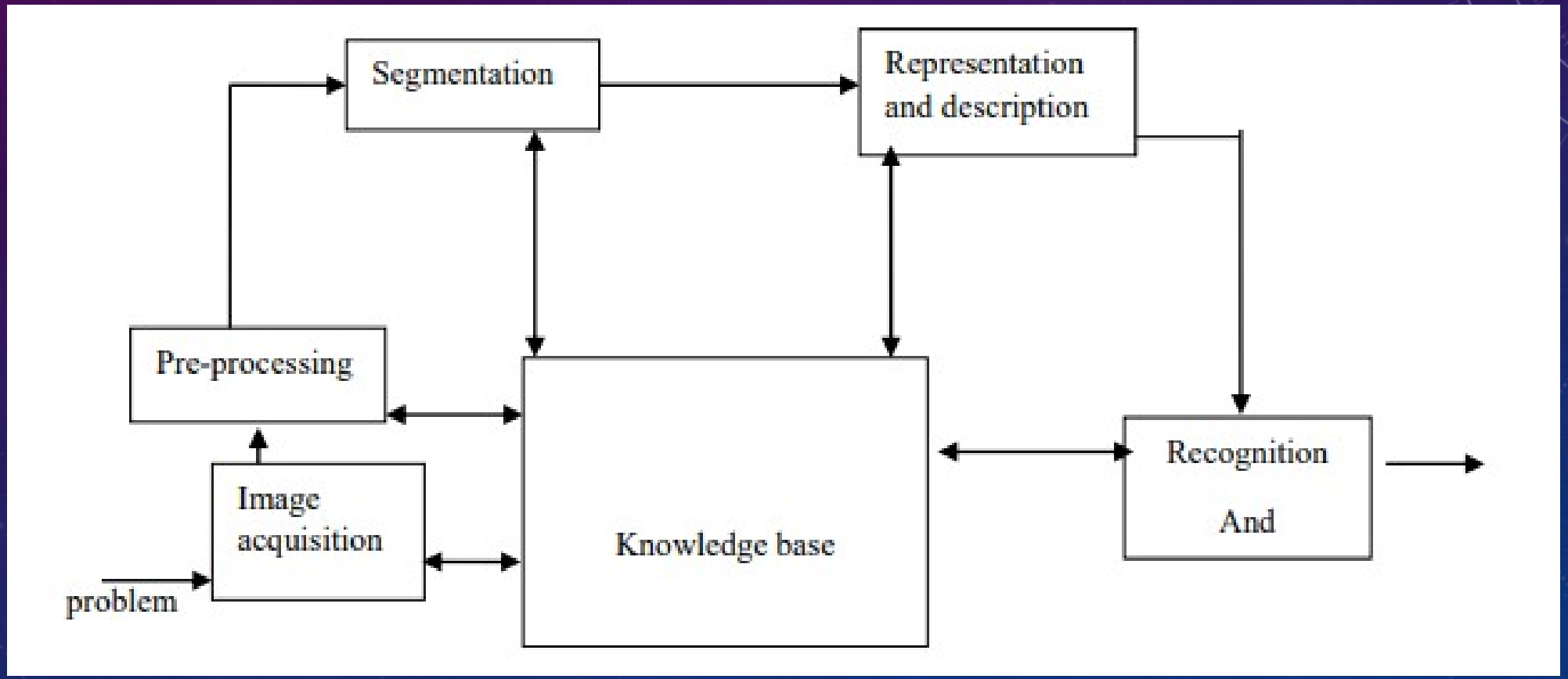
Preprocessing

Feature Extraction With CNN

Softmax / Naive Bayes Classifier

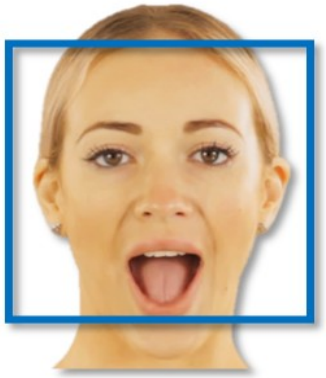
Output

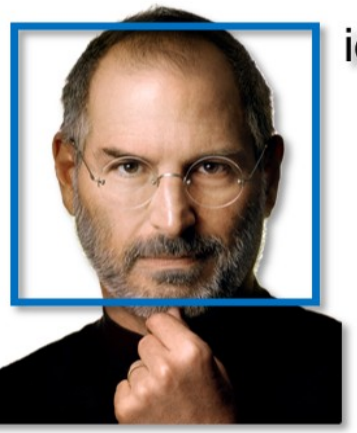
PLAN OF WORKS



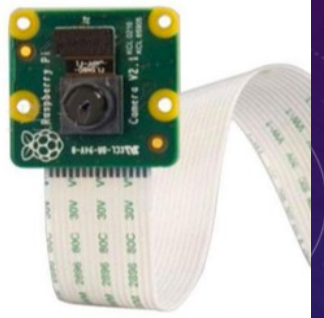
Phase 3: Recognition

Mary ← id = 1





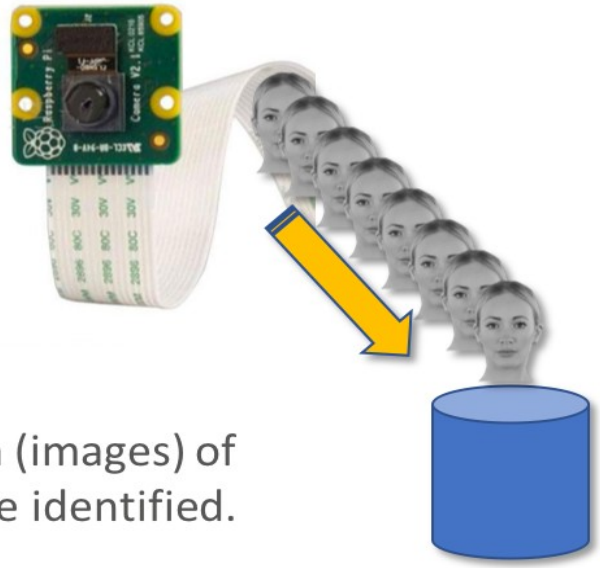
id = 2 → Steve



OpenCV python

Phase 1: Data Gathering

id = 1



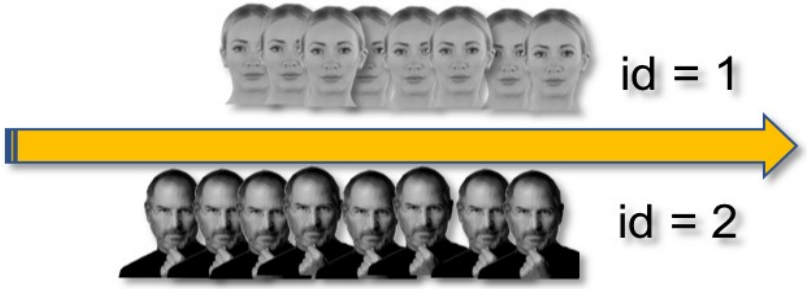
Gather face data (images) of the persons to be identified.

dataset

Phase 2: Train the Recognizer

Feed that face data and respective id's of each face to the recognizer so that it can learn.

trainer.yml



id = 1

id = 2

Recognizer

HARDWARE SPECIFICATIONS

Product name	Prices
HD webcam	1000
Raspberry pi	8000
SD card	500
Total	9500

SOFTWARE SPECIFICATIONS

- Program language: Python 3.x
- Software:

    1. Jupiter Notebook
        - (or)
        - Geany
- Python Modules:-

    Numpy

    Opencv

    Pandas

    Matplotlib

    collection

ADVANTAGES

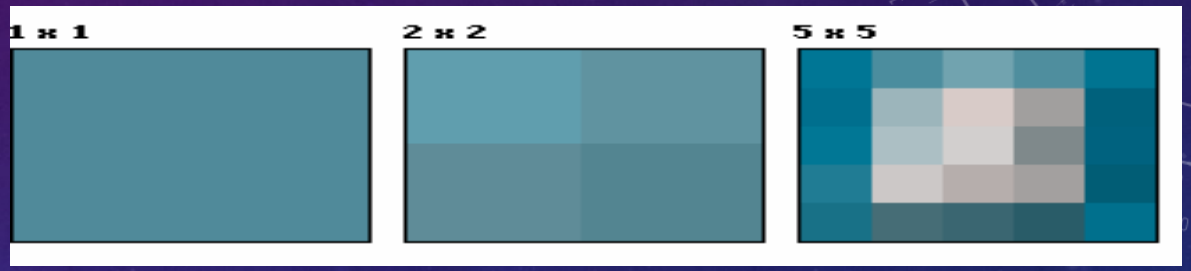
- The system stores the faces that are detected and automatically marks attendance.
- Ease of use is manipulate and recognize the faces in real time using. Multiple face detection. Multipurpose software Can be used in different places.

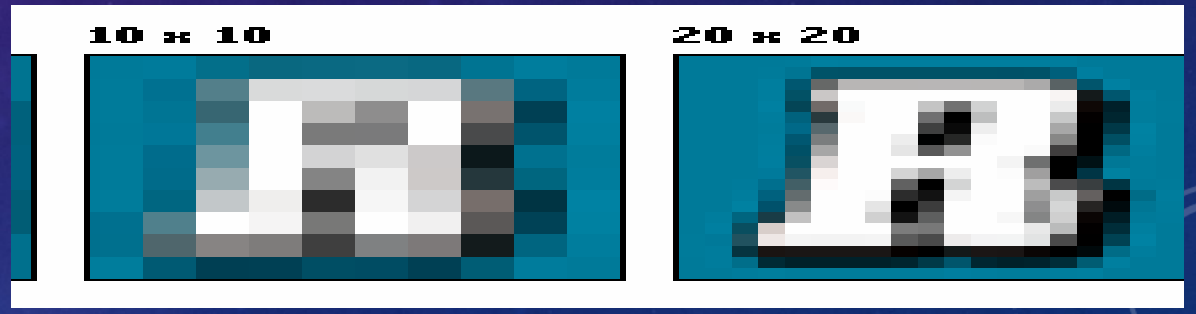
DIS ADVANTAGES

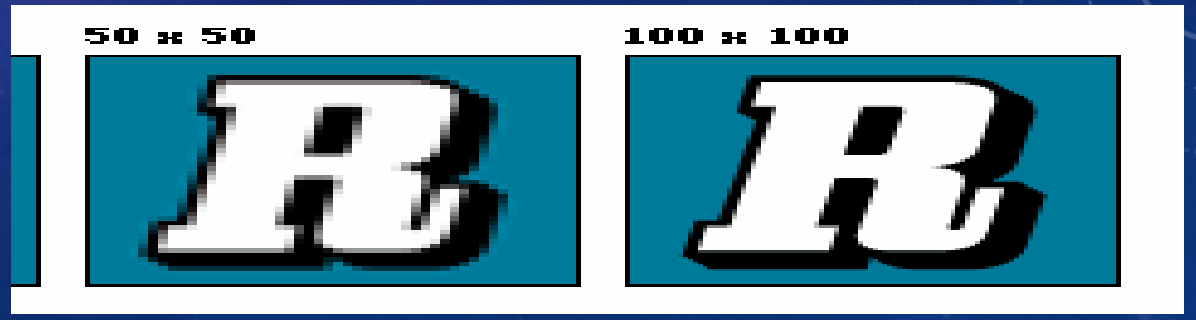
- The accuracy of the system is not 100%. It can only detect face from a limited distance.

Gray scale conversion

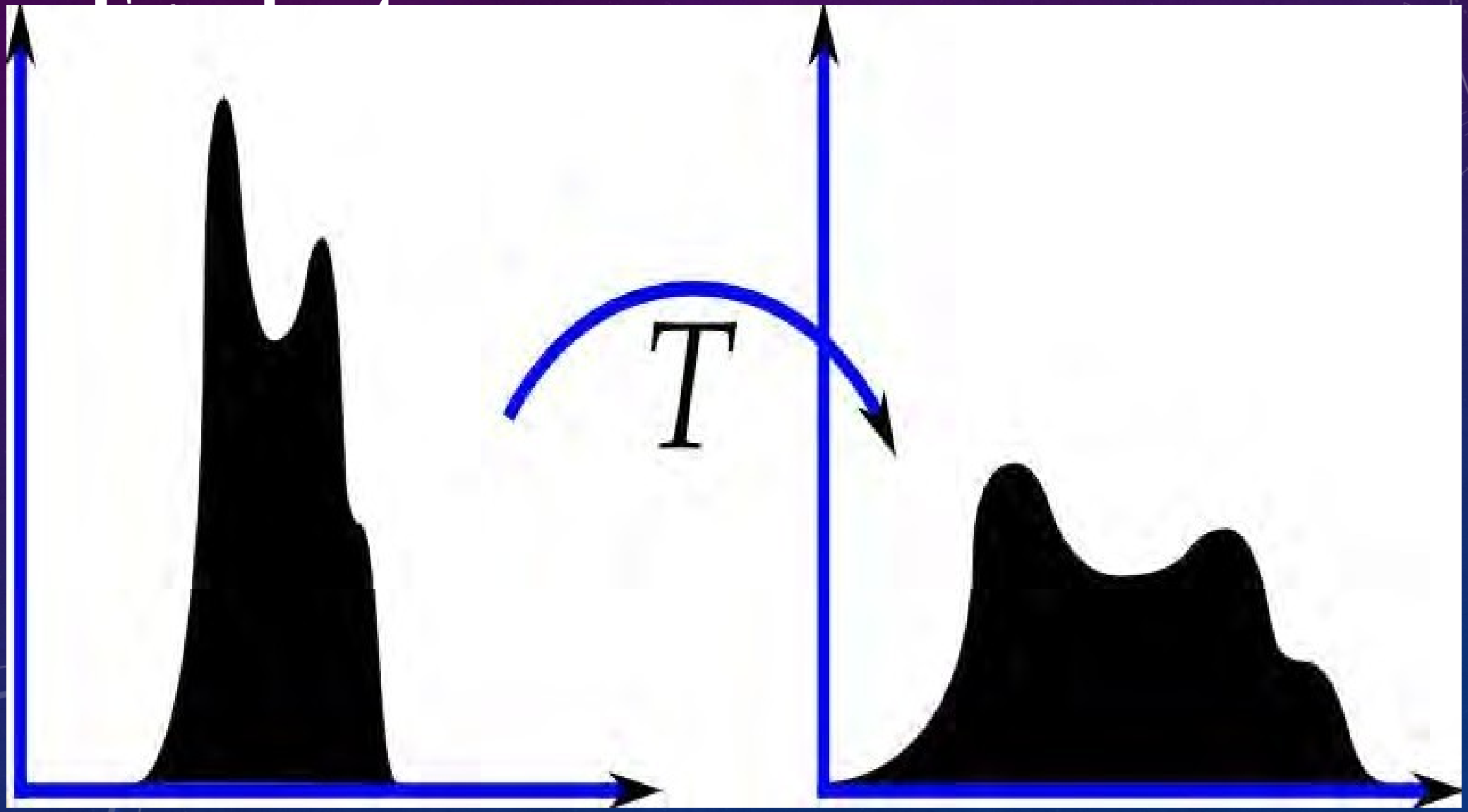
Image resizing



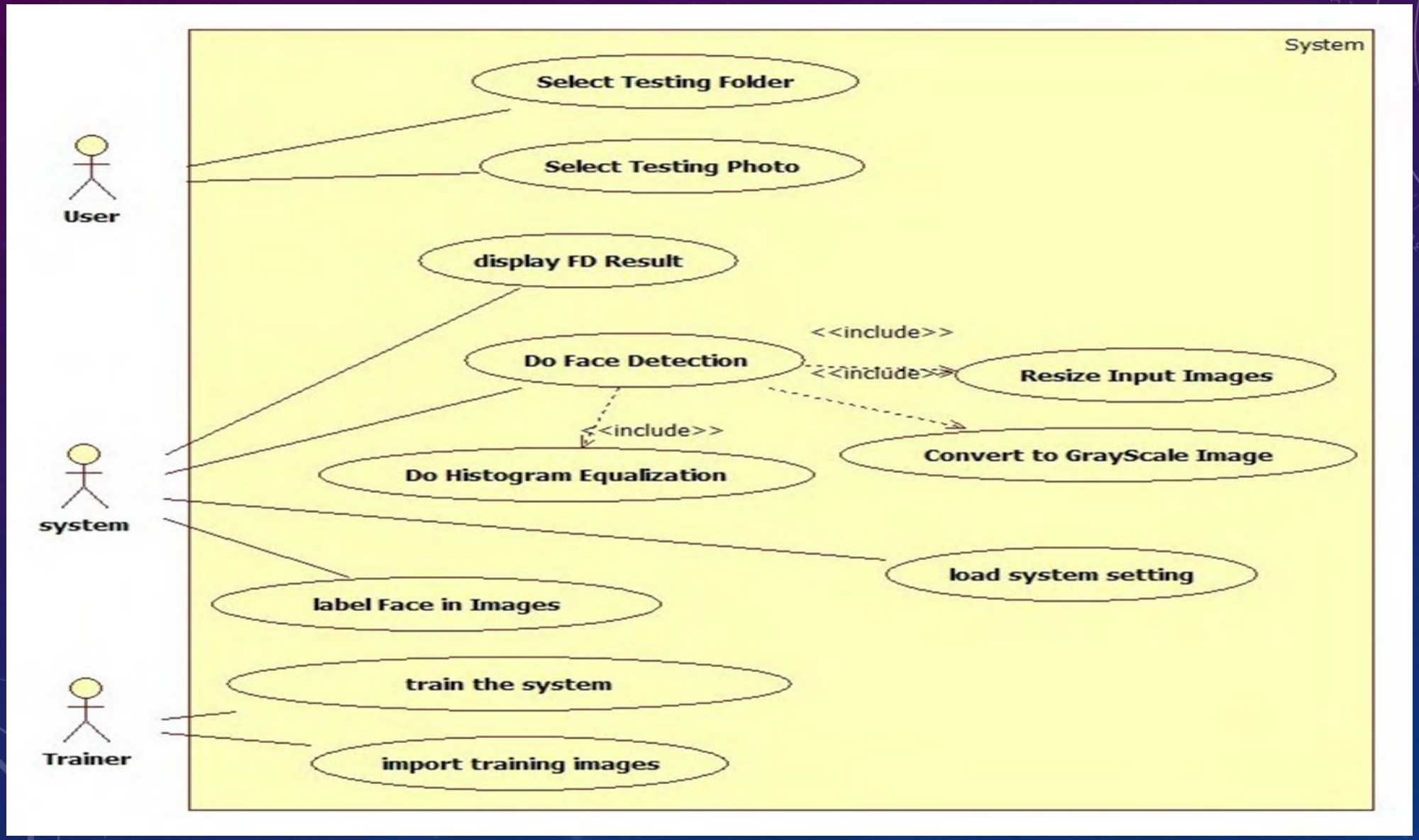




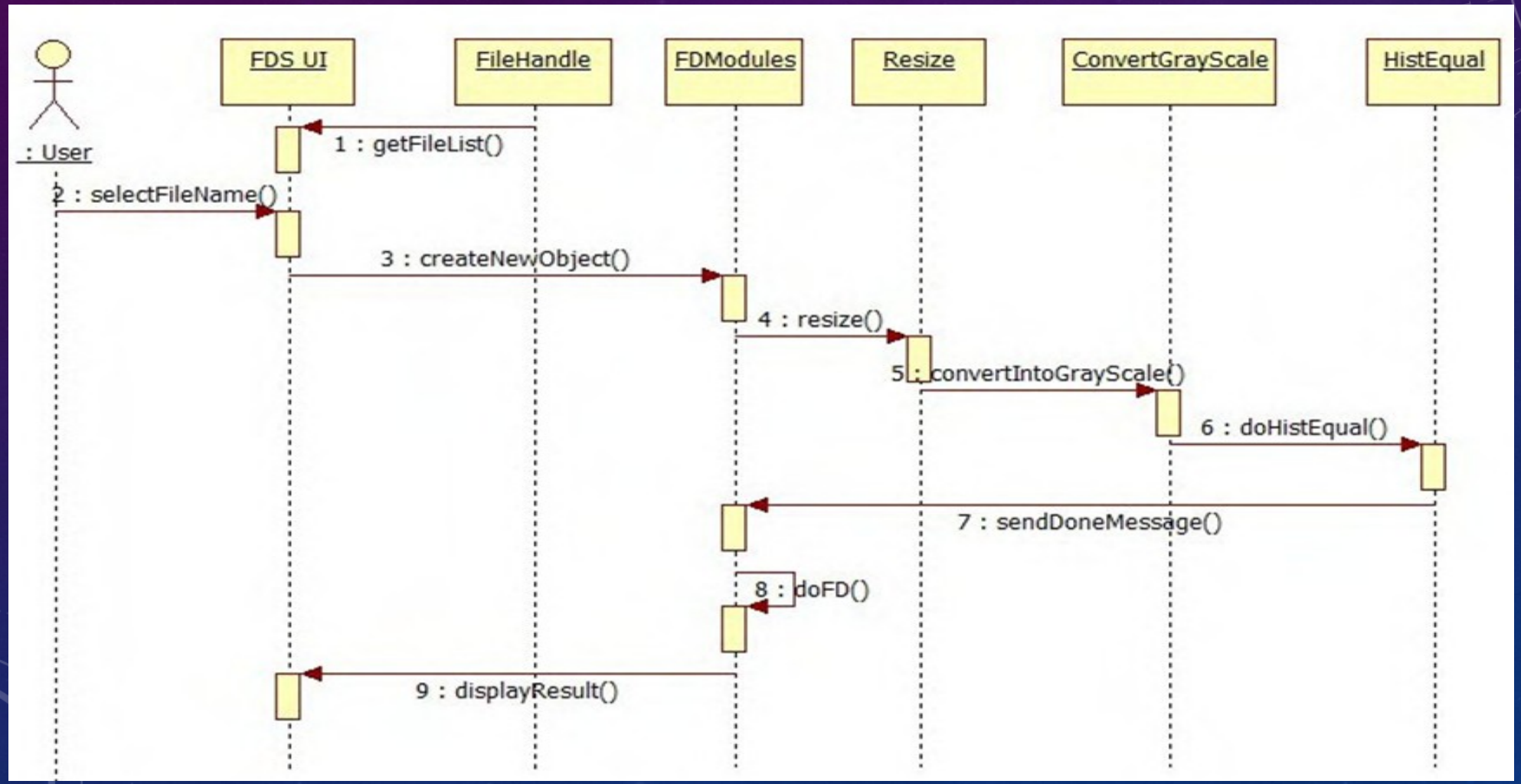
Histogram Equalization



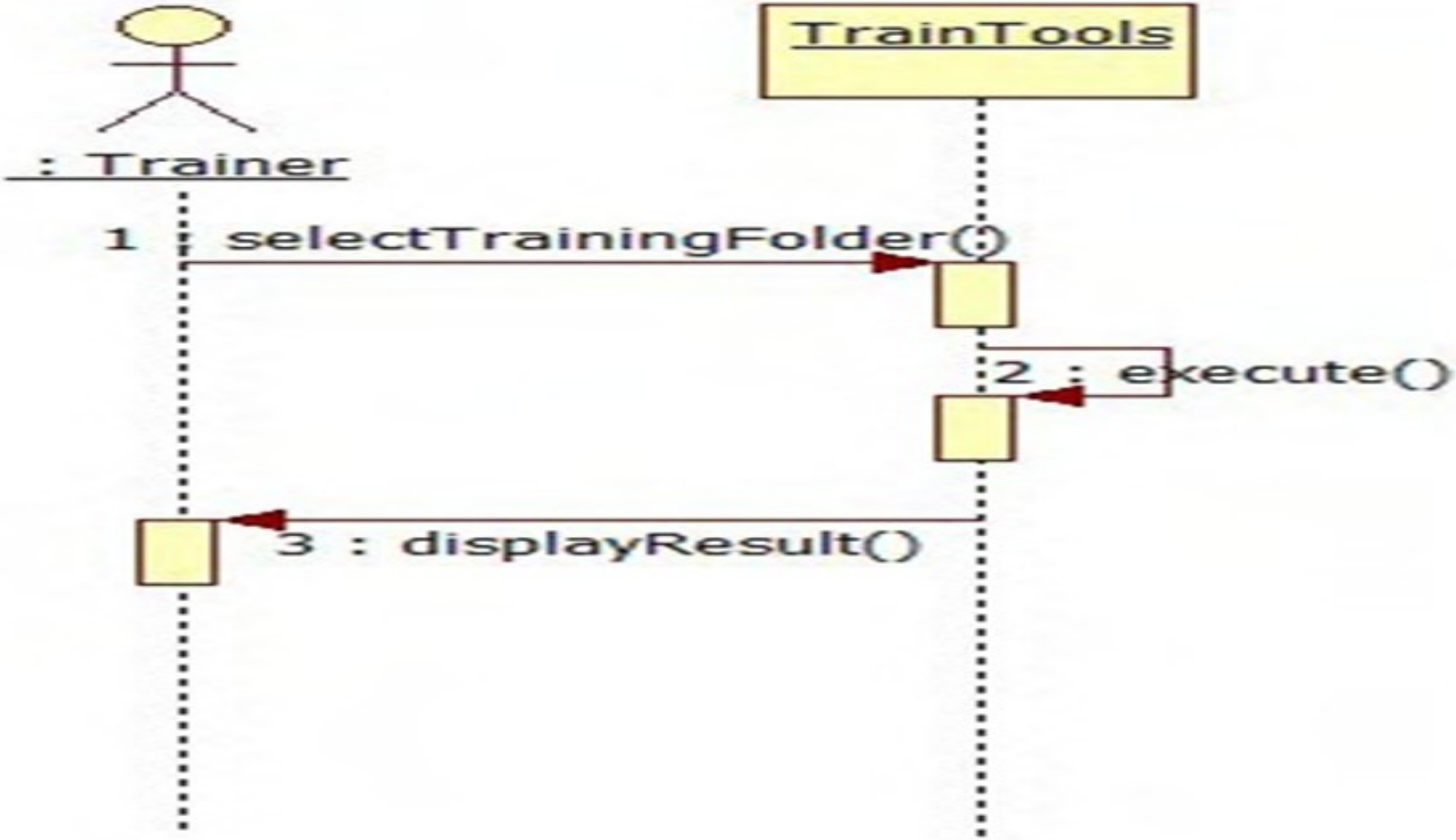
Use Case Diagram



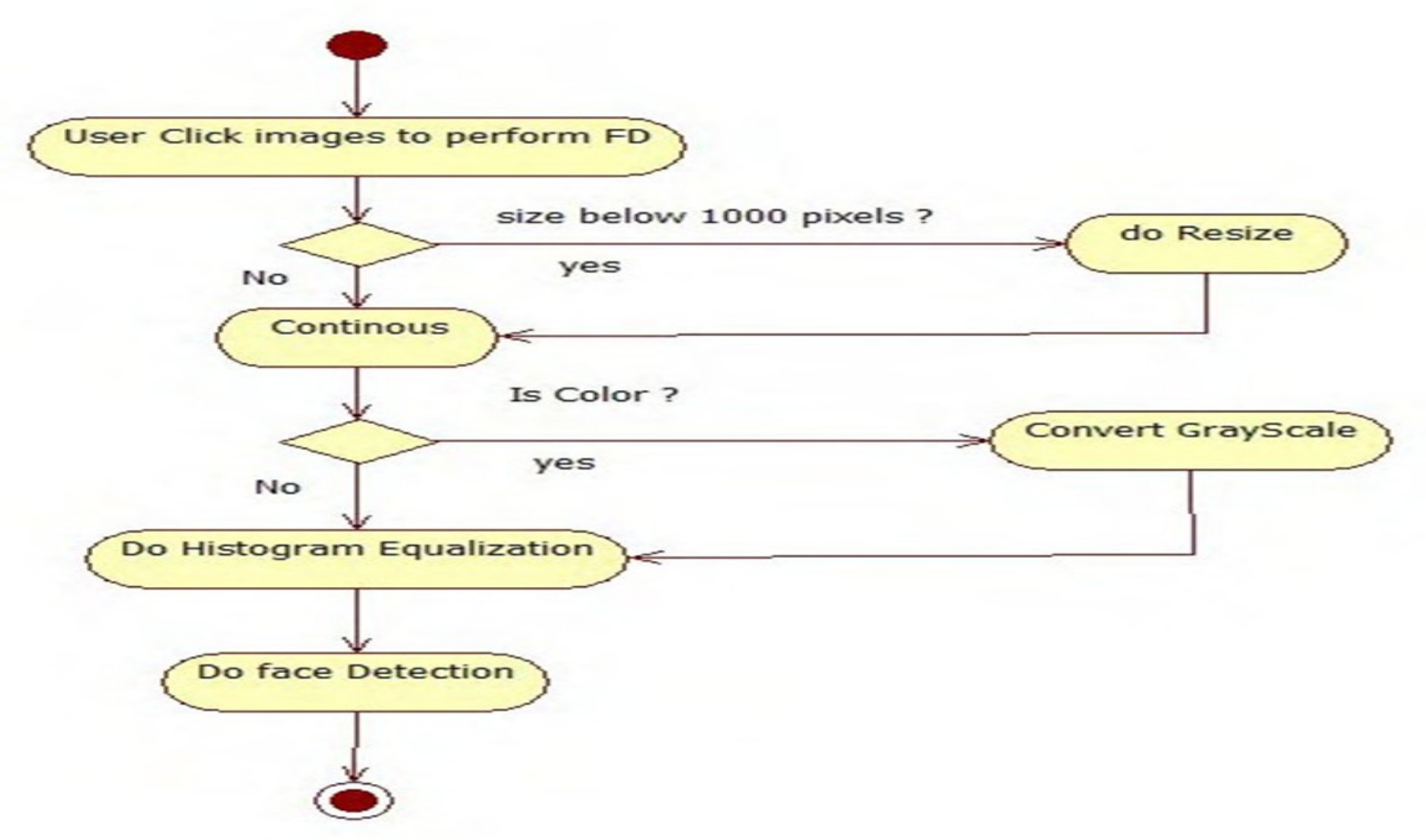
Sequence Diagram – Face detection



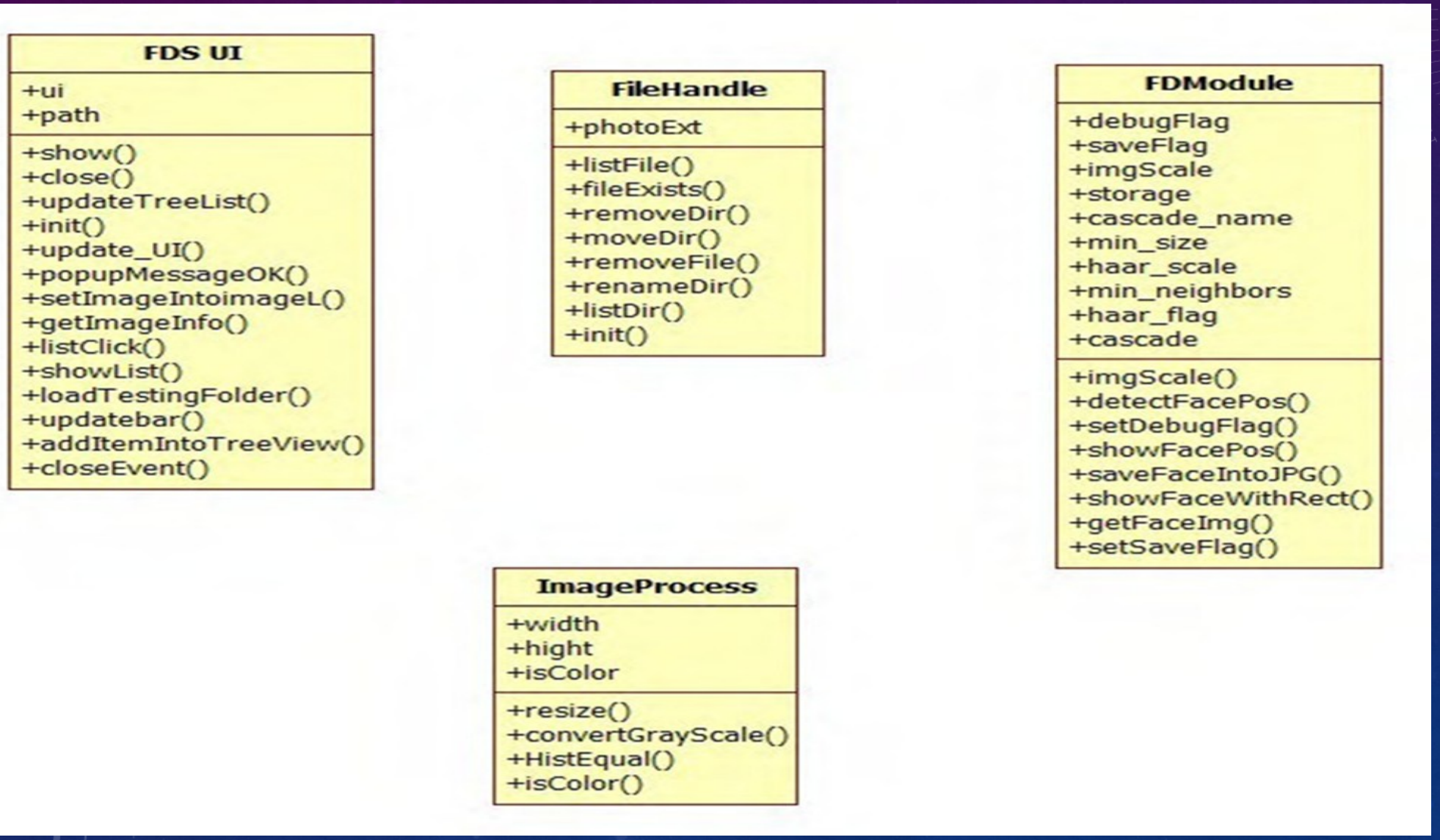
Sequence Diagram – Preparation Sample



Activity Diagram



Class Diagram



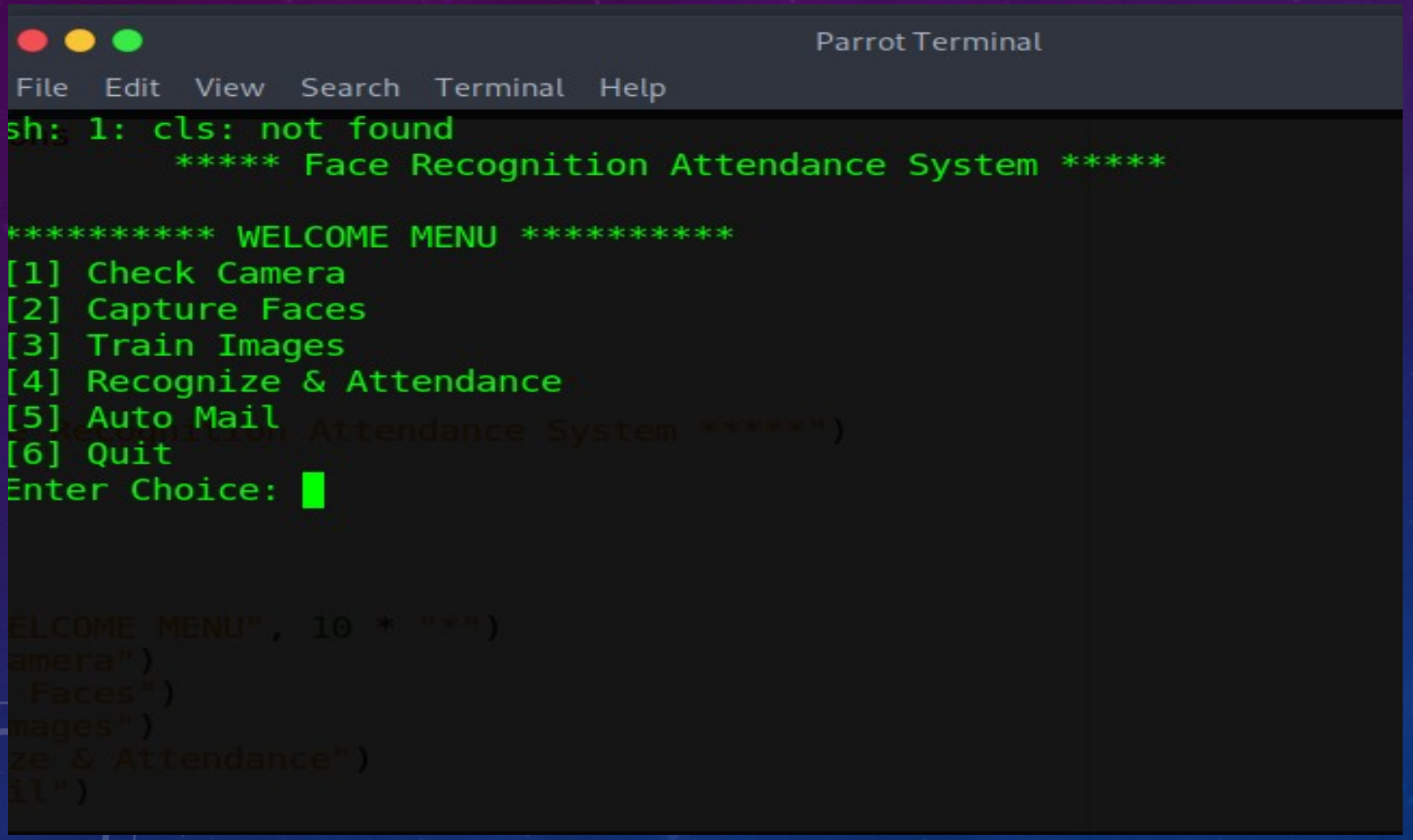
TEST CASES

Test Case - ID	Test Case Description
TC-1	Web camera detecting faces live
TC-2	Capturing multiple images
TC-3	Storing images
TC-4	Encoding faces
TC-5	Training model with training images
TC-6	Recognizing faces registered in the local database
TC-7	Marking attendance along with time

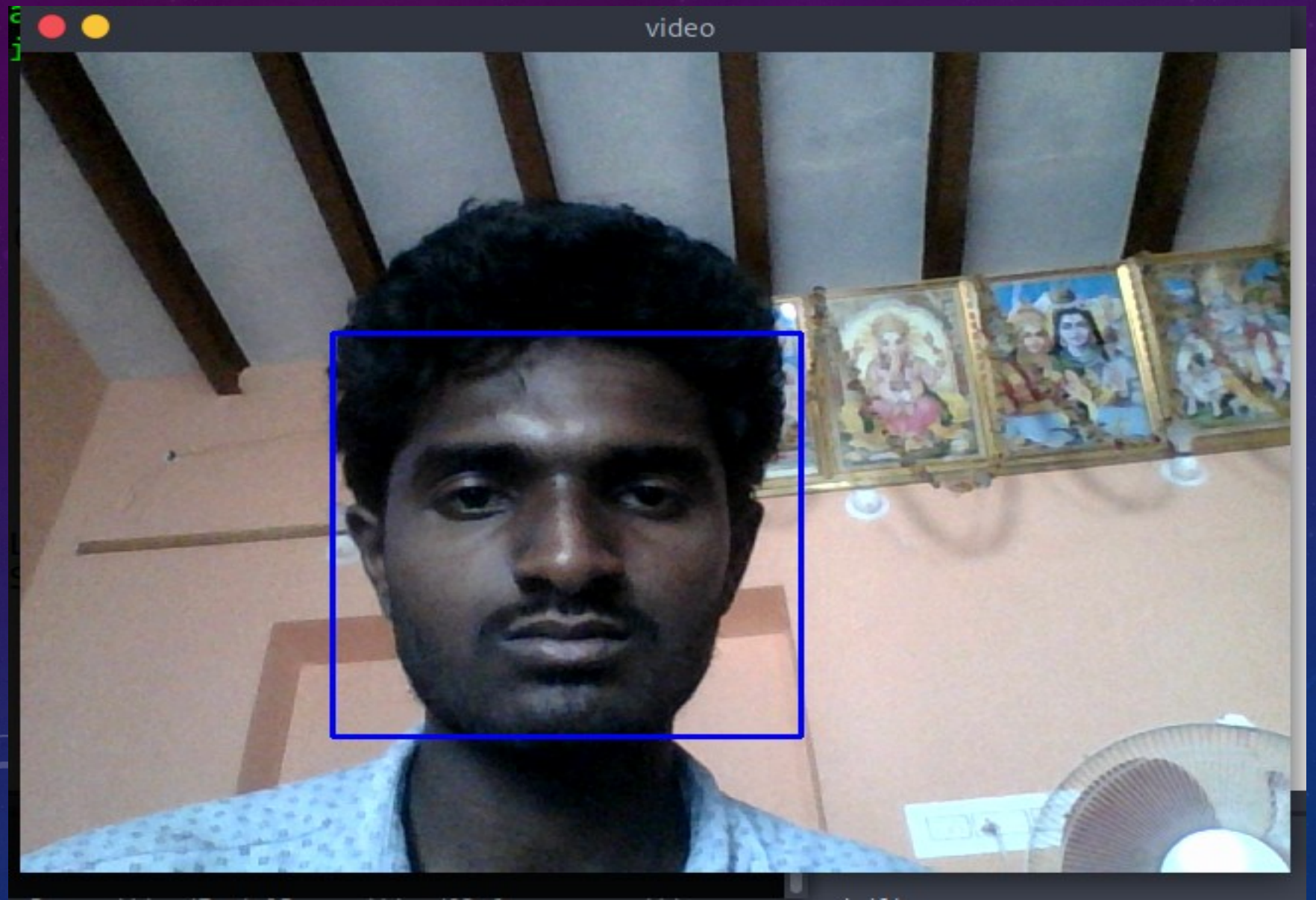
RESULT ANALYSIS

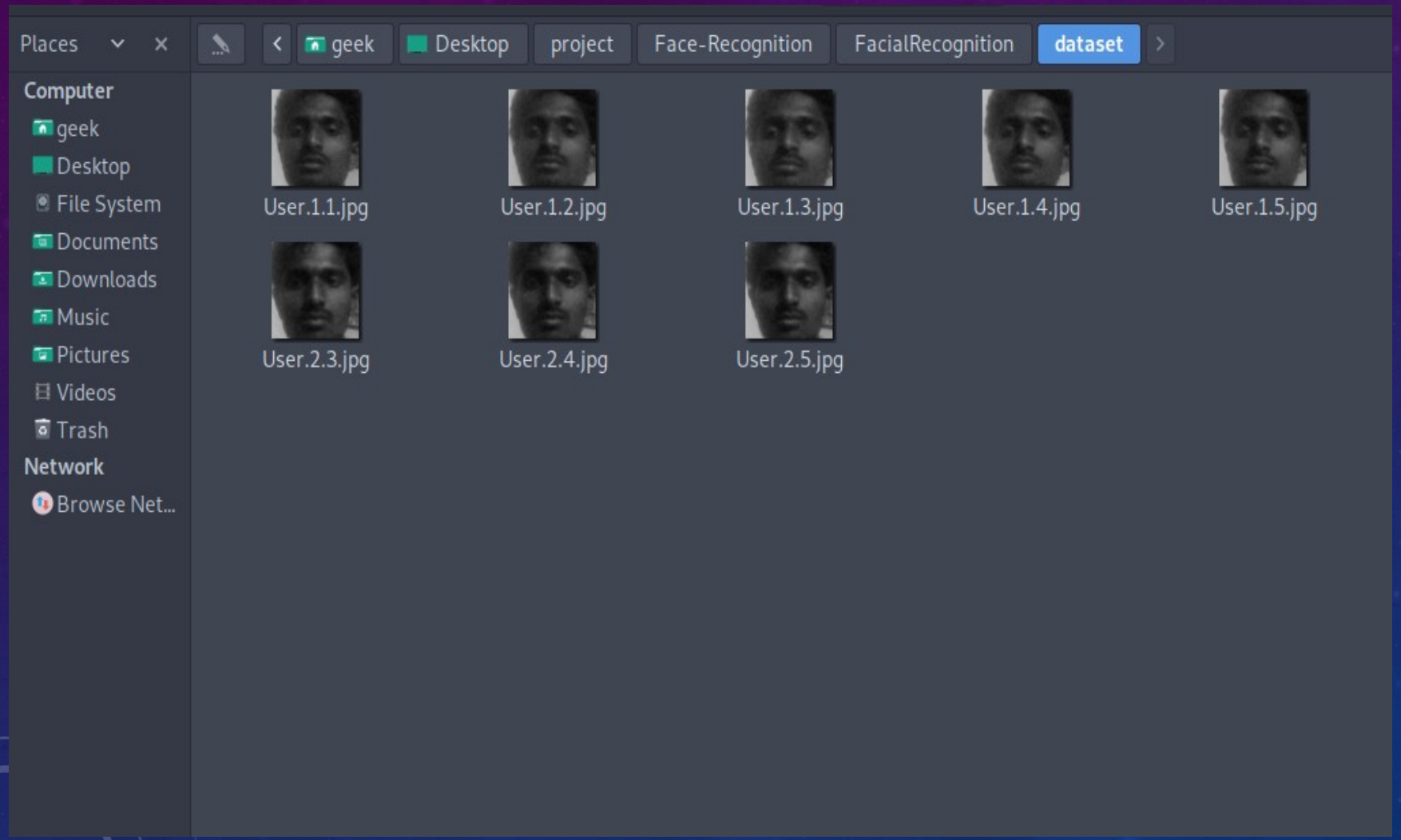
- In our project we have been working more the 200 pictures. Our result of our project percentages is almost 80-81%. Thou it is not enough for this little dataset. To make almost 98% accuracy we need to use more powerful hardware and also need more resources.

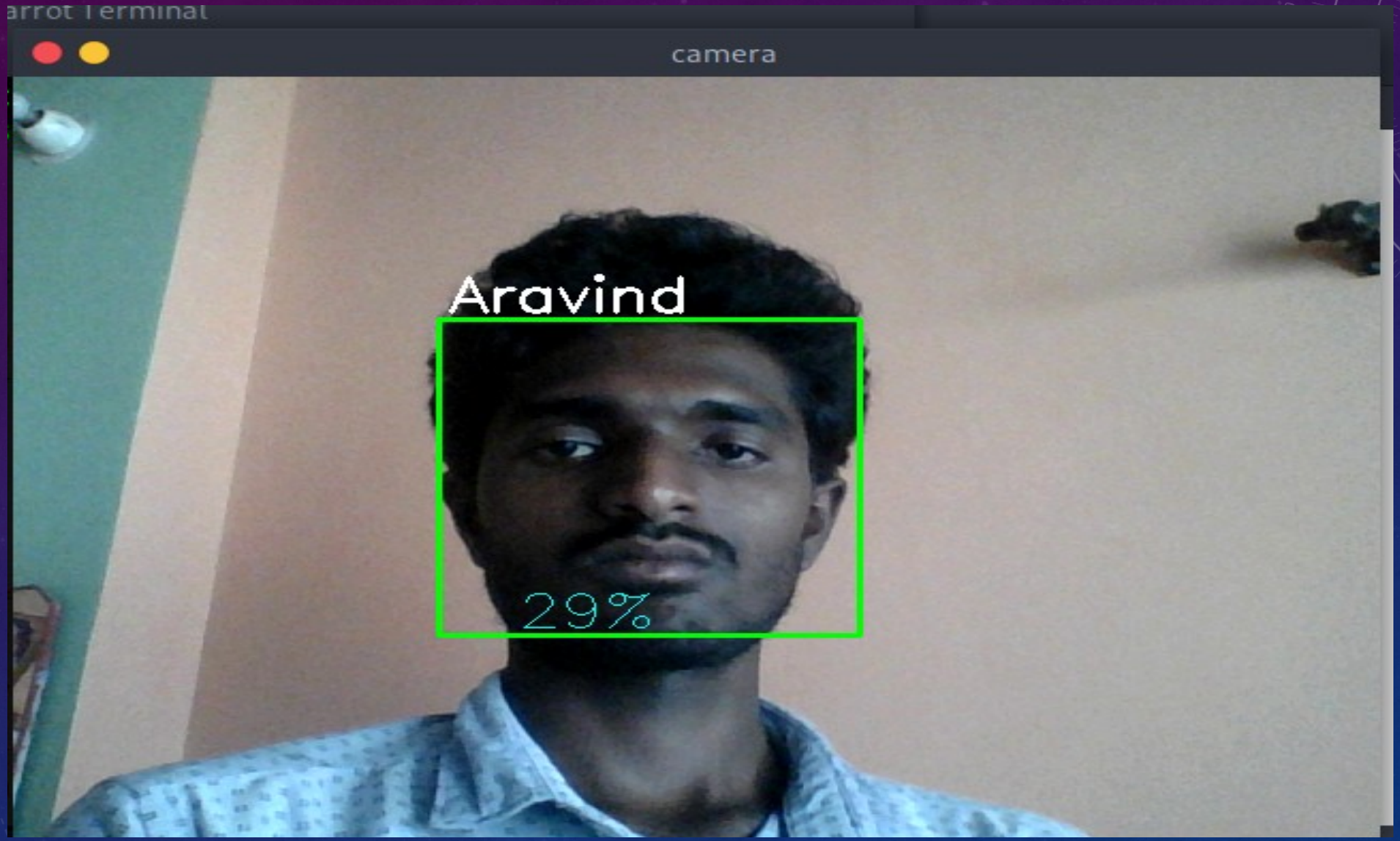
USER INTERFACE

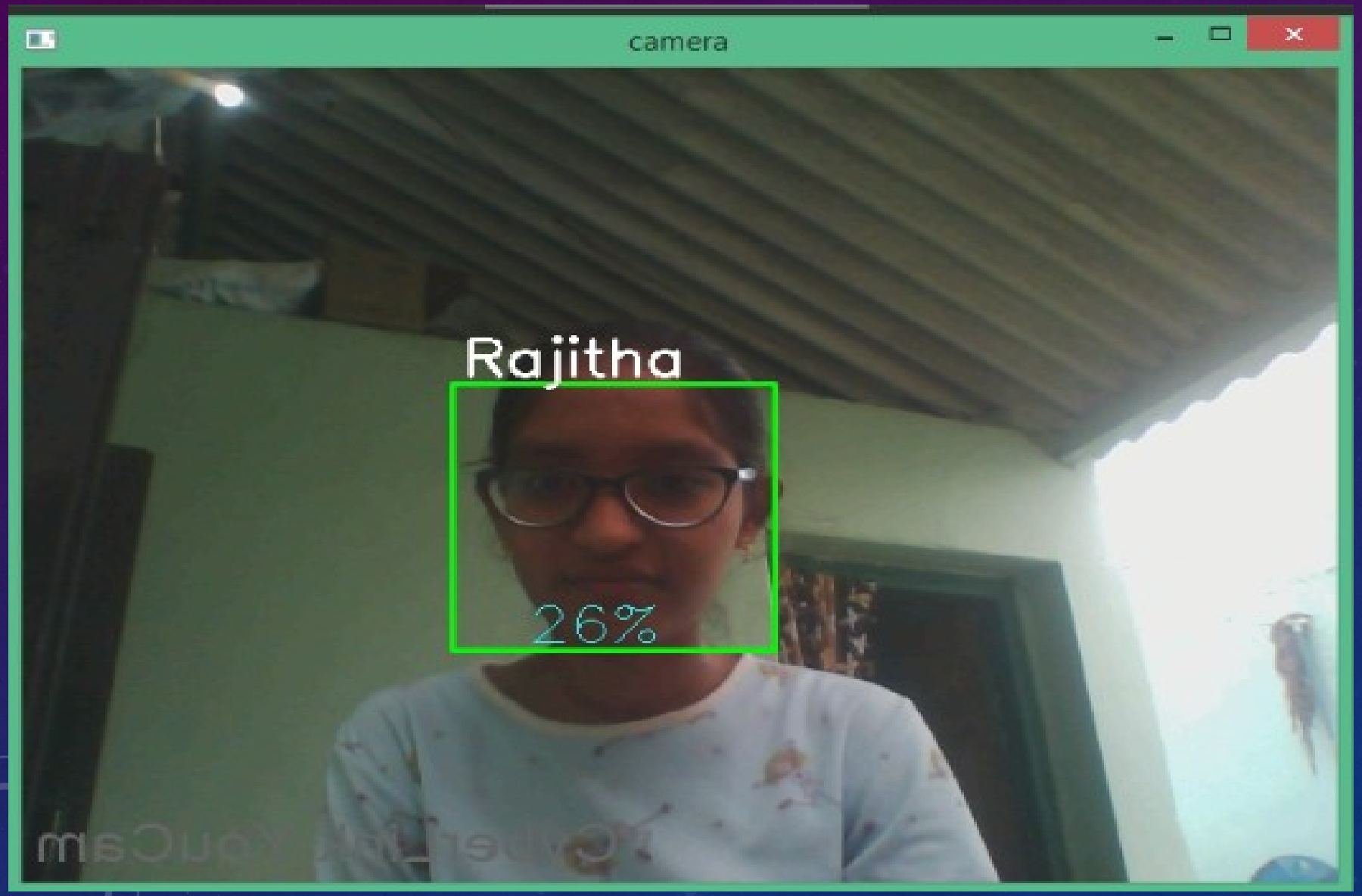


FACEDETECTION




Places
geek
Desktop
project
Face-Recognition
FacialRecognition
dataset
Computer
geek
Desktop
File System
Documents
Downloads
Music
Pictures
Videos
Trash
Network
Browse Net...
User.1.1.jpg
User.1.2.jpg
User.1.3.jpg
User.1.4.jpg
User.1.5.jpg
User.2.3.jpg
User.2.4.jpg
User.2.5.jpg


camera
Aravind
29%


camera
Rajitha
26%

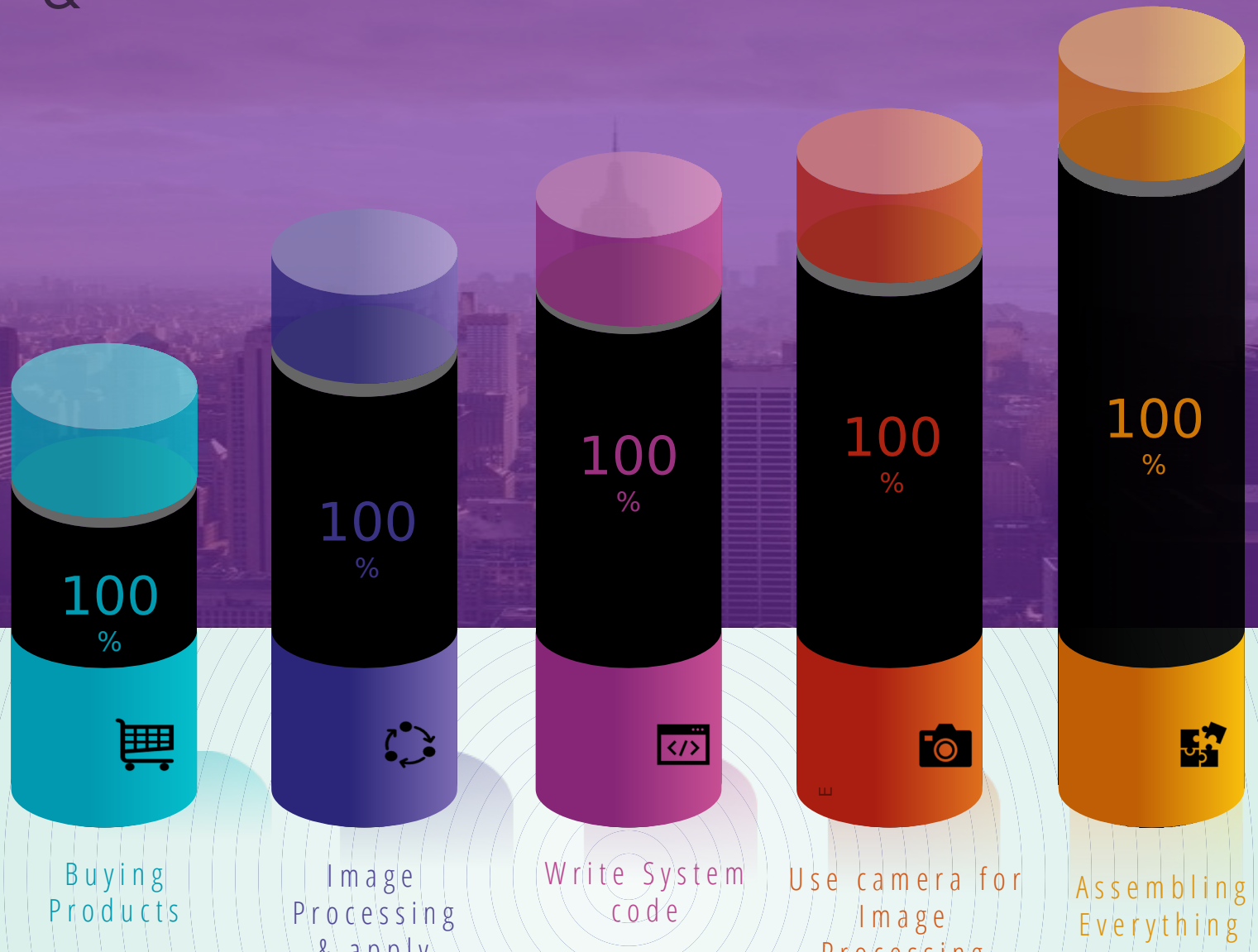
FUTURE WORKS

- In future, we are going to make our project online. So that this project can be use in bigger area like University, work place , factory etc. And also add the neural network or deep learning. If we use the neural network we can have more accuracy around 99.9% with big datasets.

CONCLUSION

- FDS is constructed and achieve highly detection rate
- We have used face recognition concept to mark the attendance of student
- FDS works very well with indoor activities or under controlled environment.
- Smart attendance management system is designed to solve the issues of existing manual systems.
- FDS got 88.15% of detection rate from Test Case 003.
- It means FDS can be handled controlled pose of human face.

Milestone & FRAM



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- S. Lawrence, C. L. Giles, Ah Chung Tsoi, and A. D. Back, “Facerecognition: a convolutional neural-network approach,” IEEE Trans.Neural Networks, vol. 8, no. 1, pp. 98–113, 1997.


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THANK YOU