Face Recognition Attendance System

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Submitted by :-

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Definition :-

Face Recognition is a biometric method of identifying an individual by comparing live capture or digital image data with the stored record for that person.

Face Recognition Attendance System is marking of attendance based on this technology.

Scope :-

Provides an automated attendance system that is practical, reliable and eliminate disturbance and time loss of traditional attendance systems.

Present a system that can accurately evaluate student's performance depending on their recorded attendance rate.

Methodology :-

1. Waterfall Model is a sequential approach, where each fundamental activity of a process is represented as a separate phase, arranged in linear order.
2. In the waterfall model, you must plan and schedule all of the activities before starting working on them (plan - driven process).
    - Requirement :-
        - Requirement Documents.
        - Prepare Use Cases.
    - Design :-
        - Software Architecture.
        - Map the Stakeholders.
    - Implementation :-
        - Construct the Software.
        - Data Storage & retrieval.
    - Verification :-
        - Install.
        - Test and Debug.
    - Maintenance :-
        - Check Error.
        - Optimize Capabilities.

TOOLS AND TECHNOLOGY USED:-

1. Tools :-
   - Pycharm.
   - Visual Studio Code
   - Python Interpreter

2. Library used :-
   - Python 3.8
   - Open cv
   - Dlib
   - Cmake
   - Numpy
   - Face-Recognition
   - Os
   - Datetime

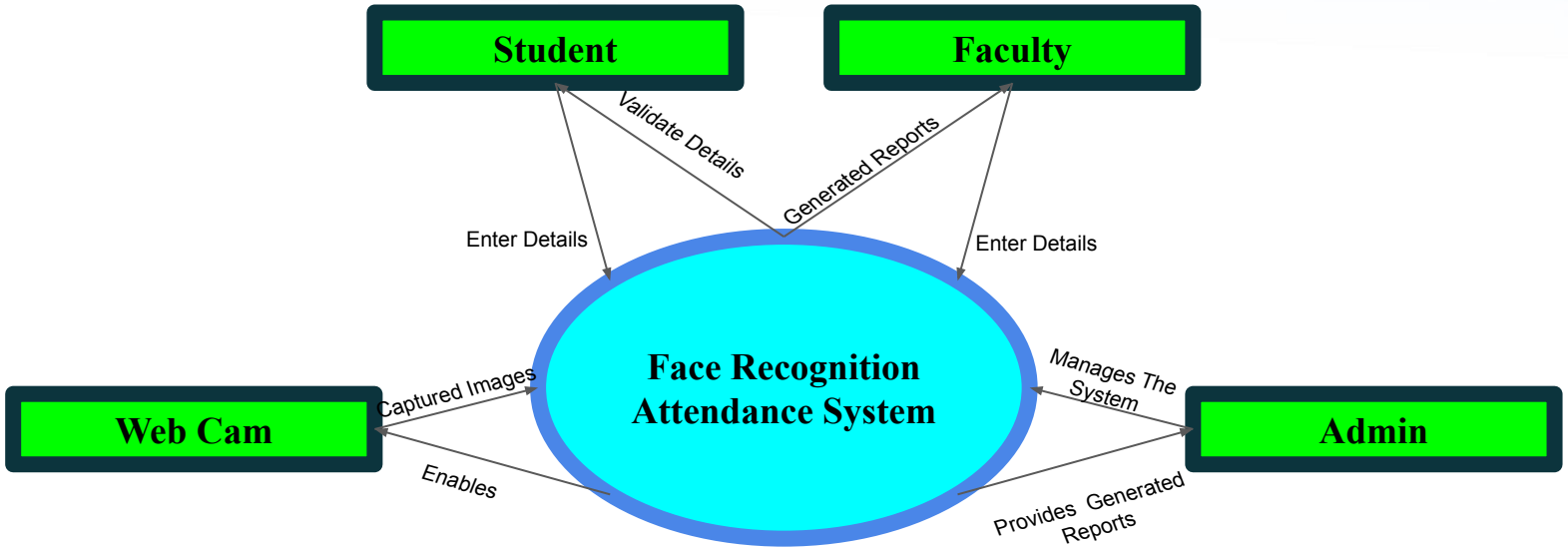
SIGNIFICANCE OF PROJECT:-

- Reduction in use of pen and paper
- More trusted environment and no proxy,
- A small contribution of ours in saving trees,
- Everything is monitored digitally
- Time will be reduced and easy conduction of tests, assignments as notes facilities.
- Parents themselves can check the student performance.

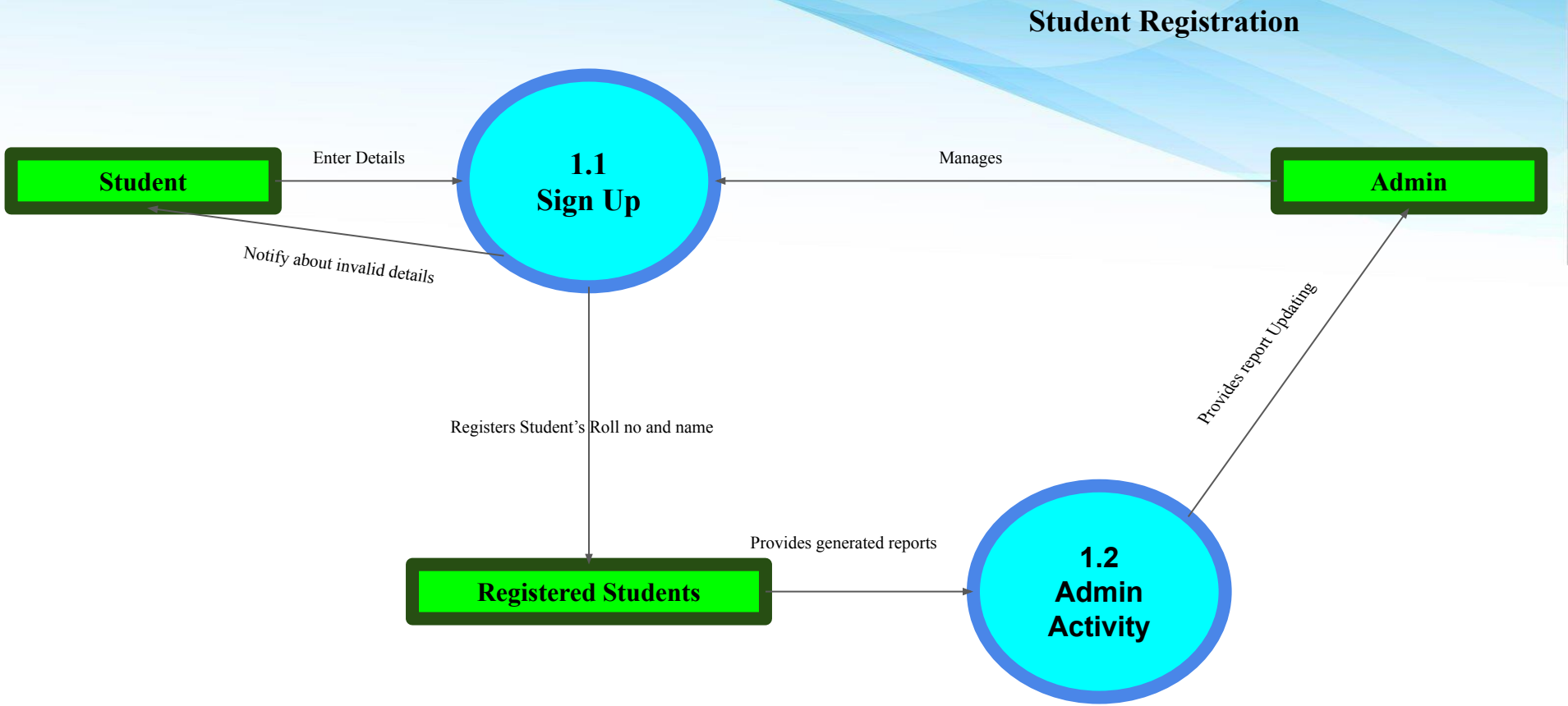
SYSTEM REQUIREMENTS TO RUN THIS PROJECT :-

- PROCESSOR - CORE i3 - 8th GEN OR ABOVE..
- RAM - 6GB
- GPU - Intel 5500 UHD OR ABOVE
- HDD - 50 GB
- OS - WINDOWS 7 OR ABOVE , HIGH SIERRA OR ABOVE

System Context Diagram :-



DFD Level 1.1 :-


Student Registration
Student
Enter Details
1.1
Sign Up
Manages
Admin
Notify about invalid details
Registers Student's Roll no and name
Provides report Updating
Provides generated reports
Registered Students
1.2
Admin
Activity

DFD Level 1.2 :-

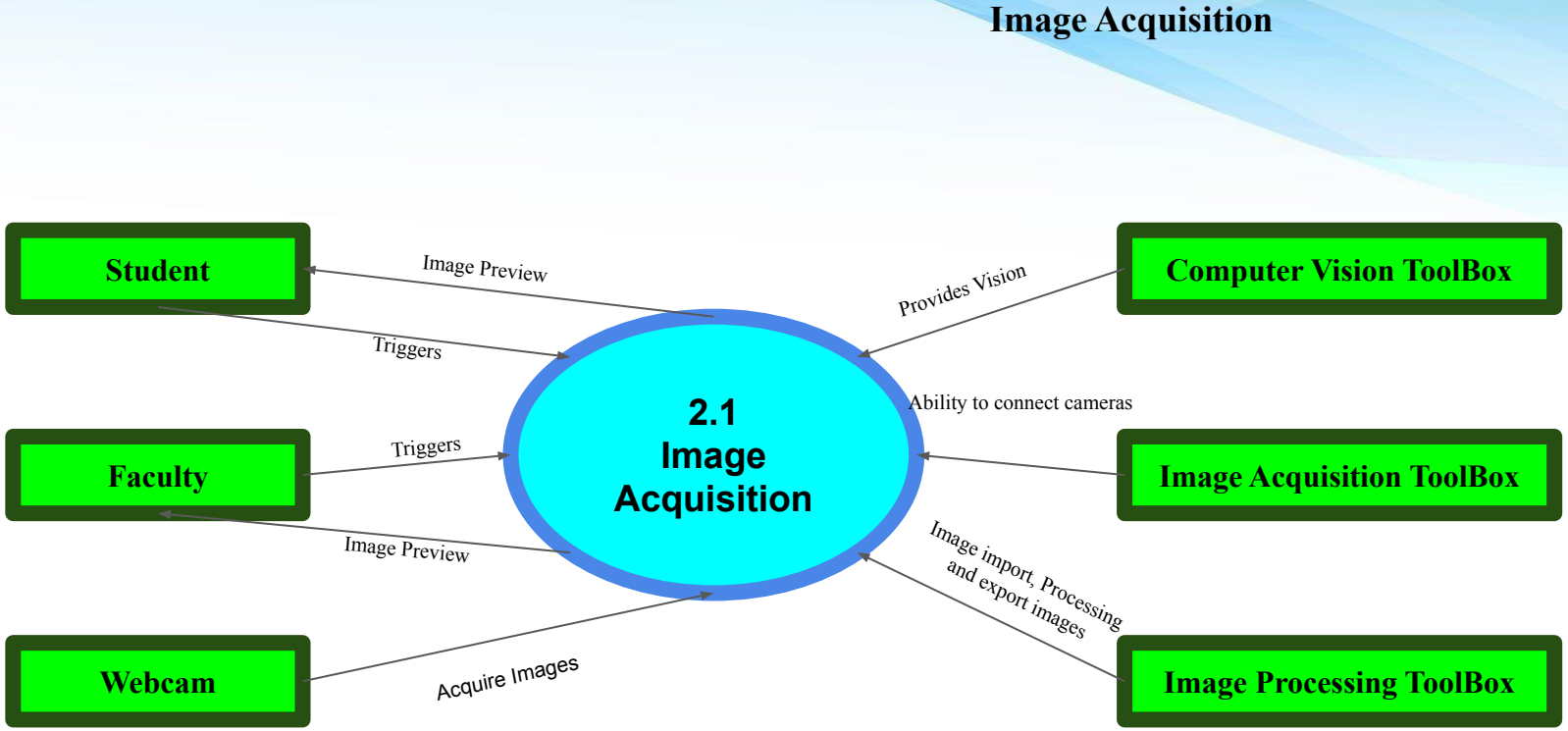
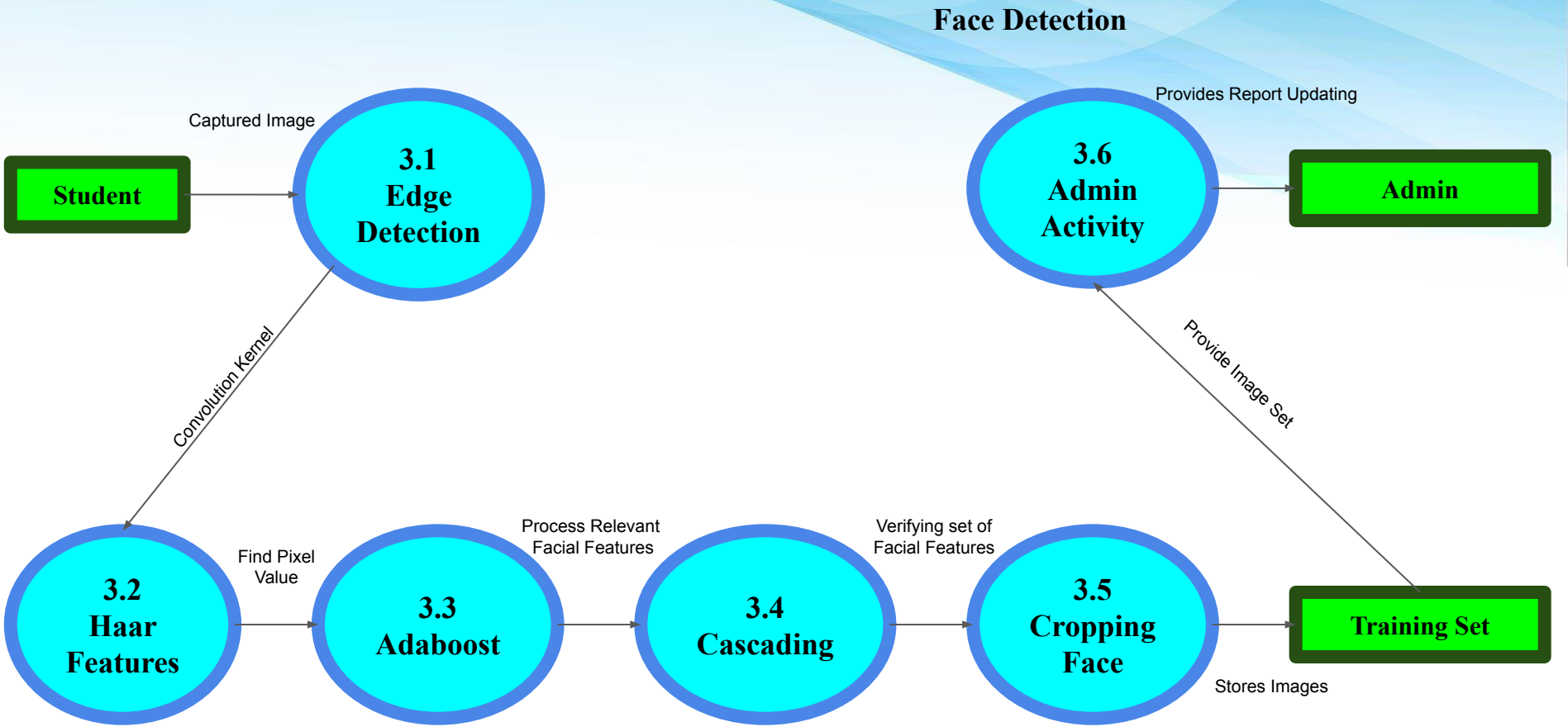


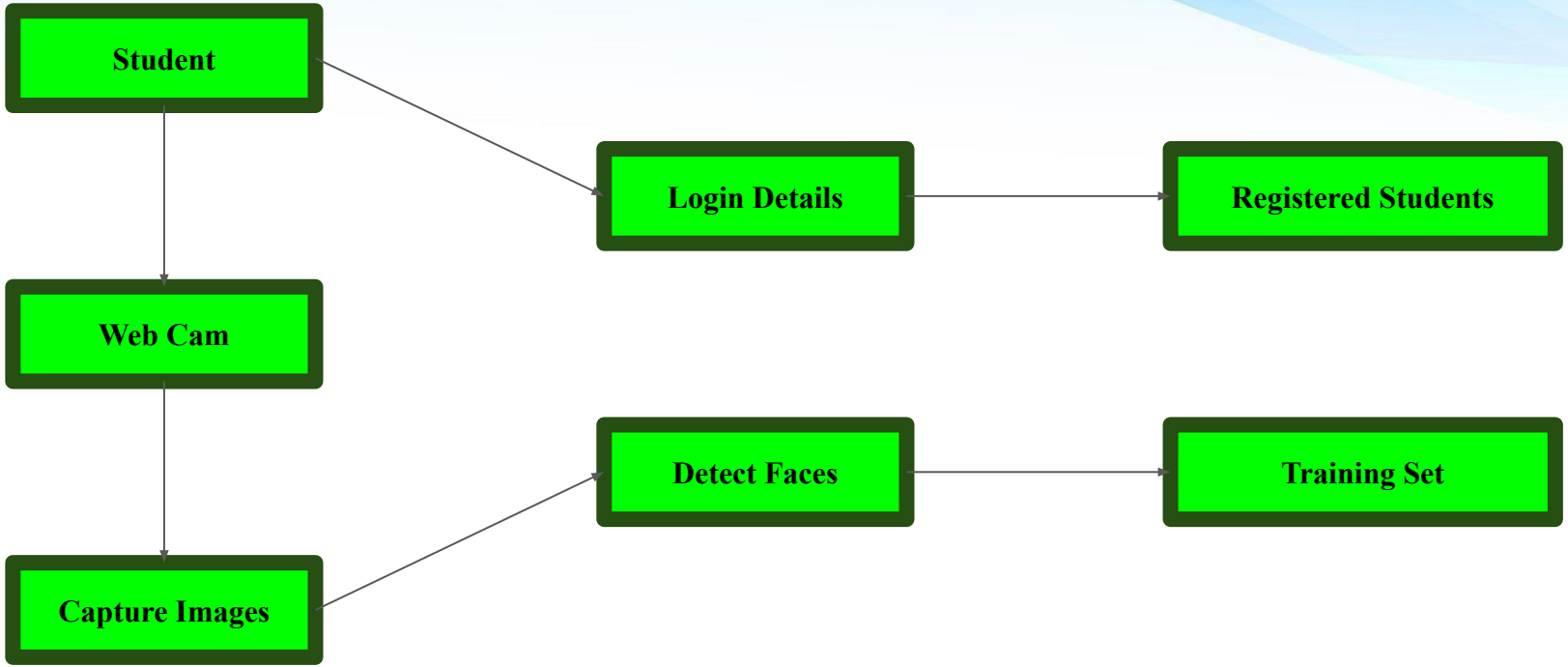
Image Acquisition
Student
Faculty
Webcam
Computer Vision ToolBox
Image Acquisition ToolBox
Image Processing ToolBox
2.1
Image
Acquisition
Image Preview
Triggers
Triggers
Image Preview
Acquire Images
Provides Vision
Ability to connect cameras
Image import, Processing
and export images

DFD Level 1.3 :-


Face Detection
Captured Image
Student
3.1
Edge
Detection
Provides Report Updating
3.6
Admin
Activity
Admin
Convolution Kernel
Provide Image Set
3.2
Haar
Features
Find Pixel
Value
3.3
Adaboost
Process Relevant
Facial Features
3.4
Cascading
Verifying set of
Facial Features
3.5
Cropping
Face
Training Set
Stores Images

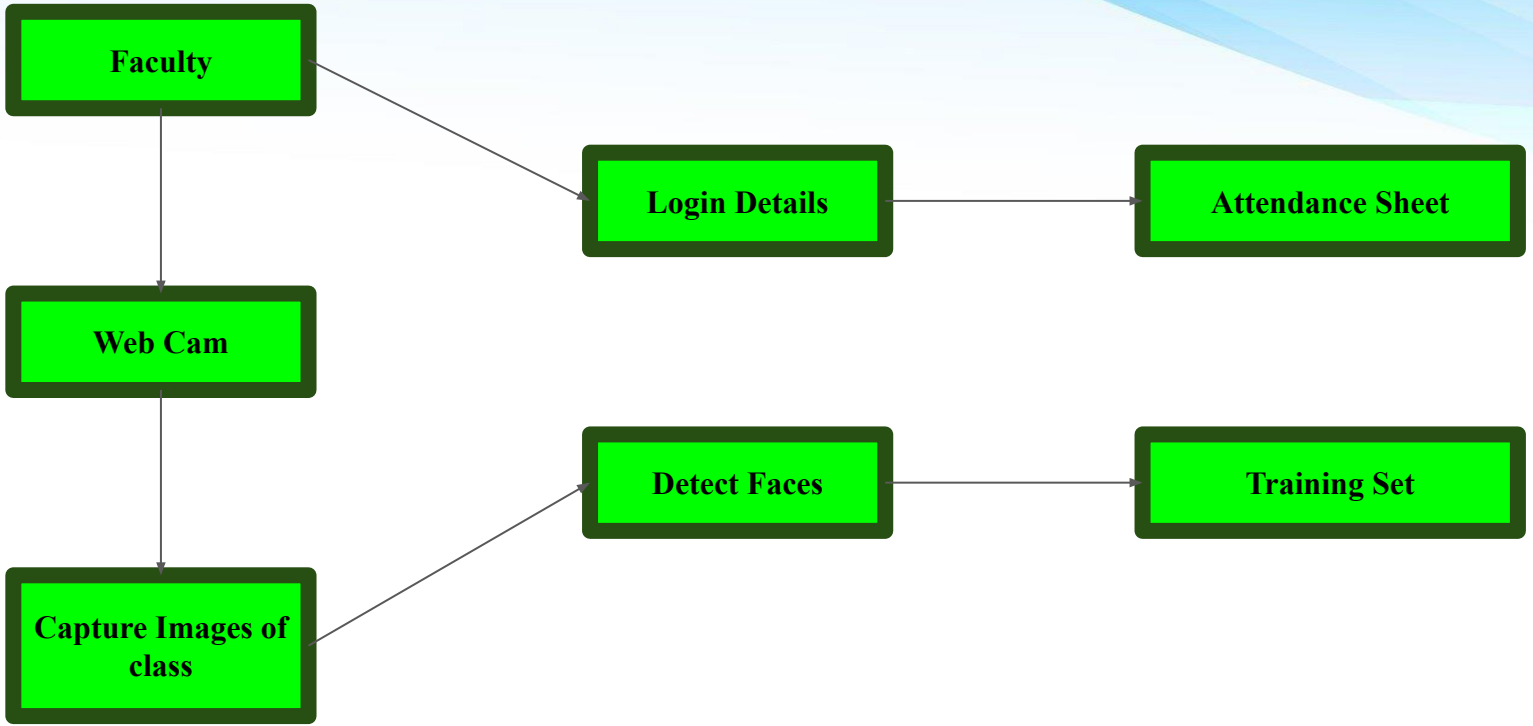
System Architecture :-

Training Phase : Registration

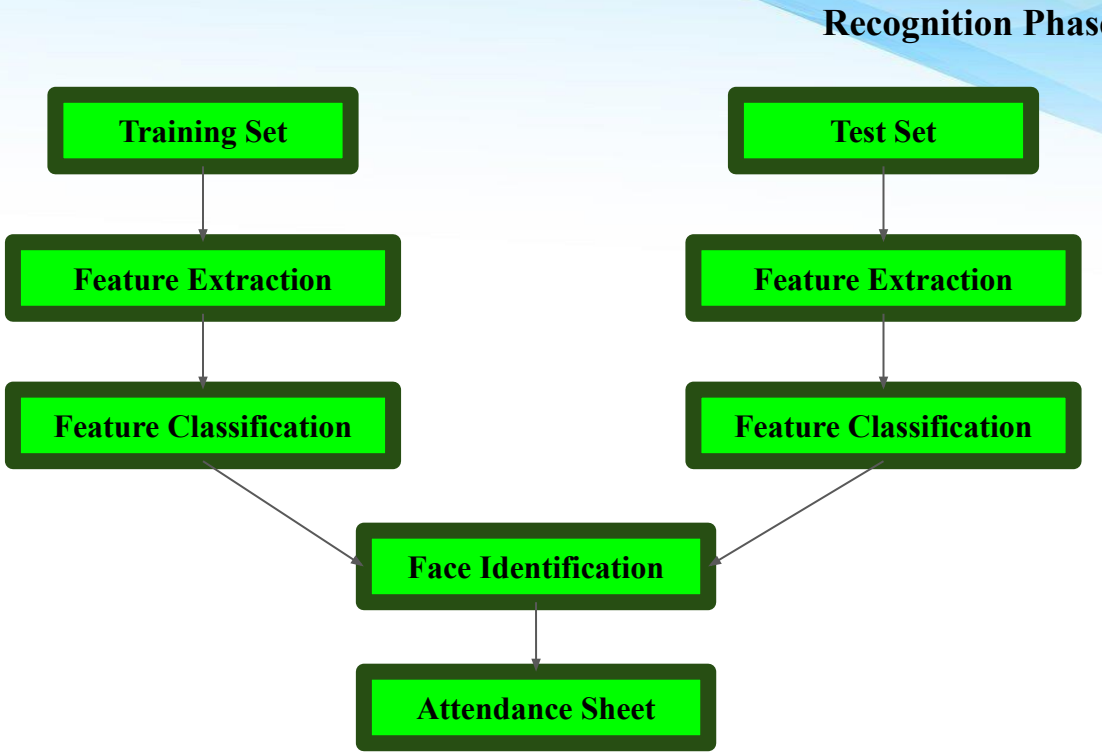


System Architecture :-

Testing Phase : Attendance



System Architecture :-



Database Dictionary :-

Field Name	Data Type	Length	Constraint	Description
Roll_no	int	3	Primary Key	Student Roll no
Name	Varchar	20	Not null	Name of Student
Date	Date	10	Not Null	Date of Attendance
Time	Time	10	Not Null	Time of Attendance
Attendance	Varchar	7	Present or Absent	Attendance of Student
Image	.png	100	Size must be of 11kb	Image of Student

Modification and Improvement:-

1. Time consumed in accessing the records of the students can be reduced,
2. Easy To Use GUI can be created.
3. Automatically manage attendance of students.
4. Students can get informed by email or mobile notification automatically.
5. List of less attendance students can be made on a single click.
6. More time taken in registration of students.
7. Send weekly/monthly attendance to students automatically.

Learning And Experience :-

From scratch to working software, carrying out real-world software projects in our academic studies helps us to understand what we have to face in industry.

It was a wonderful experience working on **Face Recognition Attendance System** with enthusiastic and like-minded people wherein we explored a part of Artificial Intelligence, i.e. image processing, which relates to our system from capturing images, detecting faces, storing them in a database, extracting facial features, recognizing them and generating attendance through different algorithms, books, websites and with the guidance of our guide.

I have learned most of the industrial strategies used for completion of project by keeping accounts of time, quality, and budget.

This project was a door to a Stairs of Success towards the bright Software Engineering career.

|| THANK YOU ||