

Department of Computer Science & Engineering Artificial Intelligence & Machine Learning

A.P. Shah Institute of Technology

G.B.Road, Kasarvadavli, Thane(W), Mumbai-400615

UNIVERSITY OF MUMBAI

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"FACIAL RECOGNITION ATTENDANCE SYSTEM USING PYTHON AND OPENCV"

Submitted in partial fulfillment of the degree of
Bachelor of Engineering(Sem-4)
in

Computer Science & Engineering
Artificial Intelligence and Machine Learning

By

Vikas Pandit	(21106044)
Sachin Sapkale	(21106026)
Jayesh Patil	(21106048)
Shashikant Shukla	(21106024)

Under the Guidance of
Dr. Jaya Gupta

FACIAL RECOGNITION ATTENDANCE SYSTEM USING PYTHON & OPENCV



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INTRODUCTION

Every college require an attendance system to maintain record of present student.

Face Recognition Attendance System is developed for the Faculty to maintain attendance record.

It uses facial recognition technology to identify the person's facial features and automatically mark attendance which is very fast enough than previous method.



OBJECTIVES

- The objective of this project is to develop a face recognition attendance system using Python that can automate the attendance process and eliminate the need for manual record-keeping.
 - The system should also be user-friendly and have a simple interface for easy navigation. Additionally, the system should have high accuracy and be able to handle a large number of users.
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LITERATURE SURVEY TABLE

Sr. No	Title	Author Name	Description
1.	Face Recognition Attendance System Based on Real-Time Video Processing	HAO YANG ¹ AND XIAOFENG HAN ² (2020)	Uses OpenCV and Dlib libraries for high accuracy in attendance tracking. Designed to handle multiple individuals in real-time, saving time and resources. Includes features such as generating reports, viewing attendance records, and sending notifications. Can be easily customized and scaled to meet the specific needs of educational institutions or organizations.
2.	Facial Recognition Attendance System Using Python and OpenCv	Dr. V Suresh, Srinivasa Chakravarthi Dumpa, Chiranjeevi Deepak Vankayala, HaneeshaAduri, Jayasree Rapa (2019)	Uses Python and OpenCV libraries for facial recognition attendance tracking. Captures images using a camera and processes them with OpenCV. Facial recognition algorithms identify individuals and track attendance. Improves attendance tracking accuracy and efficiency while reducing manual labor. Features include report generation and attendance record viewing.

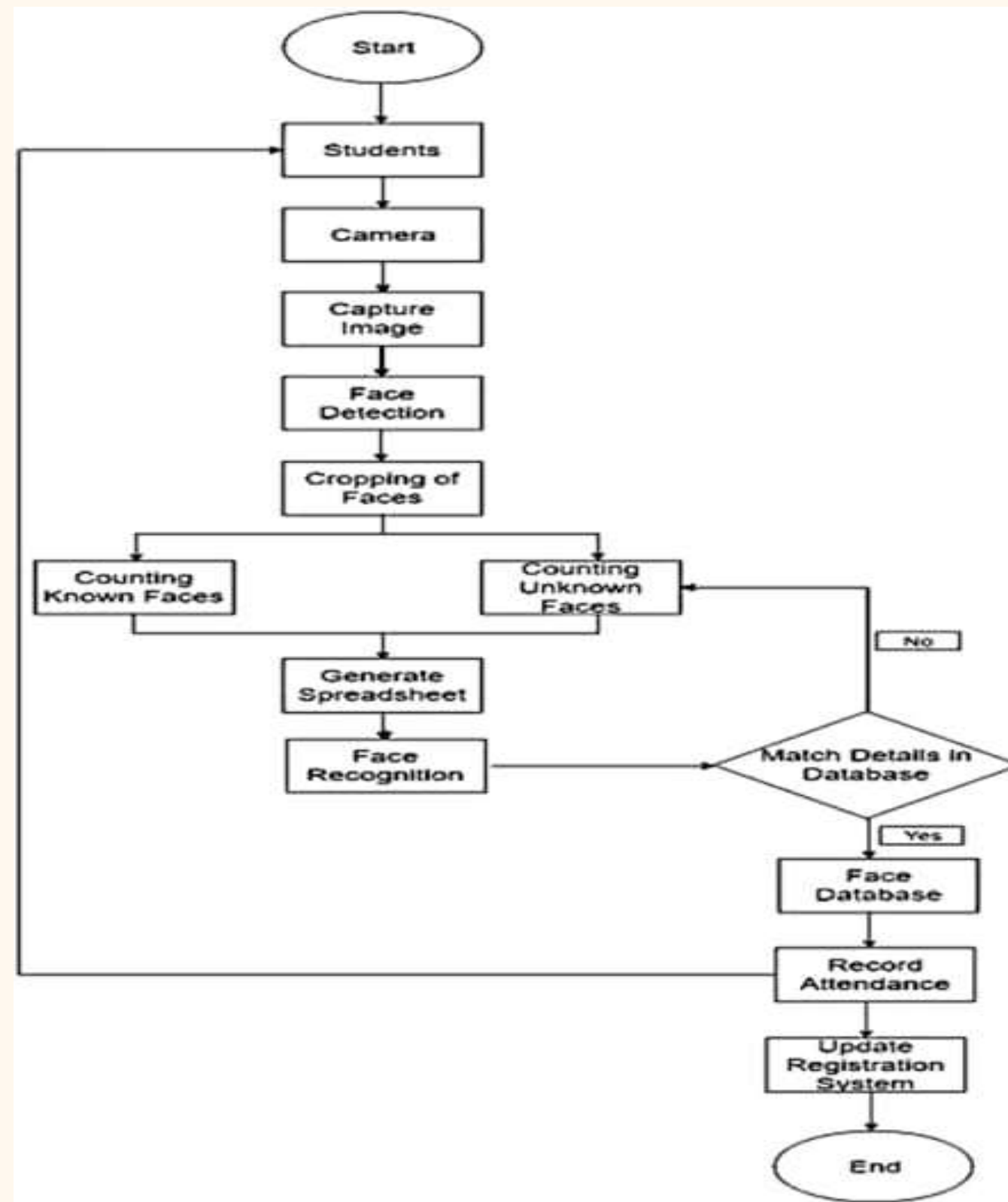
LITERATURE SURVEY TABLE

Sr. No	Title	Author Name	Description
3.	PYTHON Based Attendance System	Dr. J. Ravindranadh1 , Peram Venkata Ravindra Reddy2 (2020)	Automates attendance tracking with facial recognition in Python. User-friendly and easily integrated into existing systems. Includes report generation, record viewing, and notification features.
4.	Automated Attendance System Using OpenCV	Naman Gupta, Purushottam Sharma, Vikas Deep, Vinod Kumar Shukla (2020)	Aims to automate attendance tracking using OpenCV technology in educational institutions or organizations. Uses facial recognition technology to capture attendance and eliminate the need for manual attendance taking. Potential to save time and resources while improving accuracy and efficiency in attendance tracking.

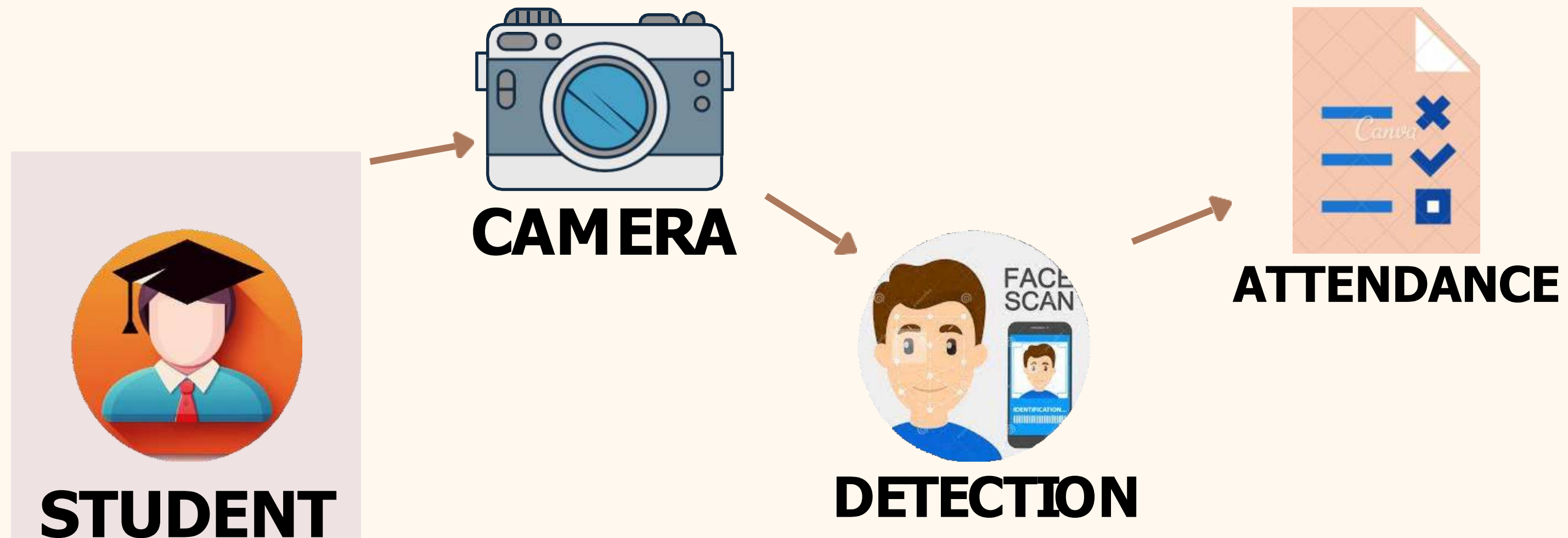
LITERATURE SURVEY TABLE

Sr. No	Title	Author Name	Description
5.	Review of Face Recognition Techniques	Kamini Solanki , Prashant Pittalia	Explores methods including Eigenfaces, Local Binary Patterns, and Deep Learning approaches. Analyzes strengths and limitations of each approach and their potential applications. Provides insights into the current state and future development of face recognition technology

BLOCK DIAGRAM



IMPLEMENTATION



IMPLEMENTATION

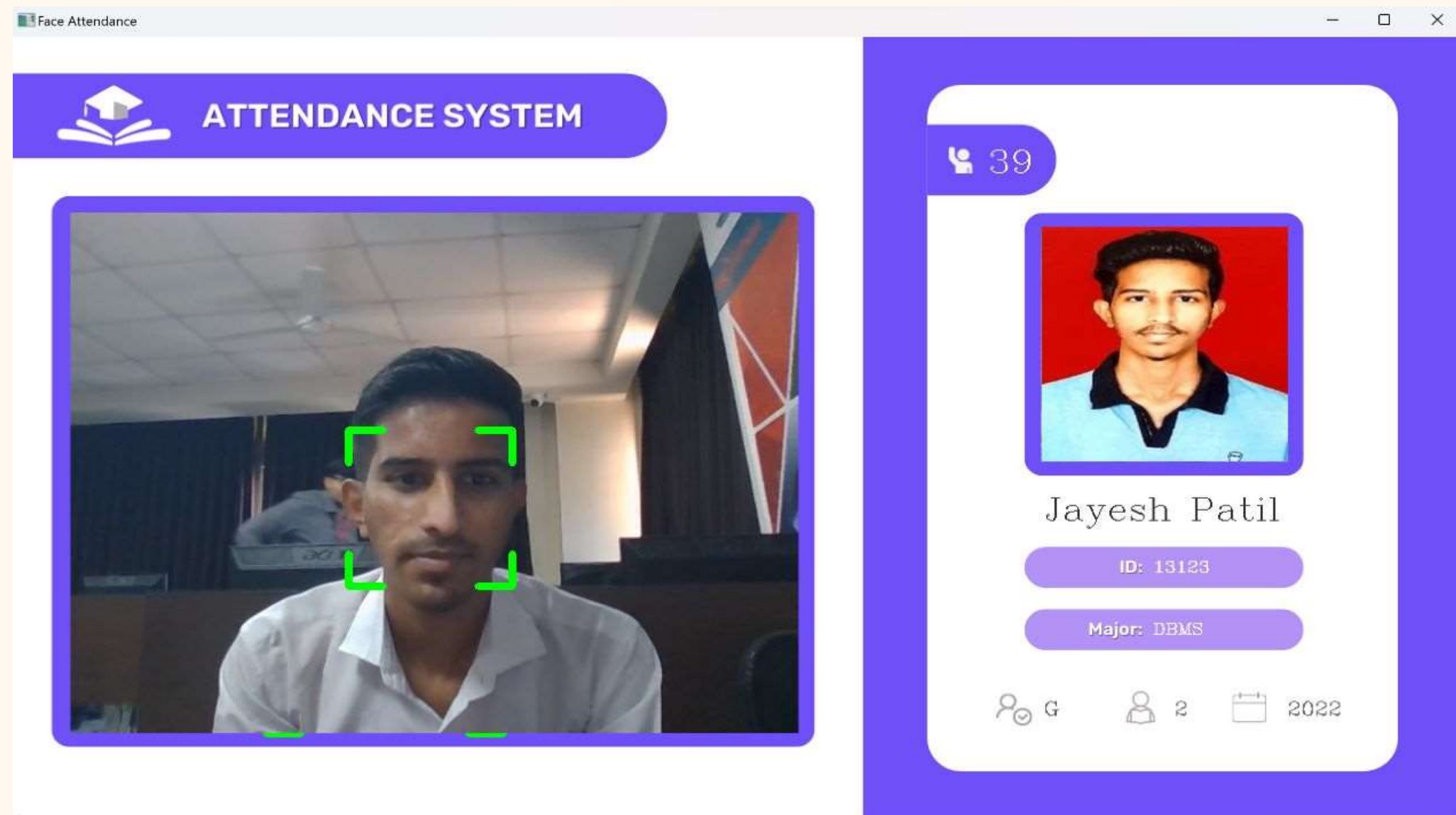


Figure-1 Taking Attendance

IMPLEMENTATION

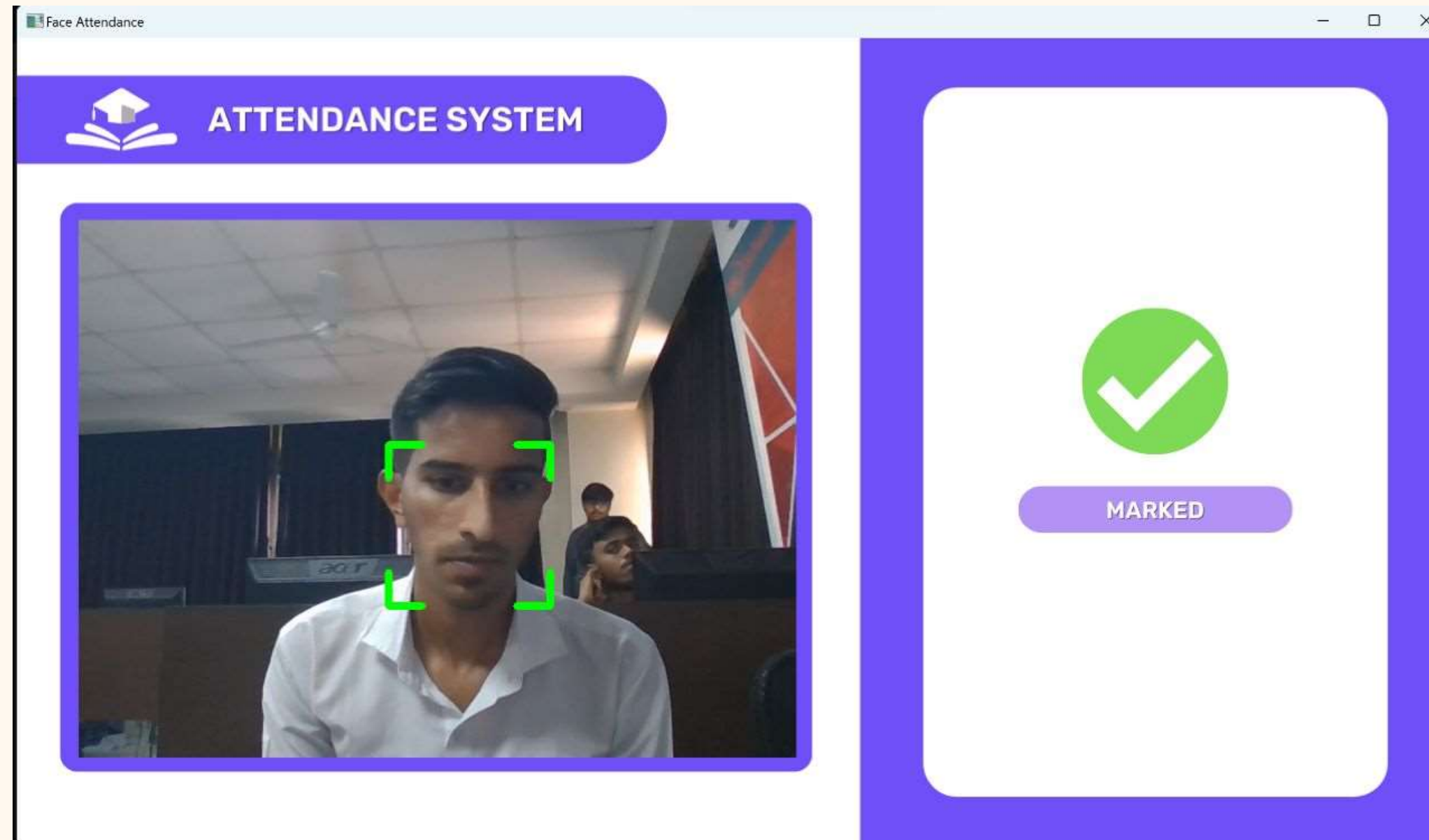
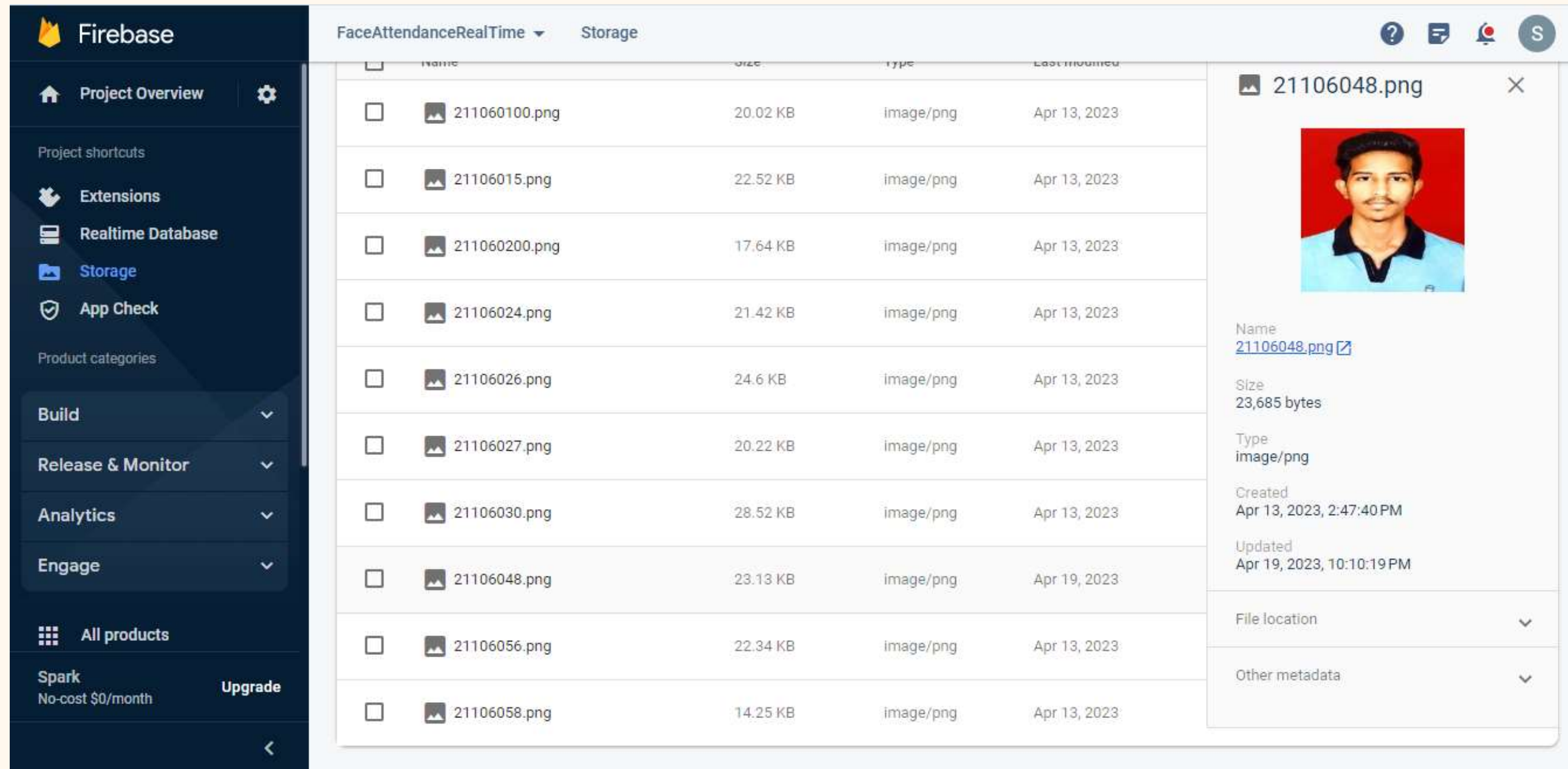


Figure-2 Marked Attendance

IMPLEMENTATION



The screenshot displays the Firebase Storage interface. On the left is a dark sidebar with navigation options: Project Overview, Extensions, Realtime Database, Storage (highlighted), App Check, Build, Release & Monitor, Analytics, Engage, All products, and Spark. The main area shows the 'Storage' tab for the 'FaceAttendanceRealTime' project. It contains a table of stored files, all of which are PNG images. The file '21106048.png' is selected, and its details are shown on the right, including a preview of a person's face, its name, size (23,685 bytes), type (image/png), creation time (Apr 13, 2023, 2:47:40 PM), and update time (Apr 19, 2023, 10:10:19 PM).

Name	Size	Type	Last modified
211060100.png	20.02 KB	image/png	Apr 13, 2023
21106015.png	22.52 KB	image/png	Apr 13, 2023
211060200.png	17.64 KB	image/png	Apr 13, 2023
21106024.png	21.42 KB	image/png	Apr 13, 2023
21106026.png	24.6 KB	image/png	Apr 13, 2023
21106027.png	20.22 KB	image/png	Apr 13, 2023
21106030.png	28.52 KB	image/png	Apr 13, 2023
21106048.png	23.13 KB	image/png	Apr 19, 2023
21106056.png	22.34 KB	image/png	Apr 13, 2023
21106058.png	14.25 KB	image/png	Apr 13, 2023

21106048.png

Name
[21106048.png](#)

Size
23,685 bytes

Type
image/png

Created
Apr 13, 2023, 2:47:40 PM

Updated
Apr 19, 2023, 10:10:19 PM

File location

Other metadata

Figure-3 Images in Realtime database

IMPLEMENTATION

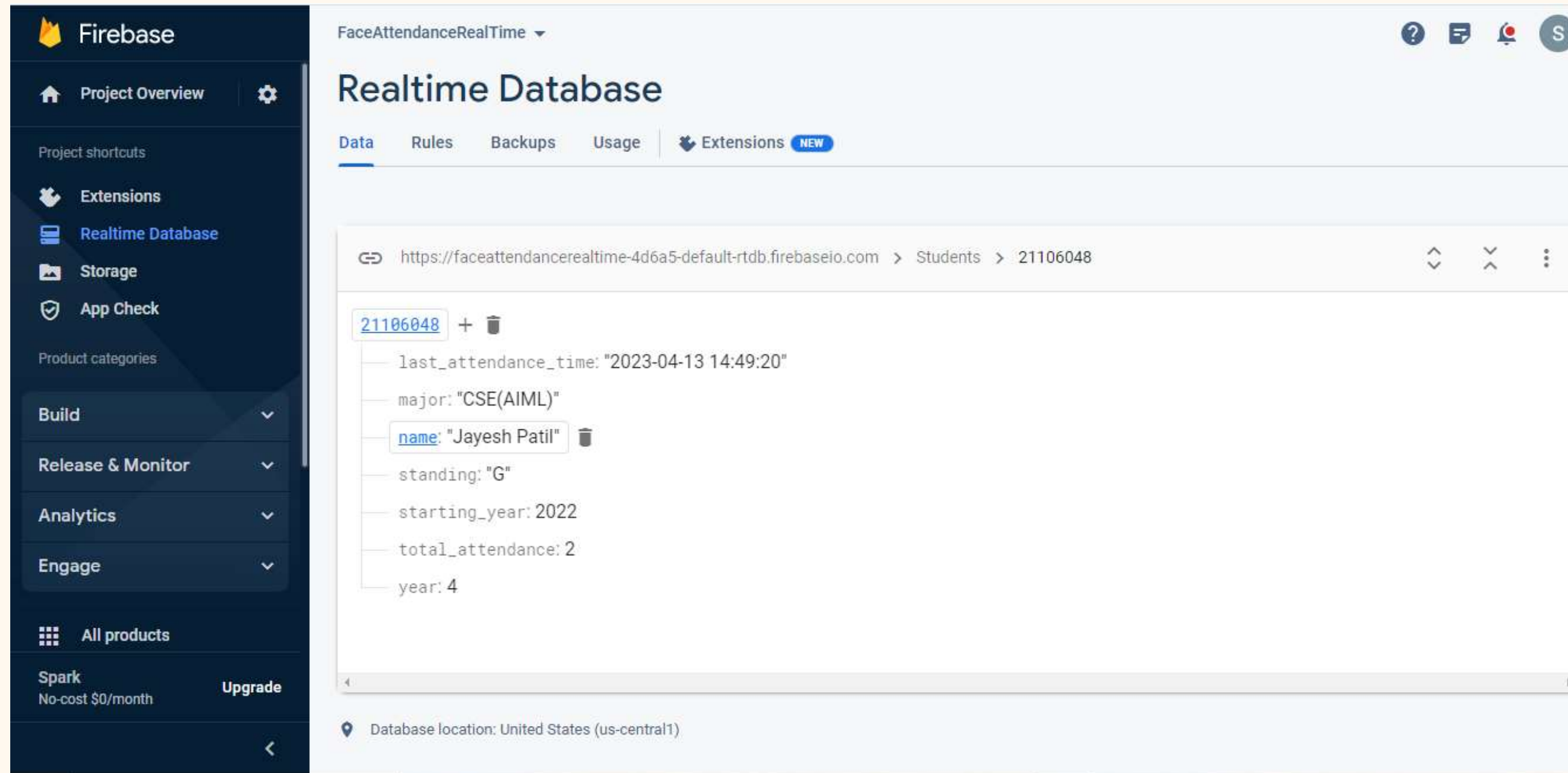


Figure-3 Images in Realtime database

IMPLEMENTATION

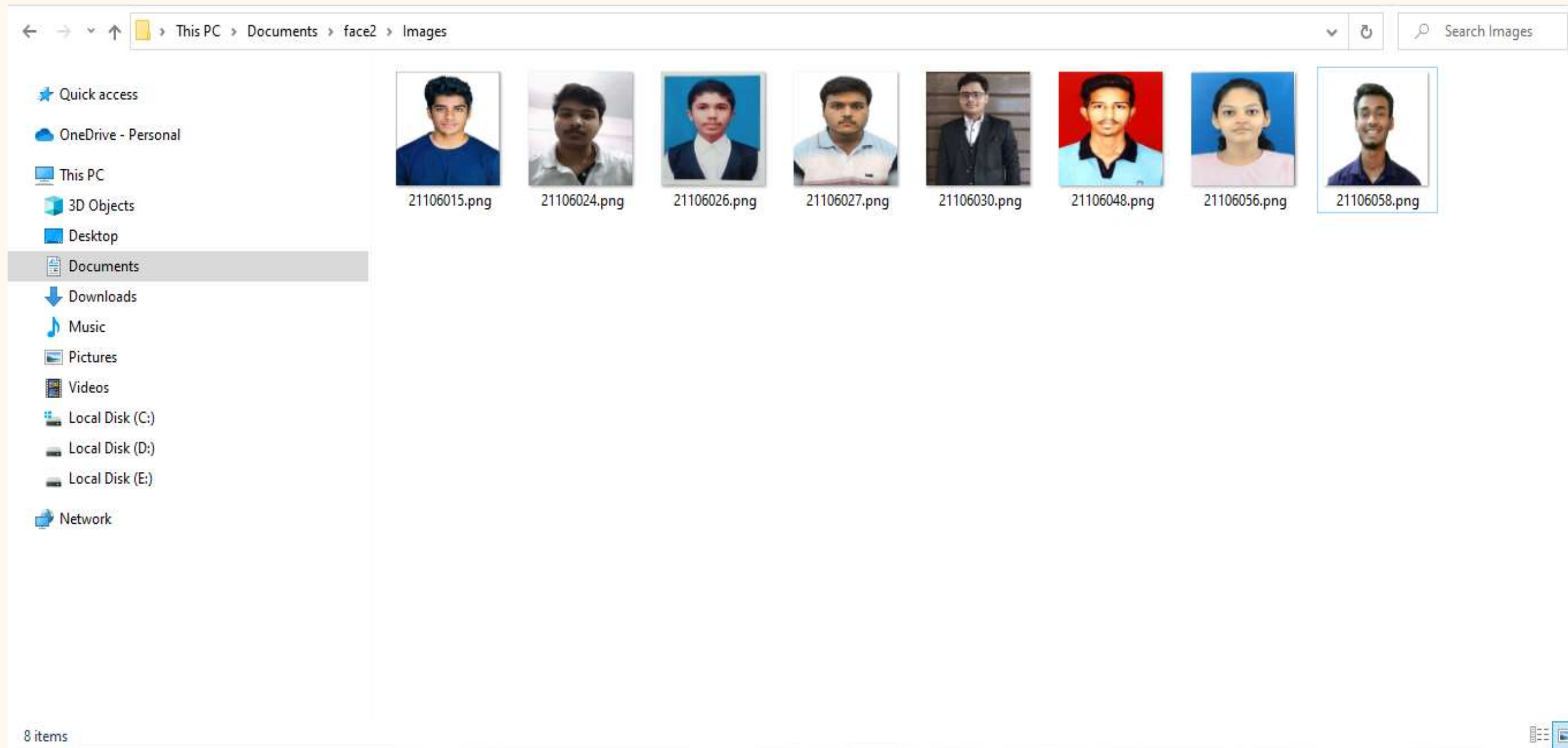


Figure-4 Images

IMPLEMENTATION

Document Recovery

Excel has recovered the following files. Save the ones you wish to keep.

defaulters.xlsx [Original]

Version created last time the user...

13-04-2023 14:51

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	last_attendance	major	name	standing	tarting_year	year	attendance	year	percentage								
2	21106015	2023-04-13	CSE(AI ML)	Adrian The G		2022	1	4	6.666667								
3	21106024	2023-04-13	CSE(AI ML)	Shashikant G		2022	2	4	13.333333								
4	21106026	2023-04-13	CSE(AI ML)	Sachin Sapl G		2022	1	4	6.666667								
5	21106027	2022-12-11	CSE(AI ML)	Mihir Manj G		2022	0	4	0								
6	21106030	2022-12-11	CSE(AI ML)	Shubham S G		2022	0	4	0								
7	21106035	2022-12-11	CSE(AI ML)	Vinaykuma G		2022	0	4	0								
8	21106048	2023-04-13	CSE(AI ML)	Jayesh Pati G		2022	2	4	13.333333								
9	21106056	2022-12-11	CSE(AI ML)	Sanjita Shu G		2022	0	4	0								
10	21106058	2022-12-11	CSE(AI ML)	Chirag Saw G		2022	0	4	0								
11	211060100	2022-12-11	CSE(AI ML)	Pavan Sapk G		2022	0	4	0								
12	211060200	2022-12-11	CSE(AI ML)	Narendra N G		2022	0	4	0								
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Figure-5 Defaulter List

TOOLS / SOFTWARE

- Python
- Visual Studio Code
- Firebase Database



● — **CONCLUSION** — ●

Before the development of this project. There are many loopholes in the previous method while taking attendance using old method which caused many troubles to most of the institutions.

Therefore, the facial recognition feature method is secure enough, reliable and available for use. It saves time and lot of effort.

REFERENCES

Journal Papers:-

- [1]. Yang, Hao, and Xiaofeng Han. "Face recognition attendance system based on real-time video processing." *IEEE Access* 8 (2020)
 - [2]. Suresh, V., S. Chakravarthi Dumpa, C. Deepak Vankayala, H. Aduri, and J. Rapa. "Facial recognition attendance system using python and OpenCv." *Quest Journals-Journal of Software Engineering and Simulation* 5, no. 2 (2019)
 - [3]. Ravindranadh, J., and Peram Venkata Ravindra Reddy. "PYTHON Based Attendance System." (2020)
 - [4]. Gupta, Naman, Purushottam Sharma, Vikas Deep, and Vinod Kumar Shukla. "Automated attendance system using OpenCV." In (2020) *8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO)*
 - [5]. Solanki, Kamini, and Prashant Pittalia. "Review of face recognition techniques." *International Journal of Computer Applications* 133, no. 12 (2016): 20-24.
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REFERENCES

Useful Links:-

1. Article: Advanced Attendance System.

Website: https://en.wikipedia.org/wiki/Facial_recognition_system

2. Learning Python and Firebase Database video tutorials.

Website: <https://youtu.be/iBomaK2ARyI>
<https://youtu.be/LaGYxQWYmmc>
<https://www.w3schools.com/>

3. Advanced attendance System.

Website: <https://www.slideshare.net/>





FUTURE SCOPE



Some of the future enhancements that can be done to this system are as follows:

Facility of Defaulter list in which system update the defaulter student.





Thank You!