Department of Computer Science &Engineering
Artificial Intelligence & Machine Learning

A.P. Shah Institute of Technology

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

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”FACIAL RECOGNITION ATTENDANCE SYSTEM USING PYTHON AND OPENCV”

Submitted in partial fulfillment of the degree of
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in

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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.

LITERATURE SURVEY TABLE

Sr. No	Title	Author Name	Description
1.	Face Recognition Attendance System Based on Real-Time Video Processing	HAO YANG1 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.

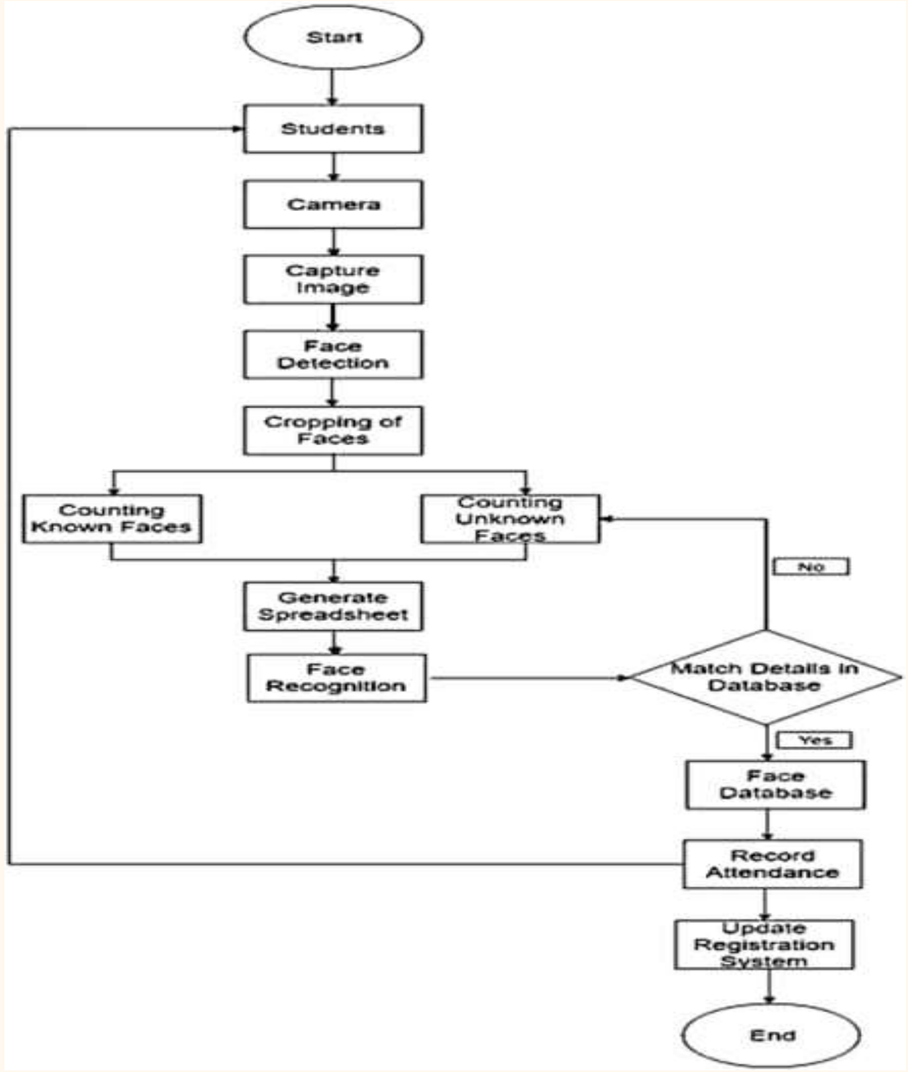
LITERATURE SURVEY TABLE

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

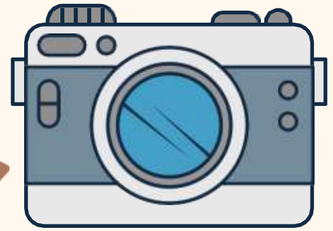
Sr. No	Title	Author Name	Description
5.	Review of Face Recognition Techniques	Kamini Solanki , Prashant Pittalia	Explores methods including Eigenfaces, Local Binary Patterns, and Deep Learning approaches. Analyzes strengths and limitations of each approach and their potential applications. Provides insights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

BLOCK DIAGRAM



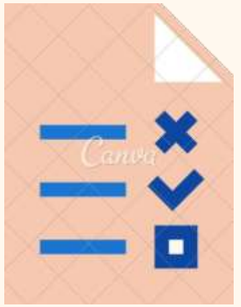
IMPLEMENTATION

STUDENT



CAMERA

DETECTION



ATTENDANCE

IMPLEMENTATION

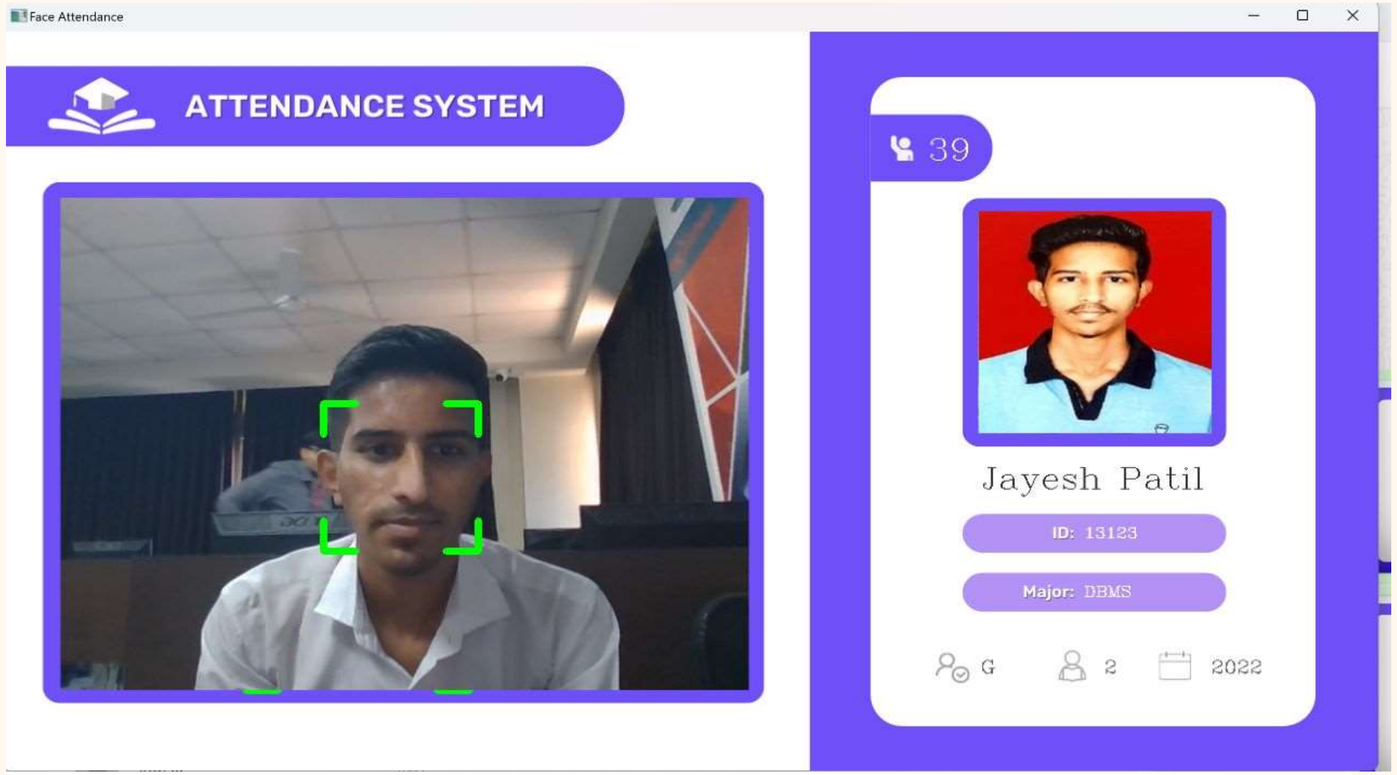


Figure-1Taking Attendance

IMPLEMENTATION

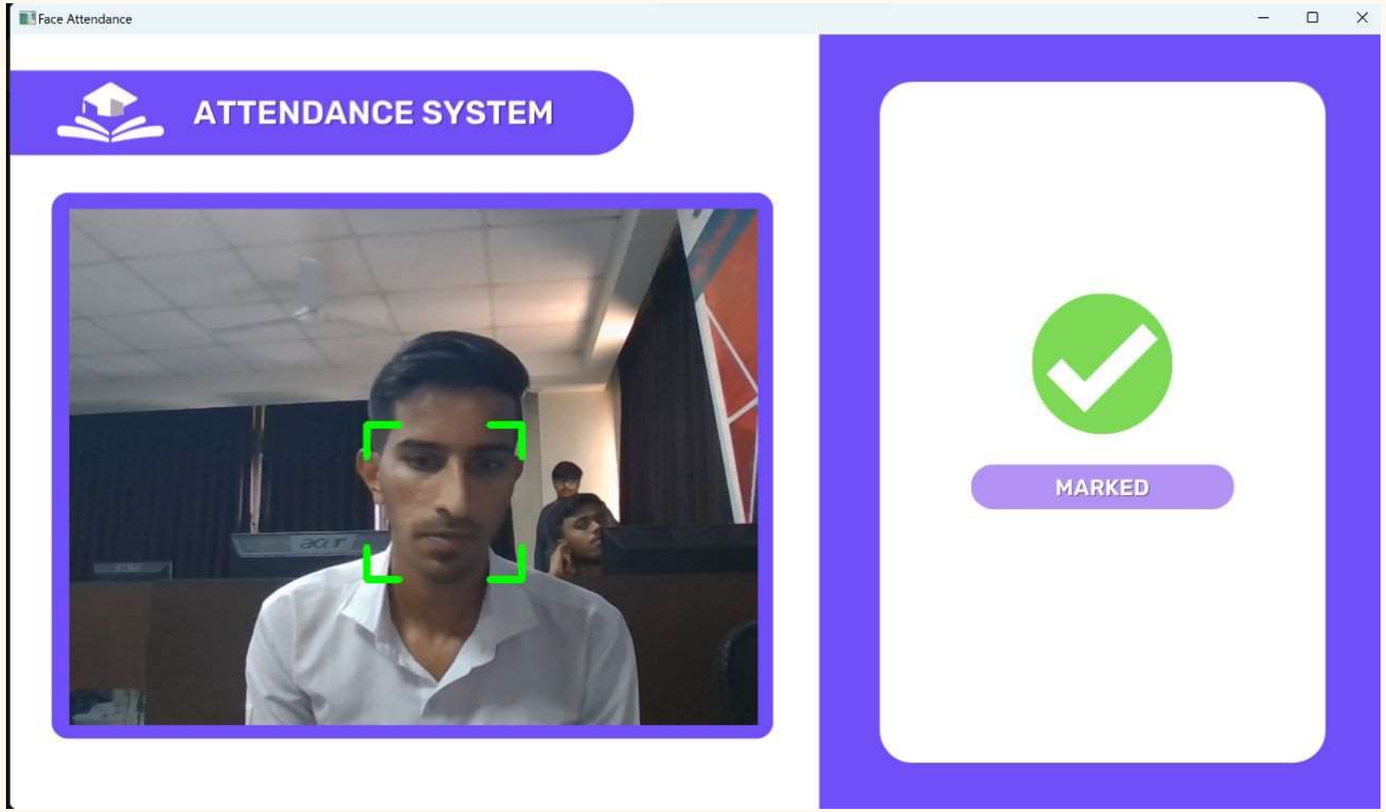


Figure-2 Marked Attendance

IMPLEMENTATION

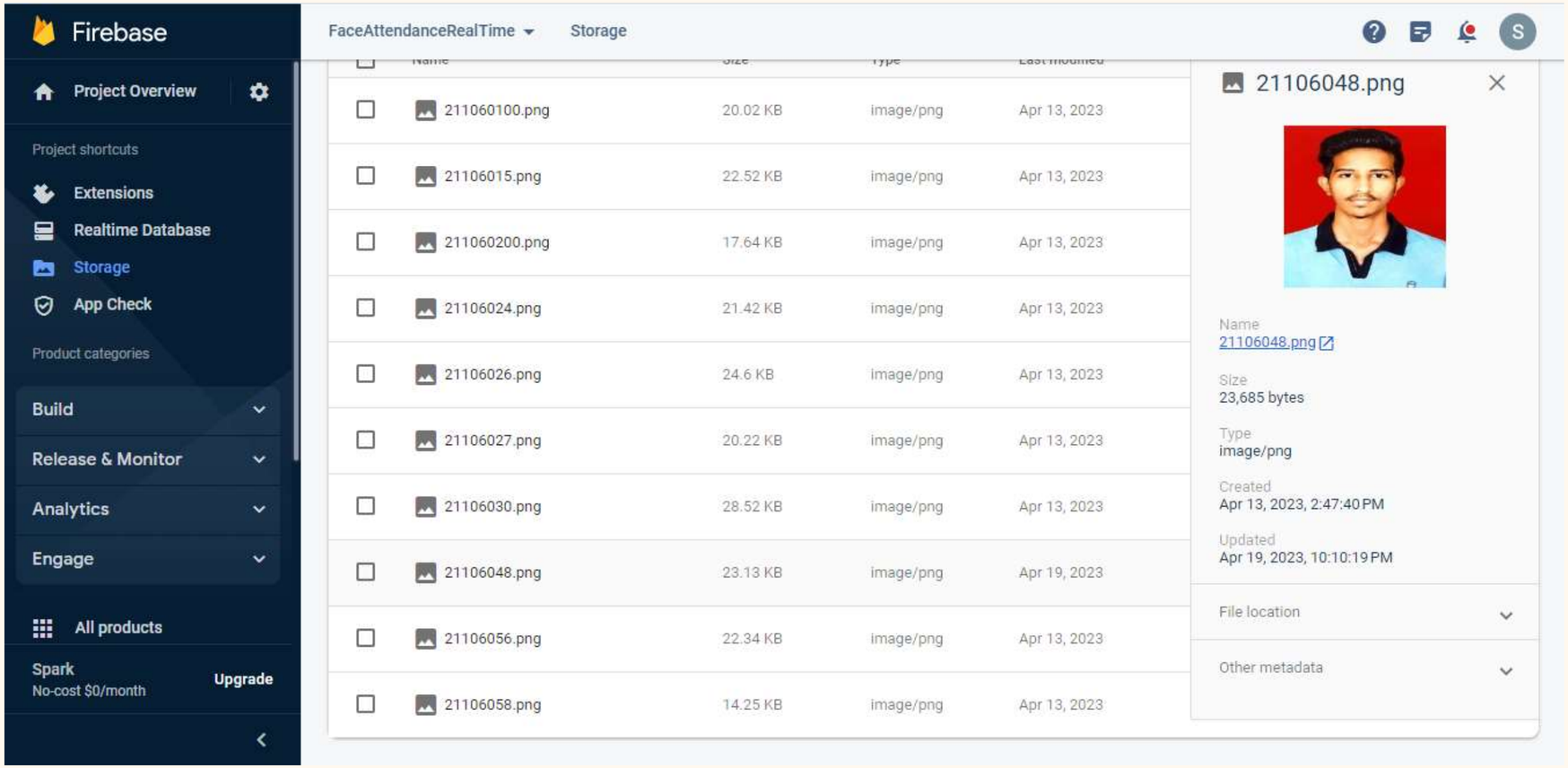


Figure-3 Images in Realtime database

IMPLEMENTATION

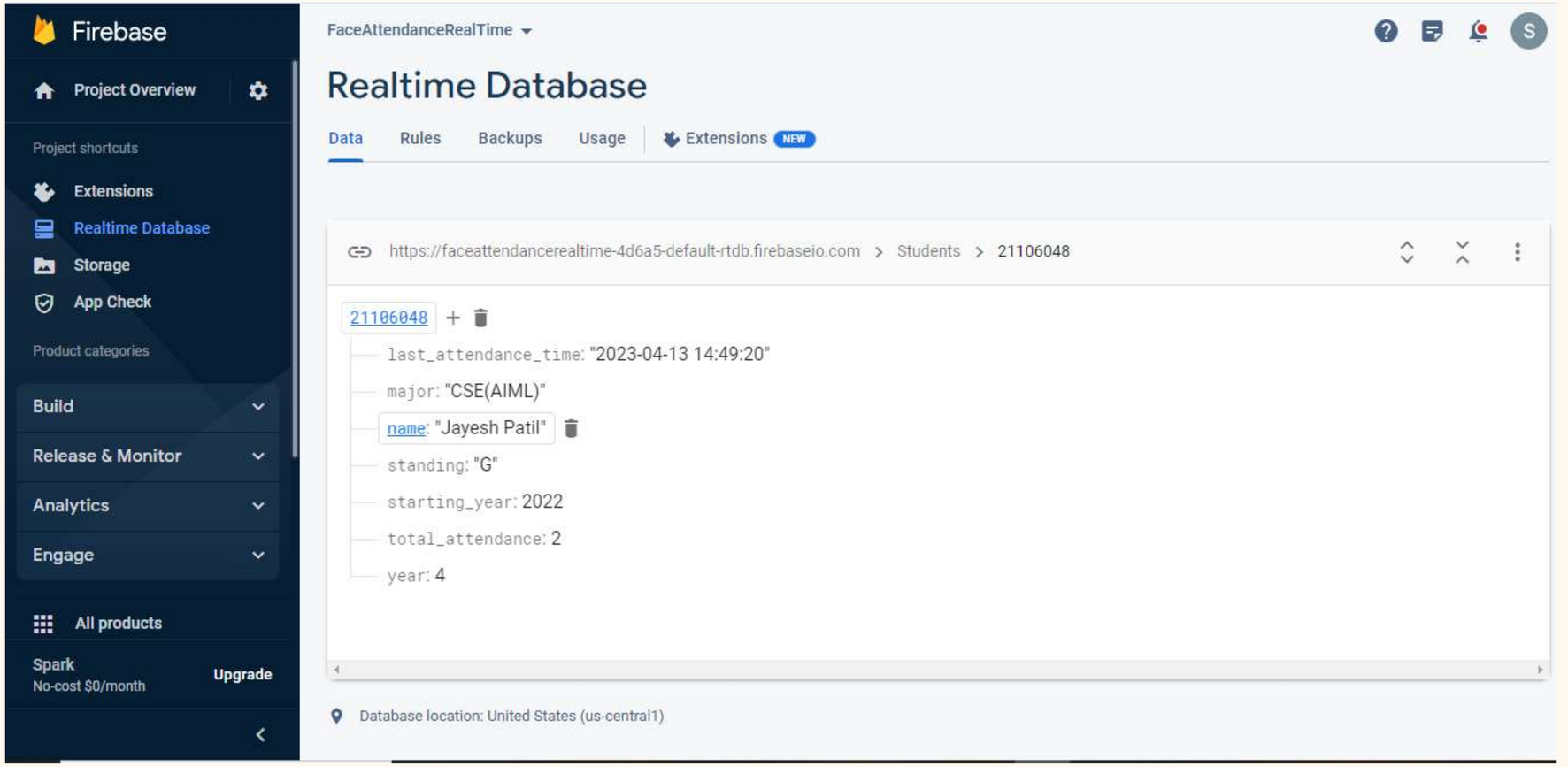
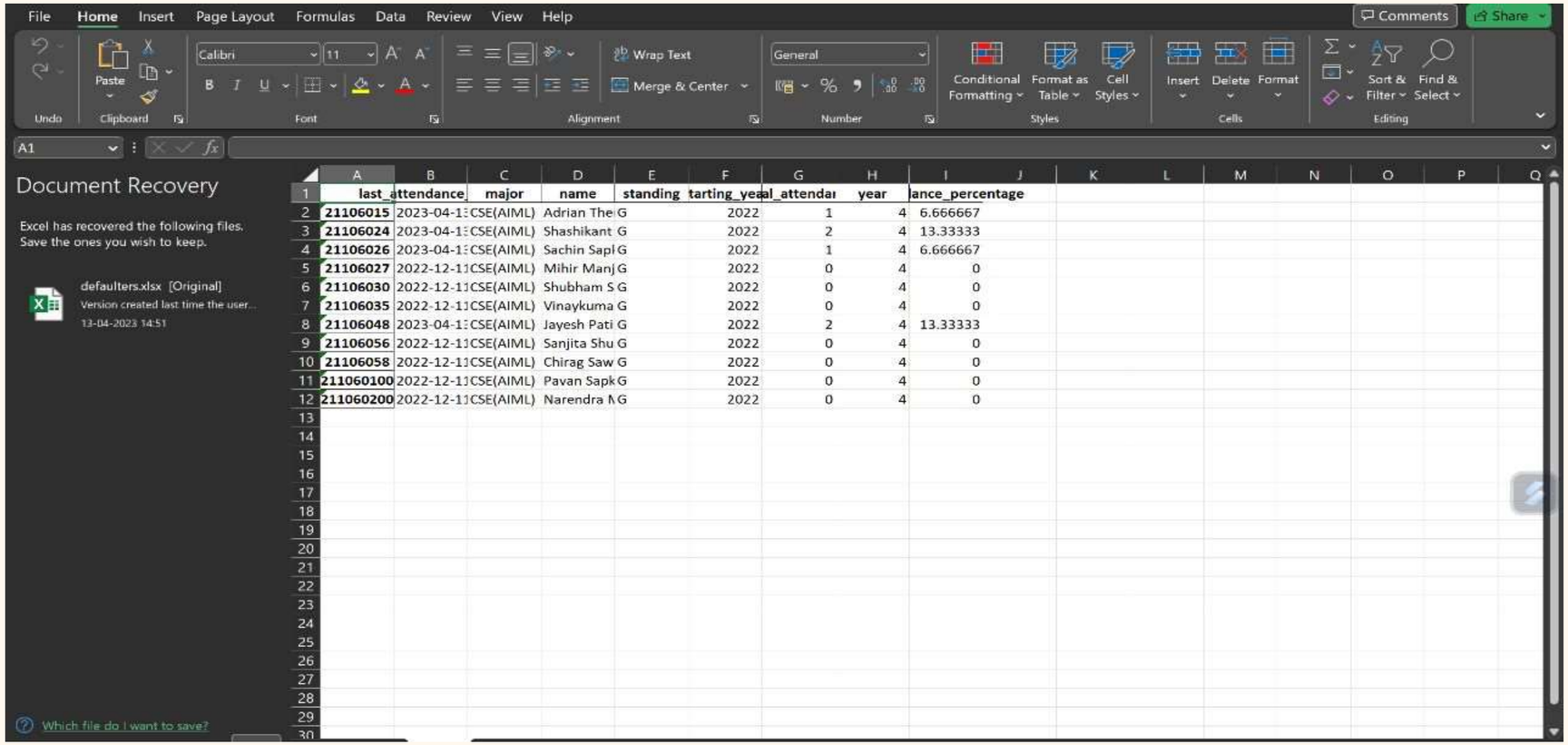


Figure-3 Images in Realtime database

IMPLEMENTATION

Figure-4 Images

IMPLEMENTATION



	A	B	C	D	E	F	G	H	I
1	last_attendance		major	name	standing	tarting_yea	al_attendar	year	ance_percentage
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3	21106024	2023-04-1	CSE(AIML)	Shashikant	G	2022	2	4	13.33333
4	21106026	2023-04-1	CSE(AIML)	Sachin Sapl	G	2022	1	4	6.666667
5	21106027	2022-12-1	CSE(AIML)	Mihir Manj	G	2022	0	4	0
6	21106030	2022-12-1	CSE(AIML)	Shubham S	G	2022	0	4	0
7	21106035	2022-12-1	CSE(AIML)	Vinaykuma	G	2022	0	4	0
8	21106048	2023-04-1	CSE(AIML)	Jayesh Pati	G	2022	2	4	13.33333
9	21106056	2022-12-1	CSE(AIML)	Sanjita Shu	G	2022	0	4	0
10	21106058	2022-12-1	CSE(AIML)	Chirag Saw	G	2022	0	4	0
11	211060100	2022-12-1	CSE(AIML)	Pavan Sapk	G	2022	0	4	0
12	211060200	2022-12-1	CSE(AIML)	Narendra M	G	2022	0	4	0

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.

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!