

## ABSTRACT

This project explores the integration of OpenCV and LBPH for real-time attendance monitoring, utilizing face recognition technology to ensure efficient and accurate student identification. By leveraging OpenCV's Haar Cascade Classifier for face detection, we capture and process facial data in real-time, achieving high accuracy in recognition. The system implements the LBPH (Local Binary Patterns Histogram) algorithm for robust face recognition and data management. Using a CSV database and Pandas for data handling, the project offers a streamlined method for tracking attendance across multiple sessions. Additionally, a user-friendly GUI built with Tkinter allows for easy subject selection and attendance monitoring. This approach ensures precise recognition, real-time data logging, and operational efficiency in a scalable classroom environment. The project outlines a step-by-step process for setting up face detection and recognition, configuring the attendance database, and integrating the GUI for seamless user interaction. By following these best practices, the solution aims to enhance the accuracy, security, and automation of attendance management in educational institutions.

**Keywords:** OpenCV, LBPH, Face Recognition, Attendance System, Haar Cascade, Real-Time Monitoring, Python, Tkinter

## ACKNOWLEDGEMENT

I extend my sincere gratitude to the Chancellor, **Dr. T. R. PACHAMUTHU** and to Chairman **Dr. R. SHIVAKUMAR** of SRM Institute of Science and Technology, Ramapuram and Trichy campuses for providing me the opportunity to pursue the MCA degree at this University.

I express my sincere gratitude to **Dr. C. SUNDAR, Dean(S&H)**, SRM IST, Ramapuram for his support and encouragement for the successful completion of the project.

I record my sincere thanks to **Dr. J. DHILIPAN, M.Sc., MBA., M.Phil., Ph.D., Vice Principal-Admin(S&H) and Head of the Department** of Computer Applications, SRM IST, Ramapuram for his continuous support and keen interest to make this project a successful one.

I would like to convey my heartfelt gratitude to **Dr. D. KANCHANA, Program Coordinator** for her useful advice and suggestions which really helpful to me during the project completion.

I find no word to express profound gratitude to my guide **Dr. N. KRISHNAMOORTHY, M.Sc., MCA., M.Phil., Ph.D., Assistant Professor, Department of Computer Science and Applications (MCA)**, SRM IST Ramapuram.

I thank the almighty who has made this possible. Finally, I thank my beloved family members and friends for their motivation, encouragement and cooperation in all aspect which led me to the completion of this project.

**ANUBHAV LAL**

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