

Face Recognition Based Attendance Software and Reporting using OpenCV

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Abstract: *The face is the identity of a person. The methods to exploit this physical feature have seen a great change since the advent of image processing techniques. The attendance is taken in every school, colleges and libraries. Traditional approach for attendance is professor calls student name and record attendance. It takes some time to record attendance. For each lecture this is a waste of time. To avoid these losses, we're going to use automatic process which is based on image processing.*

Identification of any people in any organization or colleges for the purpose of attendance marking is one of such software. Authentication is a significant issue in computer-based communication. Human face recognition is an important branch of biometric verification and has been widely used in many applications. The use of Attendance Management System is to perform the regular activities of attendance marking and analysis with less human intervention.

In this new approach, we are using face detection and face recognition system. This face detection distinguishes faces from non-faces and is essential for accurate attendance. The other strategy is facing recognition for marking the student's attendance. We have used OpenCV for this system. The camera will be connected using OpenCV module that converts the image into the RGB format which in turn is mapped to the pre-trained neural networks using HOG algorithm to recognize the face pixels. This system offers effective way to manage the attendance system which is time efficient and offers massive scaling for future purposes.

The image is processed as follows: first, faces are identified using a Haarcascade classifier, then faces are recognized using the LBPH (Local Binary Pattern Histogram) Algorithm, histogram data is checked against an established dataset, and the device automatically labels attendance. An Excel sheet is developed, and it is updated every hour with the information from the respective class instructor.

Keywords: Face Recognition, Image Processing, OpenCV, HaarCascade classifier, LBPH

REFERENCES

- [1] Dadi, Harihara & Mohan, P.G.(2015). Enhancement of Face Recognition Rate by Data Base Pre-processing. International Journal of Computer Science and Information Technologies. 6.2978-2984.
- [2] Buciu, Ioan & Grava, Cristian & Gacsadi, Alexandru. (2019). Facial Biometric Template Post-processing by Factorization. 1-4. 10.1109/ISSCS.2019.880173
- [3] G.Satyanarayana Reddy,Rallabandi Srinivasu,Srikanth Reddy Rikkula,Vuda Sreenivasa Rao," Management Information System To Help Managers For Providing Decision Making In An Organization", International Journal of Reviews in Computing.
- [4] Chen, Q., & Zhang, L. (2021). "Deep Learning-based Realtime Attendance Tracking System Using Facial Recognition." Journal of Computer Science and Technology, 36(2), 368-382.
- [5] Zhang, L., et al. (2022). "IP and OpenCV-Based Facial Recognition for Attendance Tracking in Educational Settings." Journal of Computer Vision and Applications, 65(3), 312-324.

[6] Chen, J., et al. (2023). "IP and OpenCV-Based Face Recognition with Edge Computing for Attendance Tracking." International Journal of Computer Vision and Applications, 88(4), 432-446.

[7] Park, H., et al. (2023). "Multimodal Biometric Fusion for Advanced Attendance Tracking Using Face Recognition." International Journal of Computer Vision and Applications, 115(8), 812-826