

ABSTRACT

Attendance is a crucial aspect of education as it reflects students' orderliness and discipline in the learning process. Traditional attendance tracking systems, such as roll calls or the use of identification cards, are often inefficient and time-consuming. With technological advancements, biometric systems based on face recognition have become a more accurate and practical solution. This research aims to design and develop an automated attendance system based on face recognition using the ArcFace algorithm.

The study was conducted through a series of stages, from planning to the implementation of the face recognition system. A camera was used as an input to capture student facial data, which was then processed using the ArcFace algorithm to detect and match faces with data in the dataset. The system was tested for speed and accuracy under varying video resolutions, light intensities, and image capture distances.

The test results showed that the ArcFace algorithm could achieve a maximum accuracy of 98.15%. The tests also indicated that variations in resolution, distance, and lighting significantly influenced the system's performance. The best accuracy of 97.70% was obtained at a resolution of 720p, a distance of 0.75 meters, and a light intensity of 279 lux. Conversely, the lowest accuracy was 26.32%, recorded at a 360p resolution, a distance of 1.25 meters, and a lighting level of 82 lux.

Keywords: *ArcFace algorithm, biometric system, face recognition, lux, presence.*