

ABSTRACT

Recording attendance in the field of education is crucial for tracking and managing the presence of students throughout the teaching and learning process. Before the advent of computers, attendance recording in classrooms was done manually, such as by calling out the names of students one by one or having them sign an attendance sheet provided. This process was time-consuming, especially with a large number of students in each class, making the attendance recording process ineffective and inefficient.

Therefore, with the implementation of computer technology in attendance recording, the process becomes much more streamlined. In the development of this system, we utilized biometric face recognition and body temperature measurement for IoT-based attendance. Biometrics is the science that studies distinguishing characteristics to recognize or identify individuals based on one or more parts of the human body, such as fingerprints, retinas, voice patterns (voice recognition), and facial features (face recognition). Face recognition is one of the techniques used for facial recognition, similar to fingerprint and retina recognition, where captured camera images are compared with existing facial photos and contours stored in the database.

This system utilizes a webcam, AMG8833 thermal camera, Raspberry Pi 4 Model B as its main components. And assisted by the Haar Cascade Classifier and Local Binary Pattern Histogram (LBPH) methods. Both methods have their respective roles, namely to detect faces and identify faces. So this system relies on facial patterns as proof of automatic attendance. The results of the attendance data will be automatically stored in the database and the results of the attendance recap can be accessed by users from various platforms such as Telegram and also the website. This system is carried out various tests and comparisons. So that the accuracy value obtained from the comparison of the thermal camera with AMG8833 is 98.79%, with an error value obtained of 0.87%. As for the difference in results from the measurement of the thermal camera with AMG8833 of 0.33.

Keyword : Presence, Internet of Things (IoT), Face Recognition, AMG8833, Raspberry Pi 4 Model B, Haar Cascade Classifier, Local Binary Pattern Histogram.