

ABSTRACT

Presence is a key indicator in assessing student discipline and compliance within school environments. However, manual presence methods are still widely used, despite being time-consuming, inefficient, and vulnerable to manipulation. This research aims to develop an automatic presence system based on facial recognition technology using a Raspberry Pi device and the Python programming language. The system is designed to automatically detect and recognize student faces and record their presence in real time, which can be accessed via a web interface built with Flask. Testing was conducted to evaluate system performance across varying distances between the face and the camera. The results show that the system achieved a 100% face detection success rate at distances ranging from 1 to 6 meters using the YOLO algorithm. However, face recognition accuracy significantly decreased at distances beyond 2 meters and when more than three faces were present in a single frame. The system also failed to recognize faces covered by masks. Nevertheless, the integration with Firebase provides seamless real-time data storage and monitoring capabilities. With further development, including improved hardware specifications and a more diverse facial dataset, this system has strong potential for widespread implementation in schools and other institutions.

Keywords: Automatic Presence, Facial Recognition, Raspberry Pi, YOLO, Firebase