

**DEVELOPING A STUDENT ATTENDANCE APPLICATION BASED ON FACE
RECOGNITION USING A CONVOLUTIONAL NEURAL NETWORK ALGORITHM
(CASE STUDY: ELEMENTARY SCHOOL 01 MUARA ENIM)**

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ABSTRACT

The development of artificial intelligence technology offers opportunities to enhance the efficiency of academic administration, particularly in the student attendance process. This study aims to design and implement a facial recognition-based student attendance system using a real-time Convolutional Neural Network (CNN) algorithm to facilitate automated attendance recording. The research methods included a literature review and the collection of 320 facial photographs of 5th-grade students at SDN 01 Muara Enim. The data were processed through normalization, grayscale conversion, and augmentation techniques such as rotation, flipping, and zooming. The custom CNN model comprised multiple layers, including Convolution2D, MaxPooling2D, Dense, and Dropout. The results demonstrated that the model achieved 96.8% accuracy, 95.4% precision, and 94.7% recall. Its performance on the confusion matrix surpassed that of VGG16 and ResNet models. Subsequently, the model was integrated into an Android-based attendance system prototype and a cloud-based administrative website.

Keywords: Student Attendance, Facial Recognition, Convolutional Neural Network (CNN), Real-time, Recognition.