

**Development of an Indonesian Sign Language Translator Mobile
Application Using Convolutional Neural Networks for the Deaf at**

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ABSTRACT

Indonesian Sign Language (SIBI) is one of the primary communication media used by people with hearing impairments in their daily lives. However, many people in society still do not understand sign language, causing communication barriers between deaf individuals and the general public. These limitations can affect information delivery, social interaction, and public services in everyday life. Along with the development of artificial intelligence technology, especially in the fields of digital image processing and pattern recognition, these communication problems can be addressed through the development of an automatic sign language translation system.

This study aims to develop a mobile-based Indonesian Sign Language translator application using the Convolutional Neural Network (CNN) method. The developed application is capable of recognizing users' hand shapes or movements through a smartphone camera in real-time and translating the recognition results into text that can be understood by the general public. Mobile-based application development was chosen because it offers high flexibility and accessibility, allowing users to access the application anytime and anywhere through smartphones.

The research stages began with the process of collecting an Indonesian Sign Language image dataset using a camera. The collected dataset then underwent a preprocessing stage to improve data quality before being used in the model training process. The preprocessing stages included image resizing, data normalization, and dataset splitting into training data and testing data. Afterward,

a Convolutional Neural Network (CNN) model was developed and trained to recognize sign language patterns based on the collected dataset. The CNN method was chosen because it has good capabilities in automatic feature extraction and image classification in object recognition processes.

After the training process was completed, the model was evaluated using testing data to determine the system performance in recognizing trained sign language gestures. The evaluation was conducted using testing parameters in the form of model accuracy. The model that met the testing requirements was then implemented into a mobile application so users could perform sign language translation directly through the smartphone camera in real-time.

The results of this study indicate that the mobile-based Indonesian Sign Language translator application using Convolutional Neural Network (CNN) is capable of recognizing and translating sign language into text effectively. The developed application is expected to help improve communication effectiveness between deaf individuals and the general public, as well as become one form of artificial intelligence implementation in supporting more inclusive and accessible communication for various groups.

Keywords: Indonesian Sign Language, Convolutional Neural Network, CNN, Digital Image Processing, Mobile Application, Sign Language Translator.