

REAL-TIME SIGN LANGUAGE DETECTION USING DEEP LEARNING MODEL

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Key Effective communication between deaf and hearing individuals can be challenging due to the lack of efficient sign-language recognition systems. To address this challenge, a Deep Learning-Based Approach for Sign Language Detection using a Convolutional Neural Network (CNN) is proposed. The model is trained and evaluated on a standard sign language image dataset consisting of 7500 images belonging to 25 classes, with each class having 300 images. The dataset is split into training and testing data in a ratio of 80:20, respectively, by randomly selecting images from the dataset. The proposed approach achieves a remarkable accuracy of 94% in detecting sign language gestures in real time. Machine learning algorithms through the image classification method based on the CNN model and libraries such as TensorFlow, Keras, and OpenCV with Python are used to develop the deep learning-based approach for sign language detection. The video frame is labeled according to the sign language gesture being performed by the person. The results of the research demonstrate the effectiveness of deep learning-based approaches for sign language detection and contribute to the development of more advanced and efficient sign language recognition systems. This technology has the potential to significantly improve communication and interactions between deaf and hearing individuals.

Keywords: *Sign language, Deep learning, CNN algorithms*