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Review on Emergency Alerts using Sign Language Recognition

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Abstract: *Sign language is a vital form of communication for individuals with hearing and speech impairments, yet it remains incomprehensible to the general population, creating a significant communication barrier. This project aims to develop a highly accurate and efficient sign language recognition system using deep learning techniques, specifically Convolutional Neural Networks (CNNs) and transfer learning with VGG16, to interpret Indian Sign Language (ISL). The system translates these gestures into readable text by recognizing static hand gestures representing alphabets and numerals in ISL, enabling seamless communication between sign language users and the general population. The proposed system addresses the limitations of traditional glove-based recognition systems, offering a vision-based method that enhances accuracy and usability. The project focuses on preprocessing noisy datasets, applying thresholding techniques for segmentation, and using CNN and VGG16 to train and classify hand gestures. The expected outcomes include high accuracy rates for gesture recognition, real-time performance, and a user-friendly interface, significantly improving communication for individuals with hearing impairments.*

Keywords*:* Sign Language Recognition, Indian Sign Language (ISL), Convolutional Neural Networks (CNN), Deep Learning, Transfer Learning, VGG16, Gesture Recognition, Image Classification, Communication Barrier, Hearing Impairment.

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