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Kannada Sign Language Detection using Artificial Intelligence

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Abstract: *Communication barriers faced by hearing- and speech-impaired individuals make sign language recognition an important area of research. Kannada Sign Language, being region-specific, has limited technological support compared to other widely used sign languages. This paper presents an artificial intelligence–based system for the discovery and recognition of Kannada Sign Language gestures with computer vision and deep learning techniques. The proposed system captures hand gesture images through a camera and processes them using image preprocessing methods such as resizing and normalization. A convolutional neural network (CNN) model is employed to extract significant features and accurately classify the gestures corresponding to Kannada alphabets. The system is trained on a custom dataset containing various hand gesture samples under different conditions to improve robustness and accuracy. Experimental results demonstrate that the proposed model achieves reliable performance in recognizing Kannada sign gestures, thereby enabling effective communication assistance. This work aims to bridge the communication gap between the hearing-impaired community and the general public, and it can be further extended to real-time translation and sentence-level recognition in the future.*

Keywords: Kannada Sign Language, Artificial Intelligence, Deep Learning, Convolutional Neural Network, Computer Vision

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