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Sign Language Translation System using Computer Vision and Machine Learning

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Abstract: *Communication plays a vital role in human interaction. However, for hearing and speech-impaired individuals, sign language is the primary medium of communication. Unfortunately, the majority of people do not understand sign language, creating a communication gap between sign language users and non-users. To address this issue, this paper presents a Sign Language Translation System using Computer Vision and Machine Learning that translates hand gestures into understandable text output. The proposed system utilizes computer vision techniques to capture real-time hand gestures through a camera and processes them using image processing and machine learning algorithms. Hand landmarks are extracted and analyzed to recognize different gestures accurately. The recognized gestures are then translated into corresponding text, enabling effective communication. This system aims to provide an efficient, low-cost, and real-time solution to bridge the communication gap between hearing-impaired individuals and the general public. The proposed model demonstrates promising accuracy and can be further extended for real-world applications such as education, healthcare, and public services.*

Keywords: Sign Language Translation, Hand Gesture Recognition, Computer Vision, Machine Learning, Human–Computer Interaction

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