**Sign2Speech: Real-Time Sign Language to Speech Conversion Using AI**

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**ABSTRACT**

Sign2Speech is an innovative desktop and mobile application designed to bridge the communication gap between deaf or mute individuals and those who do not know sign language. The system captures hand gestures through a webcam and processes them to ensure clarity and accuracy. Image pre-processing techniques, such as background removal, lighting adjustment, and frame resizing, are applied to enhance gesture detection.

A machine learning model is then employed to recognize the sign language gesture and convert it into corresponding text in real time. This text is displayed on the screen for immediate understanding, and a text-to-speech module converts it into spoken language, enabling seamless verbal communication.

By integrating gesture recognition, text display, and speech output, Sign2Speech provides a fast, reliable, and inclusive solution for real-time interaction, significantly improving accessibility and social integration for individuals with hearing and speech impairments.