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Survey on Sign Language Translation:Integrating Metahuman Avatars for Human Language Input Expression

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Abstract: *The deaf and mute population in the Indian subcontinent relies on Indian Sign Language (ISL) for communication, a comprehensive language employing hand gestures, facial expressions, and body postures. To address the communication gap, we present an end-to-end framework that recognizes spoken language and performs corresponding ISL gestures in real time. Leveraging Unreal Engine's depth sensing and motion capturing, we collected motion data for various ISL gestures. Unity3D facilitated animation setup for a diverse range of ISL expressions. Integrated into an application, our framework enables convenient, real-time conversations, fostering inclusivity. Beyond recognition, the system completes the communication loop by converting ISL to human language. Notably, Metahuman avatars are employed to present the ISL gestures, adding a human-like and expressive dimension to the communication process. This approach, leveraging technology for natural language translation and ISL interpretation through Metahuman avatars, stands as a significant step toward bridging the communication gap, promoting understanding, and enhancing accessibility for the hearing and speaking impaired community.*

Keywords: 3D Signing avatar, Animation framework, Indian Sign Language, Natural Language processing

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