

Smart Translation for Deaf and Dumb People using Machine Learning

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Abstract: *In recent years, advancements in machine learning have paved the way for innovative solutions to assist individuals with disabilities. This project focuses on developing a smart translation system for deaf and mute people, aiming to bridge communication gaps and enhance their interaction with the hearing and speaking community. The system leverages state-of-the-art machine learning algorithms to translate sign language into text and speech in real-time and vice versa.*

The core components of the system include a sign language recognition module, which employs convolutional neural networks (CNNs) to interpret hand gestures captured via a camera, and a natural language processing (NLP) module to convert the recognized signs into coherent sentences. Additionally, speech recognition and synthesis modules are integrated to facilitate bi-directional communication.

Extensive training and testing were conducted using diverse datasets to ensure the system's accuracy and reliability across different sign languages and dialects. The results demonstrate high accuracy rates in gesture recognition and translation, proving the system's effectiveness in real-world scenarios.

This smart translation system represents a significant step forward in assistive technology, offering a practical solution to enhance communication for deaf and mute individuals. Future work will focus on expanding the system's language capabilities, improving real-time performance, and incorporating user feedback to refine its functionality..

Keywords: convolutional neural networks.