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Title: Real-Time Speech-to-Text Translation System using Machine Learning

ABSTRACT

Different languages often create communication problems in areas such as education, healthcare, travel, and international communication. When people speak different languages, it becomes difficult to understand spoken conversations in real time. This problem can cause confusion, mistakes, and delays in important situations. With the increase in globalization and digital communication, there is a strong need for a simple and effective solution that can help people communicate across language barriers. This project presents a Real-Time Speech-to-Text Translation System using Machine Learning to solve this problem.

The main objective of this project is to develop a system that can listen to a user's speech, convert the spoken words into text, and translate the text into another language instantly. The system aims to provide accurate translation with minimum delay and easy usage for users. The proposed system uses Automatic Speech Recognition (ASR) to convert speech into text and Neural Machine Translation (NMT) to translate the text into a target language. Machine learning models are trained to recognize different speech patterns, accents, and words to improve accuracy.

The methodology includes capturing real-time audio through a microphone, processing the audio data, converting speech into text, and translating the text using machine learning techniques. The backend of the system is developed using Python and machine learning libraries to ensure fast and reliable performance. The results show that the system ca n successfully translate spoken language in real time with good accuracy. This system is useful in many real-world applications such as online learning, healthcare communication, customer support, and international meetings. Overall, the proposed system helps reduce language barriers and improves communication between people speaking different languages.

Keywords : Real-Time Translation, Speech-to-Text, Machine Learning, Automatic Speech Recognition, Neural Machine Translation