SPEECHPAL: INTERGRATING AUTOMATIC SPEECH RECOGNITION AND LARGE LANGUAGE MODELS FOR ENHANCING EXPRESSIVE COMMUNICATION IN APHASIC INDIVIDUALS.

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Abstract

This study introduces "SpeechPAL", a speech recognition and prediction system designed for individuals with expressive language disorders. Throughout the project, the author has used Broca's aphasia as an example of expressive language disorder, a disorder resulting from a neurological condition. The author utilizes Automatic Speech Recognition (ASR) and Large Language Models (LLMs) to develop the system and it serves as a tool for enhancing expressive verbal communication.

In addition, during the testing and evaluation phases, the whisper model was assessed using the aphasia bank dataset and benchmarked. The chosen LLM could achieve a perplexity of 1.90, indicating the effectiveness of the model in predicting speech within the context of aphasia.

Subject Descriptors

Human-computer interaction (HCI) - Interactive systems and tools - User interface programming

Applied computing - Life and medical sciences - Bioinformatics

Computing methodologies - Artificial intelligence - Natural Language Processing - Speech recognition

Computing methodologies - Machine learning - Machine learning approaches - Neural networks