

INTRO/ABSTRACT

Every year, there are lots of people who are affected with brain or other traumatic injuries that lead to some form of speech impairment. One of these conditions is Aphasia, which can cause a loss of word-finding or word-substitution, agrammatism, and apraxia. The team is using Dart and Flutter to build an Android app that provides a visually assisted form of speech therapy, where a user can look at a word to have it read back to the user. The goal of this app is to assist in improving the speech production and day-to-day activities of people with Aphasia or a similar disorder.

METHODS

The app utilizes Google ML Kit and TensorFlow to allow for real-time gaze estimation by applying a face mesh to a detected face and feeding it to a Convolutional Neural Network that outputs the predicted location of the user's gaze. The app also utilizes Flutter TTS to allow for words to be read back to the user, using Melodic Intonation Therapy (MIT) to help with improving a patient's expressive language capabilities.

RESULTS

The TTS capabilities are functional when the user selects words in the app, and all the foundation for the Convolutional Neural Network is there. However, when running the application, we are getting intermittent results for the Gaze Estimation.

There are many more features that we would like to add or improve, but we decided to focus on building the foundational pieces so that other people can build on this idea and help to improve this form of speech therapy.

The Read-Talkback Assisted Platform for Aphasia is an Android application developed with Dart and Flutter.

Implementing Google ML Kit, TensorFlow, and Flutter TTS. It aims to provide a visually assisted form of speech therapy for people with Aphasia.



Link to our website for more information about our project.