

Recognising Control Words Using A Machine Learning Model

Tailored To An Individual Speaker With Restricted Speech Ability

The primary goal of this project is to find a way of using Machine Learning (ML) to enable a person who is unable to speak in a way that would allow the use of one of the standard "Voice Assistants" such as Google Voice, Alexa, Siri or Cortana to control devices through speech.

The aim is not to create a general speech recognition system but rather to create a model that can ultimately run on a stand-alone (no internet required) micro-controller based board to detect a specific set of Control, or Command if you prefer, words that will result in the effective control of specific devices in the user's environment. For this project we are aiming to simply control some basic functions of the user's TV set.

The ML model will output a number indicating which Command Word it has heard, when it detects one. Identifying the words is as far as *the part of the project* covered in the our Southend Tech Team's Hackathon as part of the [BASILDON 2024 CREATIVE TECH FEST](#) will go.

Development Environment

In order to develop the model we will be using the Kaggle platform and work using Python running in Jupyter Notebooks which provide the entire development environment required for this project.

One team member, Anastasia, will acquire some real-world speech samples for use in this project, using a modern mobile phone as the recording device. This will be done in the expected deployment environment so will give us an entirely realistic source of data.

Further Development

The aim beyond the Hackathon is to take this model, once working, and translate it to a TinyML model to run on a physical device in a real-world situation. This will include generating and transmitting the Infrared control commands to the TV directly from the device.