Sunday, February 17, 2019

Project Proposal - Acoustic Pattern Recognition

Jack Richard

The project I would like to pursue on my own is motivated by a project I am working on in my free time, Atlas. Essentially the project is to build a personal assistant that surpasses Google assistant, Siri, Alexa, etc. on the *personal* level, as each of these commercial implementations are for the general public. Simply put, they are designed to work for the general user, but cannot distinguish between users. Currently, Atlas runs 24/7 on my server at home and I have built an application through Flutter that allows it to control my apartment while I'm away. It also has a customized personality that suits what I am looking for in an assistant. The only thing missing is the ability to communicate vocally in my apartment. So, I would like to pursue this project to take a deep dive into acoustic voice recognition and hopefully build a fruitful classifier that can distinguish my voice from someone else's as well as understand the phrases I am stating, just as it would from a text I would send it.

I have found potential starting points for the project through Kaggle competitions and white pages of Google Assistant and Siri. The link below is an article describing how apple identifies the phrase "hey siri" at 95% accuracy.

The project scope would begin with being able to identify my voice versus any other voice. Given enough time, the next task would be to facilitate an interface that can store new voices. As Atlas can currently expand its knowledge base similar to that of ALICE from Google, the idea would be to have it ask who the person is once it has recognized that it is not someone already stored. Ultimately, getting it to recognize my voice versus other voices is a great accomplishment in itself!

https://machinelearning.apple.com/2017/10/01/hey-siri.html