

SPEECH RECOGNITION SYSTEM FOR VOICE UNLOCKING

MINOR PROJECT SYNOPSIS

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF
THE DEGREE OF

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1 Introduction

Speech recognition is a technology that able a computer to capture the words spoken by a human with a help of microphone. These words are later on recognized by speech recognizer, and in the end, system outputs the recognized words. The process of speech recognition consists of different steps that will be discussed in the following sections one by one.

An ideal situation in the process of speech recognition is that, a speech recognition engine recognizes all words uttered by a human but, practically the performance of a speech recognition engine depends on number of factors. Vocabularies, multiple users and noisy environment are the major factors that are counted in as the depending factors for a speech recognition engine.

A voice-based unlock system for our computer will be the application that will take our voice as input and process that voice converts it into a text-based instruction for our computer and then perform an action based on that instruction. This process uses The State-of-the-art process in a speech to text, Natural Language Understanding, and Deep Learning in the text to speech.

The first step to build a voice-based application in our application is to listen to the user's voice constantly and then transcribe that voice into text-based instruction.

This is difficult to create a voice to text transcription engine with the higher accuracy as we need to train our data model for that also there are a lot of industry leaders are available as Google, Microsoft, Apple, and some others are providing their API based services which can be easily integrated with the applications. Google also offers voice action which is an API-based service to perform an action within the app seamlessly using voice.

2 Objective

1. To understand the speech recognition and its fundamentals.
2. To implement spoken dialogue agents.
3. To use a combination of multiple input modalities to infer about behavior and effective state of the user

3 Feasibility Study

Is this plan technically feasible?

Speech Recognition system will need different audios for speech recognition method and can be implemented with the help of advance algorithms of machine learning so it is quite feasible to make.

Is this system Economically feasible?

Initially this system will only need software things and algorithm which doesn't take any of our expenses and the complete project will be quite feasible overall

4 Methodology/Planning of work

As an emerging technology, not all developers are familiar with speech recognition technology. While the basic functions of both speech synthesis and speech recognition takes only few minutes to understand (after all, most people learn to speak and listen by age two), there are subtle and powerful capabilities provided by computerized speech that developers will want to understand and utilize.

Despite very substantial investment in speech technology research over the last 40 years, speech synthesis and speech recognition technologies still have significant limitations. Most importantly, speech technology does not always meet the high expectations of users familiar with natural human-to-human speech communication. Understanding the limitations - as well as the strengths - is important for effective use of speech input and output in a user interface and for understanding some of the advanced features of the Java Speech API.

An understanding of the capabilities and limitations of speech technology is also important for developers in making decisions about whether a particular application will benefit from the use of speech input and output.

5 Facilities Required

Pycharm

-It is used for training and testing of datasets.

For giving speech recognition library to support audio files for this project

Large amount of Data

-Large amount of data will be required to prepare our algorithm to recognize certain speech accents and differentiate between real and recorded voices.

Different Tools FOr Speech Recogintion

- Smartdraw 2000 (For drawing the Gantt chart and Speech Recognition Model)
- Visual Paradigm for UML 7.1 (for Use case and Activity Diagram)
- Ms-Paint
- Notepad
- Command Prompt
- Java development kit 1.6
- Office 2007 (Documentation)

6 References

[1] <https://youtu.be/PWVH3Vx3dCI>

[2] <https://machinelearningknowledge.ai/create-ai-voice-assistant-with-speech-recognition-python-project-source-code>

[3] <https://www.geeksforgeeks.org/>