CSE 535 Mobile Computing - Project 4 Karthik Viswanath Sriram

SmartLife Companion ASU ID: 1222696995

Abstract:

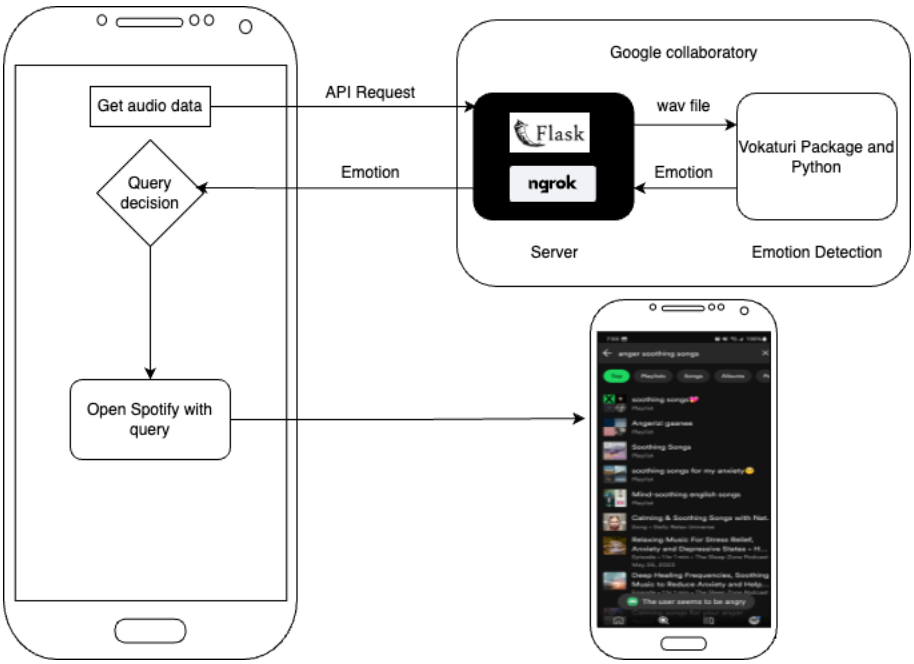
The "*SmartLife Companion"* (Guardian Angel) project, aims to create a multifunctional app eco-system that seamlessly integrates into the user's daily life to provide a wide range of personalized services. The core features of this system include health monitoring and primary diagnosis, Student support, Fall detection and mood management.

The module that I am working on is Mood Management that aims to detect the user's emotion in real time using his audio samples to perform emotion detection and suggest appropriate music through the popular Spotify application.

Alignment with Guardian Angel Project 5:

Mood management module in our project 'SmartLife Companion' aligns with the goal of being a guardian angel in the way it tries to alleviate the user's stress by suggesting music that calms and uplifts his emotions in case he is angry, sad or afraid. Stress is a very strong entity that can adversely affect a person's health thereby making him sad/angry. Music has been proved to be a very powerful cure to overcome stress and making real time suggestions based on the user's emotion will help improving his physical as well as mental health.

Design:



Specifications:

1. Mood management is an activity in our android project ‘SmartLife Companion’ that obtains the user’s audio samples when he is attending a phone call and sends an API response to a google Collaboratory server that runs using flask and ngrok.
2. Emotion analysis is done on the user’s audio data using a python package ‘Vokaturi’ that classifies emotions as happy, sad, angry or fear.
3. The response is sent back to the android application where depending on the user’s emotion, spotify app is opened and a search is performed to suggest music that calms or uplift his emotions.

Testing Strategies:

Unit Testing – The emotion detection module was tested alone by giving a wav file as input in google colaboratory environment without using flask.

Moderate Integration – A flask server was setup in colab and configured to interact with the emotion detection python file by using a file received from a post request. Post request was sent using postman tool to verify whether the wav file was received properly by the server and the python module can work on the audio.

Unit Testing on application front – call recording was tested by recording audio and saving in file storage.

Full Integration Testing – the stored file was sent as api request to google colab and tested for receiving the emotion response. Based on that spotify was opened with appropriate search query.

Navigating challenges:

Handling various permissions in android environment was a challenging task and especially accessing file storage had increasing restrictions higher the android version.

Resolving ‘Only RIFF or RIFX format supported’ error in python emotion detection module was a very involved task that was overcome by converting the audio file into a proper format using ffmpeg command to save file in drive and reading it back.

As of now, spotify is not allowing to play the song automatically, so a workaround has to be approached to play the songs suggested.