**Documentation**

**1. FFT/IFFT Audio Signal Processing Application**

This program runs on FFT.py file. The program creates three signals with noise and then proceeds to plot them, remove the noise and replot the signals. The program can be altered by changing the code from lines 14 to 21 in order to alter the signal as shown below. You can also use pandas package in order to take a wav file and plot the signals.

Text, letter

Description automatically generated

**2. Heart Rate Analysis – Time Domain Measurements**

This program runs the csv file for the heartbeat wav file after it was converted to a csv using the github repository: <https://github.com/Lukious/wav-to-csv>

In order to do this for another wave file, so that you can change the dataset in the program. Simply go to the repository and download the zip file, extract and place your wav file in the folder, *wavfile*

Graphical user interface, text, application, email

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After opening the program, run it in Spyder and enter the name of the file into the console followed by .wav

It will output the csv file to the directory, and you can use in the HeartBeat.py program.

Open HeartBeat.py and replace the directory line of code on line 14 as shown below to the name of the csv you wish to analyze. Then simply run the program and observe the output.



**3. Game Development – Read Alert**

After opening RedAlert.py, you can alter the actors by editing line 73 as shown below, the shuffle function is shown on line 132 to 139 below. Finally, you can view the random speed at line 90 as shown below. These values can be altered to change the game in whatever way you wish.

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