Voice-to-voice and Two-Way Communication Offline Translator Device using Raspberry Pi

This project used two microcontrollers of Raspberry Pi, that serves as the client and the server to perform the wireless communication which is completely offline.

I used python here as the programming language and Pyqt5 as for the user interface. This system has two mode which are the single mode for personal use and dual mode for two-way communication use, this accommodates 5 languages such as English, Filipino, Japanese, Chinese, and Korean.

I used here a LibreTranslate API to perform the translation process and VOSK API for the process of voice-to-text.

And as for how it works, there's a push-to-talk button on the device where the user will able to talk when the button is pressed, and after releasing the button – the voice will be converted to translated text based on his chosen language to translate that will display on screen and will output as voice. Same process in two-way communication that after the user speaks to the device the output will be send to the other device.
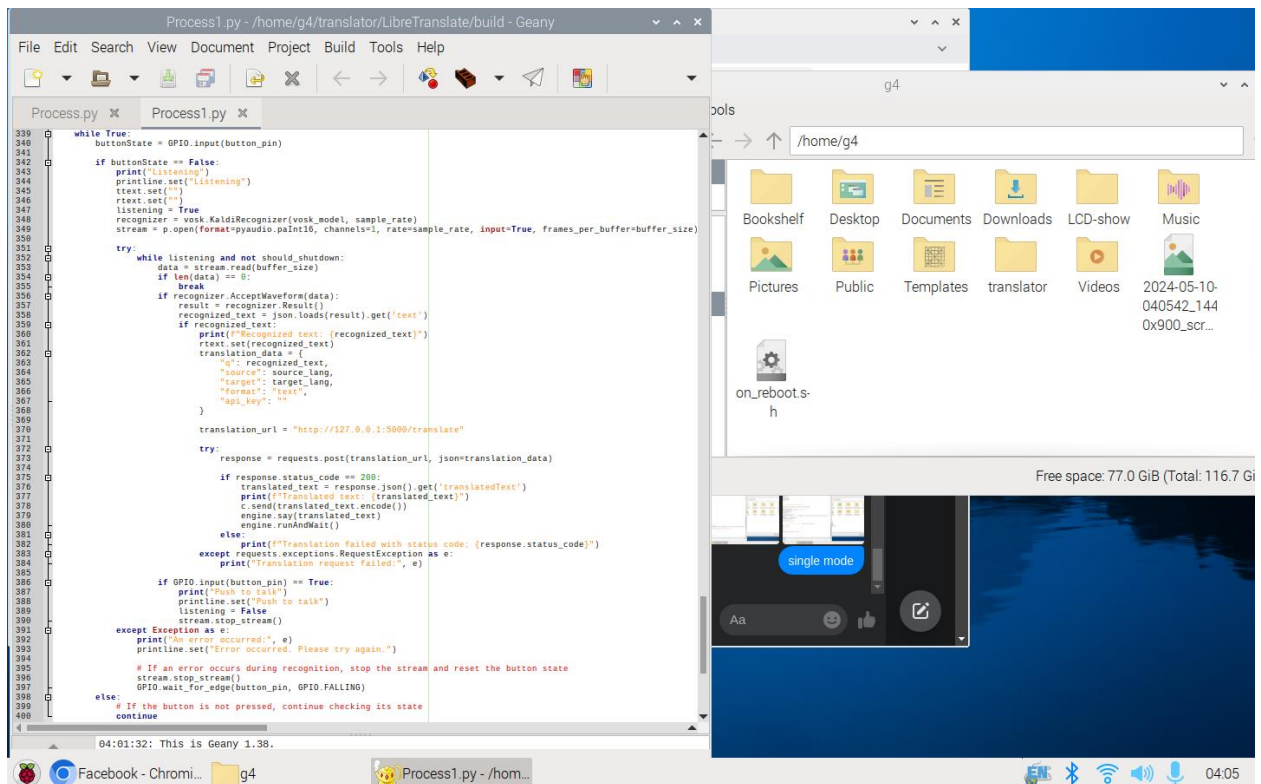
And here's the actual device I made, the mic is placed right above the push-to-talk button, the speaker is placed at the right side, and this device can also adjust the volume and can be charged as well.

And this is me coding and how I design the user interface of this project.
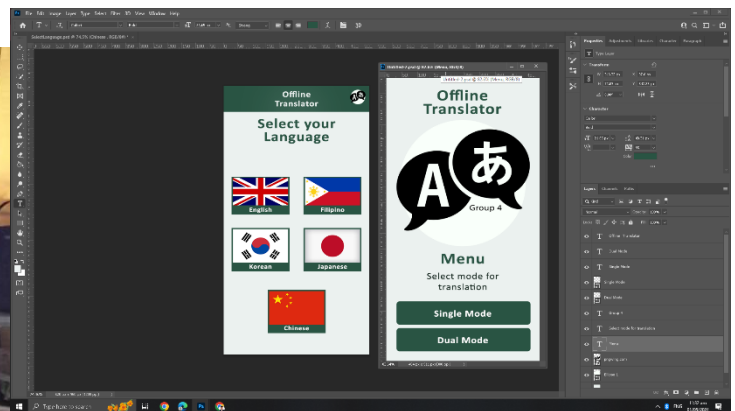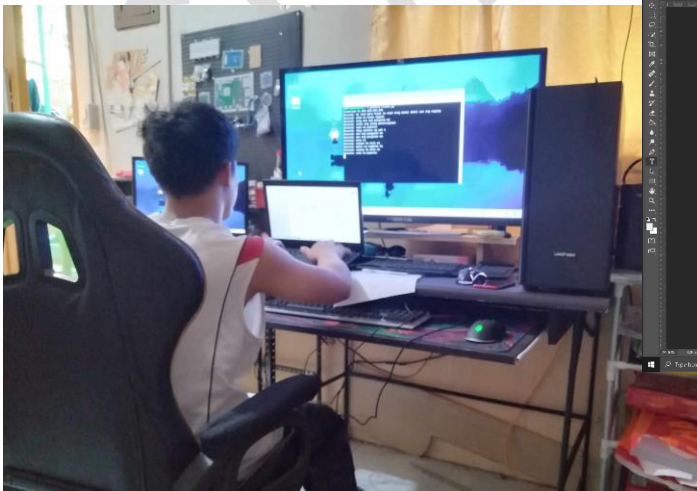
So, here's some logic in my code for push-to-talk button using while loop, basically I used multiprocessing threads to run functions simultaneously such as the main code and the API's.

Testing video link:
https://drive.google.com/file/d/1dwP8BJeaeI3iR4f z50yx-8Hxa3q0sJ9O/view?usp=sharing