Real-time Audio Visualization Practical Work

Objective

The objective of this practical work is to develop a real-time audio visualization tool that displays visual representations of audio signals as they are captured.

Implementation Steps

1. **Audio Capture:** Use a library like PyAudio to capture real-time audio input.

2. **FFT Transformation:** Apply a Fast Fourier Transform (FFT) to convert the audio signal into frequency domain data.

3. **Real-time Visualization:** Update and display a spectrogram or waveform in real-time using a plotting library (e.g., Matplotlib).

4. **Experimentation:** Experiment with different audio sources and observe the changes in the visualization.

Interpretation in Jupyter Notebook

After implementing the steps, you are required to present your results in a Jupyter notebook. Provide explanations for each step, discuss the visual representations of different audio sources, and interpret the outcomes. Consider how the real-time visualization captures different frequencies and patterns in the audio signals.

For guidance on creating a good presentation document in Jupyter Notebook, refer to this link: `https://tinyurl.com/yc64vc6m`.

Conclusion

Conclude your practical work with a summary of your findings and any insights gained from the project.