

Multimedia Appendix 1: PyAudio Installation

We used PyAudio as an API (application programming interface) free of charge under the MIT License. We also referenced a piece of source code about PyAudio written by an engineer markjay4k (<https://github.com/markjay4k/Audio-Spectrum-Analyzer-in-Python>).

PyAudio can be downloaded from package manager 'apt' (a package manager is a tool for installing and uninstalling packages with Linux command):

```
$ sudo apt install python3-audio
```