Mini-project 3: Sound Visualization Using Python

- Introduction

  In this program, I first import some sound stream and then visualize them in forms of 1d, 2d using matplotlib in python.

- Tools used in python

  In this program, the following modules are imported:

  1. Pyaudio

     PyAudio provides Python bindings for PortAudio, the cross-platform audio I/O library. In this project, we use Pyaudio to play audio file.

  2. Matplotlib

     Matplotlib is a plotting library for the Python programming language and its numerical mathematics extension NumPy. It provides an object-oriented API for embedding plots into applications using general-purpose GUI toolkits like Tkinter, wxPython, Qt, or GTK+.

  3. Spicy

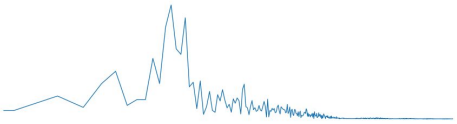
     Scipy is a common software package used in the fields of mathematics, science, and engineering. It can handle interpolation, integration, optimization, image processing, numerical solution of ordinary differential equations, and signal processing. In this project, we use Spicy.signal to process sounds

4. Tkinter

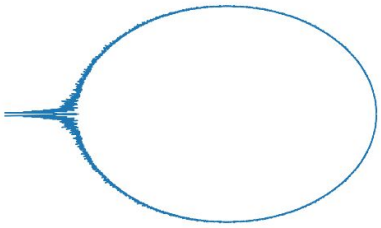
   Tkinter is a Python binding to the Tk GUI toolkit. It is the standard Python interface to the Tk GUI toolkit. In this project we use it to generate visions of 1d and 2d images.

- Demo

  1d:



  2d:



- Reference

  https://www.youtube.com/watch?v=aQKX3mrDFoY

  https://github.com/markjay4k/Audio-Spectrum-Analyzer-in-Python

  https://docs.scipy.org/doc/scipy-0.14.0/reference/tutorial/fftpack.html