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**Competitive Analysis**

Because my term project incorporates two unique parts during my search for similar existing products I decided to look at audio visualizers and music tutors separately.

**Part1: The Audio Visualizer**

Almost every audio visualizer written in python that I found online used blender software. This is good example of a very well made audio visualizer using the blender software: <https://www.youtube.com/watch?v=hmtey741Dy0> . In this video the product shows blender’s ability to create stunning 3D visuals, and respond to music equally well. I like several things about this particular project that I may use in my own. Firstly, I like the ring structure that this person used a lot. Each ring in their visualizer represents a different, and each color represents a different note. The height of each individual hexagon is the amplitude of the note. I like how the creator organized each component into a simple yet effective way. I looked into the blender software initially and tried to recreate something similar to what this product demonstrates, but after a while I actually felt that the blender software did too much of the work for you. I thought that by using the blender software, I would not actually done enough for a term project, so I decided against using it. Also, getting more complex shapes and movements in blender felt much harder than in tkinter. Most people making these visualizers just had simple tower structures. I even found a video of a term project at CMU that just made a blender visualizer with square towers. I wanted to make a visualizer with several other shapes, so I decided blender was not best.

One of the audio visualizers that I enjoyed a lot was the “Pulse” term project. This term project incorporated many of the features that I will be trying to incorporate in my term project. It was a good implementation of a non-blender software and it allowed the user to input already made music and real time audio from a microphone. Some of the ideas I liked in this project were the implementation of waves and circles in the visualization. I also like how this product used three measures for energy/amplitude: local energy, beat, and instant energy. I believe if I develop algorithms to capture these values I can also make a more refined visualizer.

**Part 2: Drum Tutor**

I could not really find another example of a music education tool using python, but I found some interesting ideas that I would like to incorporate into this part of my project. One project I found online was actually a piano tutor. Link: <https://www.youtube.com/watch?v=dnvL6zqV5rA&nohtml5=False> . In this app the notes come to piano and once they reach the piano, the user is supposed to play. This to me feels very similar to guitar hero. While this is not particularly something I want to do I like how this product implemented light up keys when they were supposed to be played as well as bars showing the duration of notes. I may want to use this same idea but have light up drums for example.

I found a grid generator online that had some important features of rudiment building, and rudiment training that I felt were good to incorporate into my projects. The link to this grid generator: <http://www.snarescience.com/gridgenerator.php> . I like how this app offers a variety of beat structures for the user. I also like how users can very easily incorporate popular gridded rudiments. I would to like to improve on the play feature of this app so that users can change tempo. I also would like to record the user real time to see how perfectly the user is playing the music. Also this app gives a logical sequence of exercises, but I would like my drum tutor to generate exercises based on the students’ performance and even allow the user to input their own hybrid rudiments.