SYNTH TRAINER PROJECT PROPOSAL

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DESCRIPTION

Synth Trainer is aimed to be an ear trainer for beginner electronic music producers. The goal of the application is to train artists to recognize sounds by their timbres and characteristics so that they can recreate sounds from their favorite songs or fleeting ideas that they may not have been able to create before. Is a sound made with sine, square, sawtooth, or triangle waves? What are the values of the ADSR (attack, decay, sustain, release) envelope?

Dedicated ear training applications exist for things like equalization and audio compression, but there seem to be no current programs tailored for sound synthesis. Synth Trainer will include a basic synthesizer interface which contains various components such as an oscillator for basic waveshapes (sine, square, sawtooth, and triangle) and an ADSR envelope. The program will produce random sounds based on the components given to the user, which the user will then attempt to recreate while solely relying on the ears. Once the user submits his/her sound, the program then reveals the settings of the randomly generated sound.

JUSTIFICATION

There are many tutorials online that aim to help aspiring musicians to understand the basics of sound synthesis. These videos are often a good way of getting a general overview of how synthesizers work, but leave the viewer without a structured form of practice for the material. A synth ear-training app, however, would allow users to get hands-on experience with the key elements of a synthesizer, guiding them to pick up sound synthesis in a much more practice-oriented fashion.

This project will require knowledge of digital signal processing, interaction design, and potentially databases. Synth Trainer will present many opportunities for team members to experiment with their understandings of previous classes, as well as extend their knowledge to uncharted territories. We believe the project presents an appropriate level of difficulty since it relies heavily on skills we have already come across while introducing bits and pieces of new technologies and concepts. We're currently considering Pyo as the audio engine and wxPython to create the GUI. If the project is deemed too difficult throughout the development process, we have references for all the various components which will hopefully reduce the challenge. We believe one semester is enough time to launch a very basic version of Synth Trainer, especially if team members share the same passion for music and are allowed to work on components that they are well-versed with.