MUS 470/470L Project Proposal with Specifications and First Milestone

Fall 2023

Due date for Proposal: Wednesday, October 25.

This project proposal and list of specifications is for the course project to be completed in MUS 470L/471L. Each project should exhibit significant work in each of the following three areas:

1. algorithm implementation
2. user interface with parameters
3. audio engine components

Your proposal report should consist of five paragraphs, one devoted to an overview of the project, and one for each of the three areas listed above. The final paragraph is your goals for the first milestone. (The first milestone, consisting of actual project work, is due at the end of the semester.)

More details:

1. In the overview, include details about how much of the work you have set out to do is material that you have significant experience with, and how much is very new to you. For example, if you plan to do an algorithm implementation which is a variation on the reverb project in MAT 321, this would qualify as something you have some experience with. Perhaps you want to implement an ambisonics encoder/decoder, which might be something completely new, etc. If you have very little experience with UI, or you plan to take on a new API, then this should be stated. Also state which of the three areas you plan to put the most time into, based on your proposal.

2. Your algorithm implementation should be, at a minimum, on the order of complexity which is similar to the reverb project in MAT 321, or the Plucked String project in MAT 320, or an ambisonics encoder/decoder, or a spline signal modeler, or an algorithmic music melody generator, or a speech recognition neural network for a limited data set like the exercise in class, for example. This requirement cannot be skipped or minimized.

3. The UI is an essential part of the project and is basically self-explanatory. In order to demo the project you should have a nice set of knobs/sliders which give the user an intuitive means to explore your work and the various parameters that illustrate your implementation.

4. The audio engine components can vary, but one example would be to implement a plugin which is used in an audio processing graph along with an existing audio engine. For example, if one was doing a reverb project then a plugin would be a nice way to make the reverb real-time. It is not necessary to write an entire stand-alone audio engine, but at least some of the typical functions should be managed in your code. For example, if you implement your own call-back, or manage your own audio buffers, or write a plugin, any of these would suffice.

5. The first milestone is the end of this semester. The goal should be to complete something which gives a proof of concept for the project, or something which is clearly a hard part of the implementation. In this paragraph, describe your best guess at what this should be, and give at least one other alternative goal if this one does not work out.

6. Please also include a list of references that you are working with. This includes research papers, books, and web links. Include enough detail in each reference so that I could find it online if I wanted to.