DSP Lab: ECE 6183 **Spring 2021**

Project

Your DSP Lab project should involve real-time programming of an audio or video signal processing algorithm. Creativity is encouraged. Your project is not expected to be a research project. You may implement an algorithm from a book or paper or build a system (e.g., GUI) that builds upon what you learned in class. One option is to implement a topic in the text book that we did not do in class, or extend in a creative way a topic we learned about, or combine in a creative way multiple topics we learned about. Your project should illustrate your understanding of the tools, techniques, and ideas that we learned in the course.

Projects can be done individually or in groups of two. If you want to have a group of three people, then let me know the project and the role of each person on the project.

Past projects have included: keyboard synthesizers, guitar effects, multi-voice chorus, music mixer, sound effects in games, pitch shifting, pop music vocal processing techniques, audio equalizer tool, guitar tuning application, spatial sound simulation (audio panning), no-touch video-based musical instruments ('air drums', digital theremin), video object tracking using webcam, finger painting in air by using webcam, piano keyboard, image processing, video special effects, MIDI keyboard, reverberation simulation tool, real-time audio noise suppression, real-time chorus tool for singers, raspberry pi security camera, real-time voice transformation tool, automatic music generation by gesture or other control input, real-time guitar chord classification, real-time graphic visualization of audio.

You may use any available Python libraries. You may build upon projects that other people have done and posted (e.g., on GitHub). But in this case, you must clearly refer to their work and clearly explain what you did, how it is different, and what code you wrote. All the code from the existing project should be in a separate folder from your own code. Your own code should be in a specific folder and should contain only your own work.

Project Topic. Describe your project topic and group members. Upload once per group. (Let me know if you change your project topic after that date.)

Due date: **Thursday, April 22**

Demonstration Video. Record a video demonstrating your project and share it with the class. You can use a combination of screen-recording and other recordings. Your recorded video can be up to 5 minutes in duration. If the project is done by a group, then each group member must participate in the video.

Due date: **Wednesday, May 12**

Project Document and Software. You should prepare a written document explaining your project, how you implemented it, and what libraries or functions you used beyond what we learned about it class. Include some screenshots of photographs of your project.

Due date: **Tuesday, May 14**

Peer Video Feedback. Each student will view and give feedback on videos made by some other students. The feedback you give to other students will be part of your course grade.

Due date: **Friday, May 17**