DSP Lab: ECE 6183 **Summer 2020**

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 must 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. Due date to describe your project topic and group members: **Tuesday, July 21.** (Let me know if you change your project topic after that date.)

Project Report. You should prepare a written project report explaining your project, how you implemented it, and what libraries or functions you used beyond what we learned about it class. Due date for project report and software: **Tuesday, August 11.** (Upload once per group.)

Presentation Video. You will record a video presentation and share it with the class via the Media Gallery in the course page on NYU Classes. You can use a combination of screen-recording and other recording. Your recorded video presentation can be up to 5 minutes in duration. Due date to upload video presentation: **Friday, August 14.**

Each student will view and give feedback on the video presentations by other students. The feedback you give to other students will be part of your course grade.