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6.111 Final Project Abstract

Freeform Production of **G**orgeous **A**udio

For our final project, we are going to make a music system that allows you to both play music and record/analyze music. We are interested in experimenting with different digital signal processing techniques, so on the recording side, we are interested in looking into noise cancellation techniques. In addition, we are thinking about making some sort of classifier that could listen to different sounds you make and record and analyze it in some way (perhaps differentiating between different types of instruments). We are interested in exploring this and more sophisticated audio analyses, potentially using a hardware accelerated neural net to perform techniques that cannot be achieved with pure DSP. On the playing side, we want to look into different effects we can implement to allow for a keyboard with different settings. We are also considering making a Guitar Hero type game on our keyboard, where you are trying to match notes being displayed on a screen. Perhaps we could combine this game with our recording ideas to allow you to try to sing a tune, and by analyzing the audio input, the system can discern whether you are singing at the right frequency, or whether you need to sing at a higher or lower frequency. We are excited to make a complete music system with multiple functionalities.