ECE Outreach Fall 2019

Analog Team Project Proposal

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This semester, the analog team aims to reach out and present at more middle and high schools across to the Fort Collins region, with a focus on analog circuit design. We hope to wrap up all projects that have been started in the previous semesters so they can be used in a classroom setting. In addition to this, we will continue to develop new interactive demos that help introduce analog circuit concepts to students.

Goals
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- Finish capacitor demo from last semester
    - Incorporate monetary aspect
    - Purchase all materials we previously to borrow
- Research and develop simple speaker design
- Audio analysis/ filtering on oscilloscope

Our first objective is to finish the demos that we started last semester and get them ready for a classroom setting. This is all based around the ‘Build a Capacitor’ demo where completion involves setting up some form of payment for materials (like Monopoly money), so kids have to learn which aspects of the capacitor are most valuable to raise its capacitance. In addition to this, we need to purchase some of the additional props we borrowed, such as the high-voltage capacitor and power supply.

We will be focusing around the idea of speakers and filters for this semester’s new projects we intend to develop. We hope to make a very basic speaker capable of playing audio and then manipulate that audio. For the more advanced high school classroom settings, we hope to use an oscilloscope to record the audio and use a Fourier transform to analyze its frequency, from which we can filter out different tones, and see its visual effect on the audio.

We plan to participate in at least four outreach events the semester, where at least two of those events involve going to high schools. Currently, the scope of the high schools we are targeting are primarily based in the Fort Collins and Loveland region.

There are also plans in place to visit some of the introductory engineering classes at CSU. We hope to organize some sort of event for the Engineering 101 class which gives them a better understanding of electrical and computer engineering. This event will be a combination of all branches in our outreach group, but the goal for the analog team will be to coordinate some type of captivating demonstration.

We also plan to visit the Engineering Major Fair in October. This event is primarily for freshmen and will be more of a one-on-one interaction of analog circuits with hands-on demonstrations and examples.