

EEL4511 Real-time DSP Applications

Lab 9 Final Project

Title: **Dual-Channel Spatial Audio w/ LED Indicator**

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Abstract:

This project uses concepts about how the human ear perceives sound from different locations and implements them using cascaded filters that mimic the sound direction, delay, and intensity of a real-world sound environment using only stereo headphones. The two main filters used approximate the effects of Head Shadow and Interaural Time Difference, which are two phenomena that occur when you listen to surrounding sounds.

Reference: DAFX – Special Audio Effects Chapter 6

Features:

1. Potentiometer to control the angle of apparent direction of the sound
2. Semi-circular LED configuration to visualize the apparent direction of sound
3. Head Shadow filter, Interaural Time Difference filter, and bass boost filter applied to incoming audio

Grade: