

# **Sigma-Delta Audio-Frequency Oscilloscope**

## **Final Project Abstract**

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Oscilloscopes are a ubiquitous tool in the electrical engineering community. Our goal is to use an FPGA to take a low-frequency analog signal within the human audible range and display the waveform on a screen, as with an oscilloscope. We will perform a high frequency, 1-bit precision sampling of an audio signal and use the FPGA to filter this signal into a high precision, low sampling frequency sequence to match the original waveform, as with a Sigma-Delta analog-digital converter. We will then display this high precision sequence on a monitor using the FPGA's VGA interface. We hope to, by the end of the final project period, be able to display the waveform associated with a song.