

Department of Electrical Engineering and Computer Science

EEL4914 Senior Design I - Spring 2015 - Senior Design Project Funding Proposal

This form is to be completed by each group requesting funding from Boeing/Leidos and attached as the coversheet for your submitted proposal.	
Project Title (acronyms fully expanded)	
Dancing Water Spectrum Analyzer	
Project Group Members	Please Include in the Attached Proposal
<p>ECE Group Number: <u>37</u></p> <p>Names: PRINT, PID, Major, and SIGN</p> <p>1. <u>Katie Corini K2239317 EE <i>Katie Corini</i></u> <u>COMPUTER Engineering</u></p> <p>2. <u>Joshua Fabian J2968219 <i>Josh Fabian</i></u></p> <p>3. <u>Esha Hassan e3331212 EE <i>Esha Hassan</i></u></p> <p>4. <u>Timothy Le t3203573 EE <i>Timothy Le</i></u></p>	<p>1. Project Motivation, Goals and Objectives</p> <p>2. Project Specifications</p> <p>3. Project Block Diagram</p> <p>4. Detailed Project Budget</p>
Requested Project Funding Amount (must be the same value as in body of proposal)	
\$ <u>1000.00</u>	
Approval	
_____	_____
Samuel M. Richie	Date

- Thank You -

Dancing Water Spectrum Analyzer

A visual representation of music using a spectrum analyzer with water.

Group 37

Joshua Fabian - Computer Engineering
Esha Hassan - Electrical Engineering
Tim Le - Electrical Engineering
Katie Corini - Electrical Engineering

Project Description

This project will use a standard 3.5 mm headphone jack to input an audio signal into our custom spectrum analyzer. The analog signal is converted to a digital signal and a fast fourier transform is used to find the frequency magnitudes. The signal will be converted to analog again and the signal will be amplified to power the motors. The magnitudes will be used to determine how the water will react to the inputted signal. Each water jet will be assigned to a specific frequency band, and there will be around 16 water jets. The strength of the water jets will vary based on the strength of their corresponding frequency band. The result will be a physical representation of a spectrum analyzer. In addition, there will be an LED for each water jet to add color to the display. The power supply for the system will also be designed by the team.

Project Motivation

The motivation of this project is to gain an understanding of digital signal processing and power supply design, along with mechanical and aesthetic design.

Goals and Objectives

The goal of this project is to produce a visible representation of an audio input. The water display will be portable and of medium weight. The system will be user friendly and will feature a standard 3.5 mm audio jack for input.

Project Function

The function of this project is to provide an aesthetically pleasing water show following music.

Requirement Specifications

16 Water pumps
16 LEDs
1 Custom 16-chambered plexiglass tank
1 2-Gallon tank
1 Custom Designed Microprocessor
1 Custom Designed Power Supply

Project Budget

Bluetooth connection - \$10

Circuit parts A/D, D/A, Microprocessor, Power Supply - \$40

PCB manufacturing - \$50

Water pump - \$150

16 Motors - \$500

16 Multicolored LEDs - \$50

Plexiglass water reservoir - \$50

Plexiglass water display - \$100

PVC pipes - \$25

Cables and miscellaneous - \$25

Project Milestones

Semester 1: Complete design and small prototype

Semester 2: Finished project

Block Diagram

