Final Project Proposal

Year: 2014   Semester: Spring   Project Name: Every1 DJ

Creation Date: 1/20/13   Last Modified: 1/26/13

Team Members (#1 is Team Leader):

Member 1: Courtney Laubach   Email: claubach@purdue.edu

Member 2: Travis Jefferson   Email: jefferst@purdue.edu

Member 3: Sophie Pouliquen   Email: spouliqu@purdue.edu

Member 4: Matt McMunigle   Email: mmcmunig@purdue.edu

1.0 Project Description:

Every1 DJ is a product that allows the user to vote for a song they would like to hear through a web application, which is tentatively being developed in the Django framework. Vote tallies will be calculated and the most desired song will be selected. The song will be streamed over the Grooveshark API (or similar) to the device, which will feature an auxiliary port to connect to external speakers. The device will also utilize an LCD screen to display the current song, as well as a control panel to allow for user manipulation of basic functions like lighting and modifying the audio playback.

2.0 Roles and Responsibilities:

Member 1 - Courtney Laubach has held many leadership roles on and off campus, making her a great choice to guide our team throughout the semester and keep each of us individually accountable for our work. Courtney is the lone electrical engineer in our group and has a desire to work on the mechanical portion of our project. Therefore, she will be leading the packaging design and fabrication, as well as construction of the team's printed circuit board.

Member 2 - Travis Jefferson has had a great deal of experience in software design during his co-op rotations with GE as well as working on embedded systems for research at Purdue. Travis will be creating the web application for the project along with assisting the team with the embedded source code.

Member 3 - Sophie Pouliquen has had significant experience coordinating diverse teams of people, including a background in software development. Her primary role will be the the systems engineer for the group, helping to ensure requirements are well captured as well as ensuring the project systems work together effectively. Since she does have software experience she will be expected to help out with the software tasks and prototyping.

Member 4 - Matthew McMunigle was also a co-op for GE and had the experience to work on multiple large scale software projects. Using this knowledge he will be on the primary software engineers for the group. Along with working on the embedded software he will be programming the onboard computer (Raspberry Pi or similar) to interact with grooveshark through wireless communication.

2.1 Homework Assignment Responsibilities:

Design Component Homework		Professional Component Homework	
4-Packaging Design and Specs	CL	3-Design Constraint Analysis/Parts List	TJ
5-Hardware Narrative and Prelim Schematic	SP	10-Patent Liability Analysis	SP
6-PCB Narrative and Prelim Layout	TJ	11-Reliability and Safety Analysis	MM
9-Software Design Narrative	MM	12-Social/Political/Environmental Analysis	CL

CL : Courtney Laubach SP: Sophie Pouliquen TJ: Travis Jefferson MM: Matthew McMunigle
Figure 1. Assignment Responsibilities

3.0 Estimated Budget:

Mechanical	Estimated Cost
Packaging Materials	$80.00
Electrical	
Project circuit board	$80.00
Electrical Components (ICs, Micro)	$50.00
Computer (Rpi), SD card	$50.00
Lighting unit	$100.00
Other	
Shipping	$50.00
Total Budget	**$510.00**

Figure 2. Estimated Budget

The project costs shall be split equally among the four team members. Purdue is expected to cover the cost of the circuit boards, in addition to a $300.00 allotment for parts and other project needs. Each team member is thus expected to contribute an estimated $52.50 towards the overall project success.

4.0 Estimated Schedule:
See DesignSchedule.xlsx

5.0 Project Specific Success Criteria:
The following project specific success criteria are proposed for Every1 DJ:
1. An ability for a user-created webapp to communicate a selected song to the Rpi through an http request (API poll).
2. An ability for a computing PC (Rpi) to stream music through the grooveshark API (or similar) and communicate the song information with the micro.
3. An ability to create a 'lights' show corresponding the the music beat, which will be sampled from the auxiliary out of the Rpi via the microcontroller ADC.
4. An ability to control the direction and rotation speed of the LED package through a motor controlled via the micro PWM peripheral.
5. An ability to utilize an LCD to display user-selected (via a control device) metadata (e.g. audio

options, light settings, and track information)