Deliverable #2: System Overview

1 Objectives

Now that you have formed your teams around a single idea, it’s time to give some thought to how your system is going to work.

This deliverable is meant as a way for you to define the implementation details of your project more clearly. You will have the chance to describe the overall system in finer detail, find parts and resources specific to your project, and create a state machine encapsulating core functionality. When you finish, you should be able to start designing your custom printed circuit board and accompanying software.

For this deliverable, you will prepare a document described in the following sections.

2 Document Details

To get full credit, you must include the following sections in your document:

Executive Summary: This section should be on the first page. This short (around 100 words) paragraph should concisely describe the goal of your system, with minimal implementation details. Think of this as your team’s elevator pitch, tell me what is cool about your idea.

System Description: This section is where you will describe the actual system, with as many implementation details as possible. The intent is to get you to a place where you can design your board and start writing software with confidence. You must include sub-sections for each of the following, in the order defined below:

1. A description of the software that will run on your system, including a description of the radio/communication protocol(s) you will use, and how your software will interface with its different components
2. A state machine diagram (generated with Visio, Graphviz, OmniGraffle, Google Draw or your favorite drawing tool) describing the software’s different states, responses, and other functions. If your project contains multiple components that work independently (have their own software and logic), you should create a state machine for each independent component.

3. A description of the hardware required for your system. This includes defining the hardware needs (microphone, color sensor, tricolor LED, bluetooth) and the purpose of each piece of hardware in your system.

4. A table of parts you think you will use: include the part number, supplier, price, and a justification or description of where they fit in your system.

5. A description of the final demo. Write this as a script or describe the demo from the audience perspective. What do you hope to show? What will the audience see? How will you prove your system works?

In addition to describing the custom hardware and custom software portions of your project, this document should describe your system’s wireless communication protocol, sensing, and user interface components of your system. If you are not sure about these components, contact me well before the deliverable deadline.

**Resources:** Your document should have a Resources section, where you list the software and hardware libraries you intend to use, your inspiration from blog posts, youtube videos, and any other resources that you have found online that is inspiring/informing your project.

An example document is available on the class schedule website, this will guide you in creating your own system overview document, start with this format, and then improve on it.

**Presentation:** A randomly-selected member of your team will give a short presentation to the class, in which they will describe to the class what you are planning to do, what parts you will include, and what challenges you expect to face. You will have 5 minutes to present, and 5 minutes for questions. Your team will be graded on the clarity of your presentation, on your ability to reasonably answer the questions, and on your preparation to move forward to the design stage. During the presentation, you should use visuals, of some sort, to help the audience understand your vision. This could include slides, diagrams, and other materials. If you plan to
use the projector, make sure to bring a laptop that you can connect via HDMI to the room projector.

3 Collaboration

This deliverable is to be done by all members of your team, and your team members will all receive the same grade. Make sure that all members of your team are prepared to present and answer questions. If your presenting team member relies heavily on the other members of the team during the presentation (leading me to believe that the selected individual is unprepared), it will negatively impact your team’s grade.

4 Submission Instructions

This deliverable is due by 4:00 PM on February 6th. Absolutely no late assignments will be accepted.

Submit your document via handin.cs.clemson.edu. The document should be in PDF form, no other format will be accepted. If the document is not turned in on time or it’s not a PDF you will get a 0%.

5 Grading

This deliverable is worth 10% of your final project grade. Table 1 shows the rubric that I will use for grading.
Table 1: Grading Rubric for System Description

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Names &amp; Title</td>
<td>Included at the top of the first page.</td>
<td>5</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>100 words or less. Provides a clear, high-level description.</td>
<td>10</td>
</tr>
<tr>
<td>System Description</td>
<td>A clear and thorough description of what you plan to build with appropriate sub-sections and sufficient detail.</td>
<td>30</td>
</tr>
<tr>
<td>State Machine</td>
<td>Sufficient detail (it should capture all of the system’s functions). More than 5 states. Every transition and state labeled.</td>
<td>20</td>
</tr>
<tr>
<td>Parts Table</td>
<td>All fields included. 5 or more parts.</td>
<td>10</td>
</tr>
<tr>
<td>Resources</td>
<td>5 or more resources listed.</td>
<td>5</td>
</tr>
<tr>
<td>Style</td>
<td>Grammar, sentence structure, clarity, organization, spelling.</td>
<td>10</td>
</tr>
<tr>
<td>Presentation</td>
<td>Idea is clearly explained within the time limit. Able to address questions. Appropriate visuals.</td>
<td>10</td>
</tr>
</tbody>
</table>