Project 5: Robotic Puppets

Project 5a: Create a Puppet (due Wed, October 8th)
Project 5b: Perform a Puppet Show (due Mon, October 20th)

Goal of the Project 5a: Create a Puppet
For this project, your team (four people, two kits) is to create the robotic puppet(s) needed for your puppet show. Thus, while you are designing, building, and programming your puppet, think about the context in which it will be used, and let the eventual puppet show you will perform influence the style, structure, and design of your robotic puppet(s). Your puppet show might consist of one puppet (should be complex, worthy of the combined group) or multiple puppets; if the latter, there is no requirement that all puppets are similar in any way (genre, style, format, look/feel, etc), but certainly could be the case depending on the show you are performing.

Materials: You will use your LEGO MINDSTORMS EV3 Kit for either creating your puppet or creating the system to control your puppet. Any/all extra materials are allowed, which means either augmenting the kit with decorations to create the puppet (from scratch), or leveraging an existing puppet and modifying it to make it robotic.

Programming: You will be programming your puppet in LabVIEW. Your puppet can be either pre-programmed (a set sequence of instructions; in which case, in your documentation demonstrate the range of functionality your puppet can enact), or user-input driven (leveraging sensors to detect human input and react appropriately; again, demonstrate with your video the capabilities of your design/implementation).

Assignment:
There are many different types of puppets (reference in-class brainstorm). For this assignment, select a puppet type and implement leveraging your LEGO MINDSTORMS EV3 Kit and any additional materials necessary. Consider the range of expressions for which your puppet is capable: How does it communicate, or convey necessary feelings, as part of a larger story? What functionality does the puppet need to have in order to accomplish this?

Grading Rubric:
In addition to an in-class presentation of your robot (on Wed, October 8th), document your robot (write up a description, take a short video explaining the construction and demonstrating the range of possible movements, include images of overall structure and connection of sensors/etc, and include your code) on the website. Describe your rationale for design choices and how your robotic puppet will be used in a performance. **Submit on Wednesday (Oct 8th) by 9pm.**

Note: only need one single documentation post per entire group; be sure to list all group members.

Total: 10 points
Structure (2 point): Does the robotic puppet appear stable, and well built?
Programming (2 point): Is the code submitted, appear correct, and readable?
Actions (2 point): Does the robotic puppet move and perform as necessary?
In-Class Presentation (2 points): Pre-planned, shared between members, and informative?
Documentation (2 points):

- Is the write-up complete (all parts included) and accurately describe the work?
- Does the video document the project, and is clear, clean, and also concise?
- Are the pictures clear, appropriate, and capture the various components?

Project 5: Robotic Puppets

Project 5a: Create a Puppet (due Wed, October 8th)
Project 5b: Perform a Puppet Show (due Mon, October 20th)

Goal of the Project 5b: Perform a Puppet Show
Using the robotic puppet(s) you and your partners created, it's time to put on a puppet show. You need to write, direct, act, produce, record, and perform a robotic puppet show. The story can be a classic or a unique creation, and the style of interaction between the different characters is up to your group. Note that you will be performing in-class, but should produce a recording of your "dress rehearsal" to include in your online documentation.

Materials: You will be using your puppet(s) created previously. Any/all other materials needed for creating the full puppet show (props, set, lighting, etc) are acceptable.

Programming: You will be programming your puppet(s) in LabVIEW, and while your program(s) will perhaps be the same as that from your previous demonstration/documentation, you may need to modify your code for the final performance. Be sure to upload all final program(s) you use.

Assignment:
For creating a single puppet show across your group, I expect collaboration on choosing a story (classic or newly created), designing how the puppet(s) will interact (with each other or other "characters"), creating any additional components necessary for your show (e.g. scenes/etc), and assembling everything into a final performance. The entire performance should be fairly short, circa 5min (plus or minus). You should also record a "dress rehearsal" performance for including on the website documentation (video story, circa 2 to 10 minutes, depending on scope).

Grading Rubric:
Document your group's puppet show (write up description, take video explaining the various components and demonstrating functionality, include images of overall structure and connection of sensors/etc, and include your code). Also submit a single video containing a "dress rehearsal" of your group puppet show. **Submit on Monday (Oct 20th) by 9pm**. You will also do an in-class performance.

Note: only need one single documentation post per entire group; be sure to list all group members.

Total: 10 points
Overall robot design (2 points): Does/do the robotic puppet(s) appear stable, and well built?
Programming (2 points): Is the code submitted, appear correct, and readable?
Puppet Show Presentation (2 points): Coherent performance, seem rehearsed, and executed well?
Documentation (2 points):

- Is the write-up complete and accurately describe the work?
- Does the video document the project, and is clear, clean, and also concise?
- Are the pictures clear, appropriate, and capture the components and results?

Puppet Show Video (2 points): Uploaded to the website, does it capture the performance?