Lab 5 & 6 Mini-Project: Interactive Kinetic Sculpture

Lab professors: Ellen Wetmore, Holly Yanco, Adam Norton

Lab 5 (on 10/9 or 10/11):
Designing the project and construction of the 3D structure.

Lab 6 (on 10/16 or 10/18):
Integrating the motors and sensors, programming, and troubleshooting.

Due: 10/23 (for Tuesday lab students) or 10/25 (for Thursday lab students) – on the due date, bring your mini-project to the lecture, where you will present it to the full class.

These two labs form a mini-project in which you will create a 3D interactive kinetic sculpture. We have introduced different kinds of mechanisms, motors, and sensors in the lectures and labs to date. You need to integrate the materials together to create a moving sculpture that responds to viewers. The sculpture does not have to be representative, but needs to be moving under certain conditions and should have an aesthetic quality - in other words - it should be kinetic, interactive and visually engaging. Consider the gesture your machine makes, or how it interacts with the viewer, or what visual elements the mechanism propels. Know that you will be evaluated on the look of the machinery and the materials you choose to integrate. These should support your concept. You can use this mini-project to form part of your final project.

Materials: Plywood, foam core, cardboard, mdf, balsa, wire, wood dowel, rubber bands, screws, bolts and nails, or recycled materials. Use your imagination.

Process:

1. Concept drawing: Design your structure and mechanism to move the structure. Draw your idea in your sketchbook. A photocopy of your drawing needs to be submitted along with the lab write-up.

2. Aesthetic structure: Design and build your sculpture in a portable size between 8 inches to 16 inches in width, height and depth. Consider visual qualities such as weight, line, light, balance or unbalance, mass, texture, light and shadow. Please limit the number of different materials to one or two in order to keep consistency and unity in the sculpture (less is more...).

3. Motors and mechanisms: To create a moving part in your sculpture, you are required to use at least one servo motor (you may also use DC motor(s) in addition to the servo motor, if you’d like). You may also employ a mechanism like those covered in the lecture (waving crank, cam shaft, gears, etc.)

4. Mounting of mechanism and electric parts: Figure out where and how your motors, sensors, and/or mechanisms will be mounted in the base. You may need several assisting structures to hold your artwork and the mechanism. Build a
secure base structure out of masonite, balsa, thin mdf, or other material. Please limit the use of glue or duck tape if you can, since glued parts are not secure and visually unpleasant in many cases. Use good craftsmanship!

Minimum Requirements:

- Used at least one servo motor (you can also use a DC if you like)
- Used a sensor
- Interactive and kinetic

Lab write-up (one write up will cover both labs, due at lecture on the day of your presentation):

1. Your concept drawing - Attach a photocopy of your drawing (or the original if you didn’t draw it in your sketchbook).
2. Design strategy and concept - Describe overall concept in the visual and interactive aspect of the artwork.
3. Mechanical function - Describe what kind of motion was planned and how it was realized. If you used a mechanism, explain how and why you used it.
4. Programming strategy - Describe your plan on using motors and sensors and how the code was designed.
5. Reflection on the audience response
6. Your program code - it also needs to be emailed to Adam (anorton@cs.uml.edu).