SM**ALL**
_**ART**IFACTS
LAB;

Design and 3D print a radar fixture

Abstract

In this assignment, you will 1) design a set of fixture around an Ultrasonic Sensor and a servo motor 3D model using Fusion 360 and 2) 3D printing it with Sandbox Makerspace printers. The goal of this assignment is to help you get familiar with the concept of *assembly*, so that you can work on complex 3D modeling in the future. Your 3D printed fixture will also be used in one of the lectures later this semester.

Description

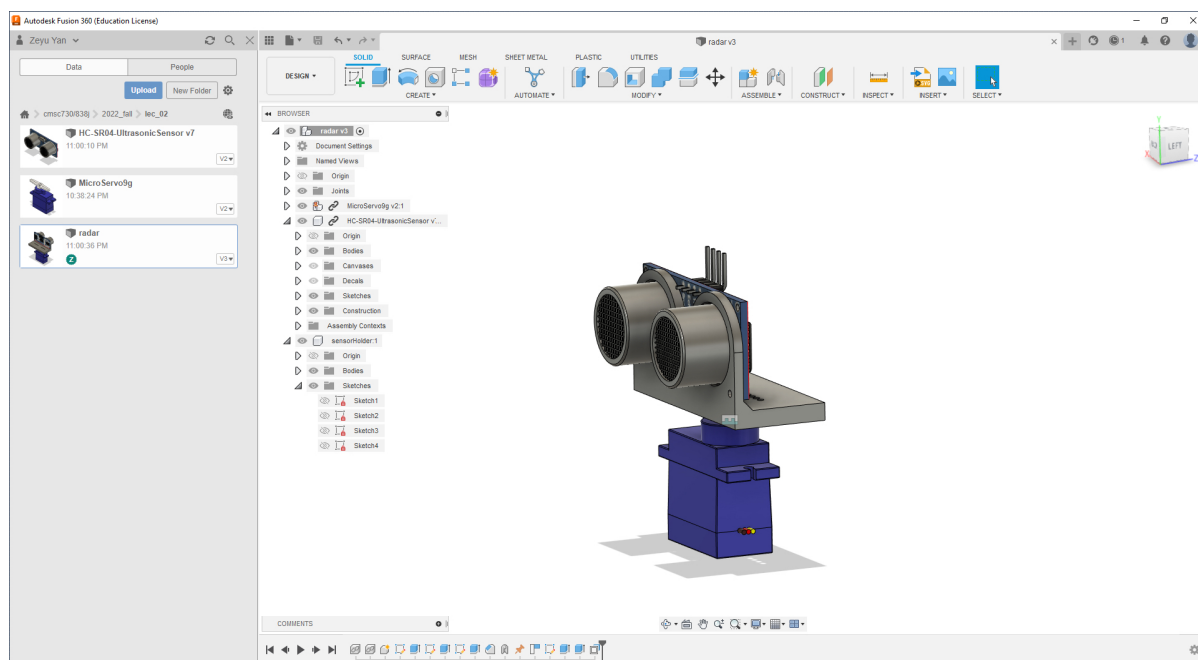The fixture will be used to join the ultrasonic sensor and the servo motor to make a radar (See Figure 1).

Figura 1: example of a fixture design.

Design spec:

- The fixture should connect the ultrasonic sensor and the the servo motor **without interference**;

- The servo motor needs to be **grounded**;

- The servo horn and the ultrasonic sensor has **tight fit slot** with **margin** left around the fitting;

- The fixture must use at least **2 mounting holes** on the ultrasonic sensor and at least **2 mounting holes** on the servor horn;

- All components are **"joint"** together (servo horn with the fixture & ultrasonic sensor with the fixture);

- must include at least one **chamfer or fillet at a reasonable edge**.

Delivery

There are two deliverables.

- Fusion 360 shareable link: please make your file visible to anyone who has the link and submit the link in elms.

- 3D printed part: Submit in person on Oct 4th. **Bring your printed model to the classroom assembled with the ultrasonic sensor and the servo**.

Due Date

Wed Sep 13th, 11:59 PM EST for the Fusion 360 shareable link. You can iterate the design even if you have made a submission. We will grade based on the latest submission by the deadline.

Wed Oct 4th, 3:30 PM EST in class for the 3D printed fixture assembly. We will hand-over the class kit next week so that you can start to work with the actual sensor and the servo.

Note that the weekly assignment is usually due at midnight on the Wed of the upcoming week. For assignment 2, you will have multiple weeks to accomplish it, as you will need time to go through the iterations for your 3D printed part.

Last Modified Date: Sep 6th, 2023