



## 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).

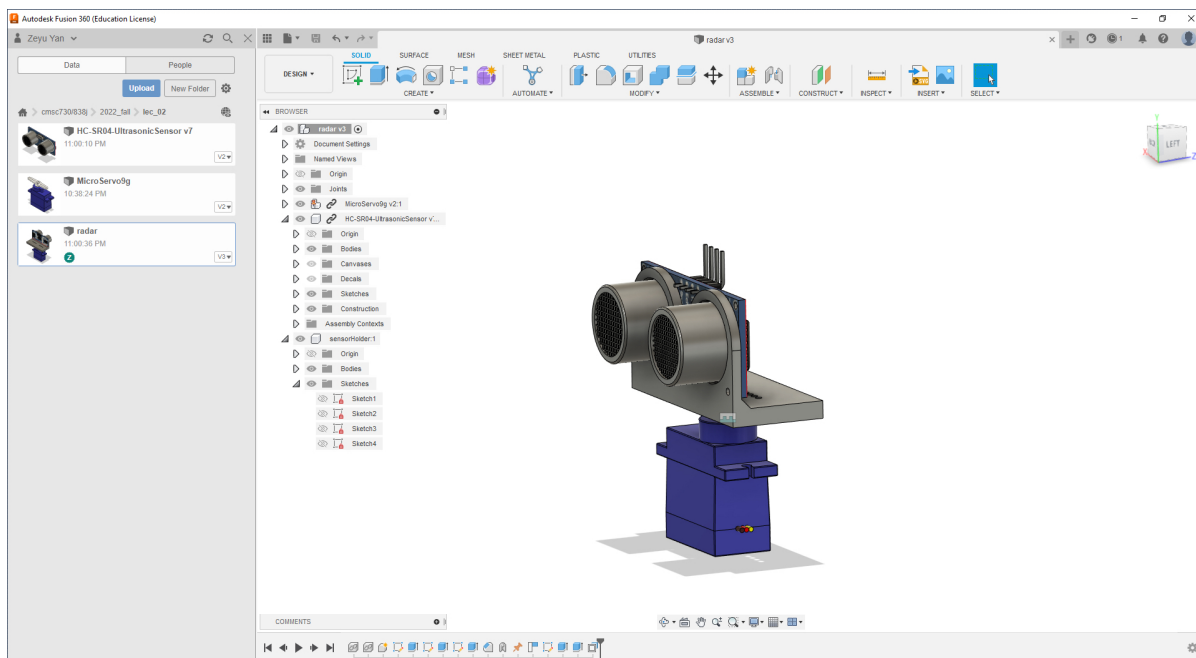


Figure 1: example of a fixture design.

### 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**.
- The final assembly should be robust enough to hold the rotation of the servo, and no adhesive is allowed.

## **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 Oct 2nd, 11:59 PM EST** for the Fusion 360 shareable link. You will also need to print your design, ensure that it can fit the servo motor and the ultrasonic sensor properly. TA will be checking the printed model at the class on Oct 2nd. The printed model will also be needed for your next assignment.