D. Tim Sawyer
A5: Fabrication

CAD Files
https://github.com/timsawyer/ubicomp/tree/master/Fabrication

Video
https://youtu.be/r4W0Mx-NSTY

Report
In this project, I designed and printed a stand to hold the servo motor, and an attachment to for the servo motor to hold the ultrasonic sensor on top of it. I used a Prusa Mk3 printer with generic PLA filament for all my printing. The 3d model design was done using AutoDesk Fusion 360.

For my creative feature, I printed a folding tripod from thingiverse, and designed and printed and adjustable phone holder to connect to it.The adjustable phone hold had three sliding clamps that can be adjusted to it any size of phone. Bolts with wing nuts were used to tighten and secure the clamps at a desired position.

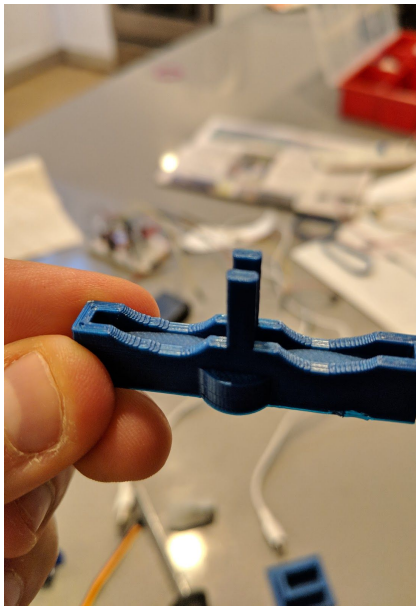
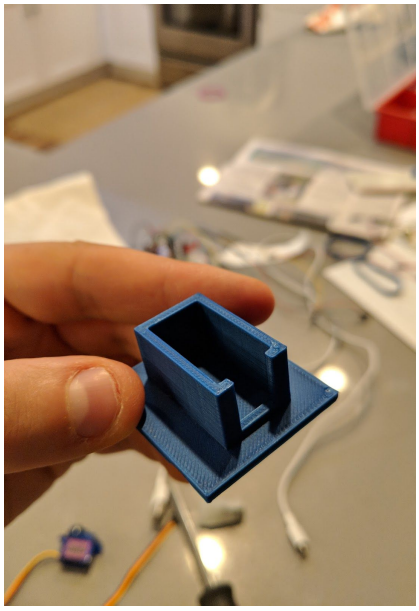
After completing all my printing, I setup the A4 project with the phone and servo with ultrasonic sensor on top of the tripod.

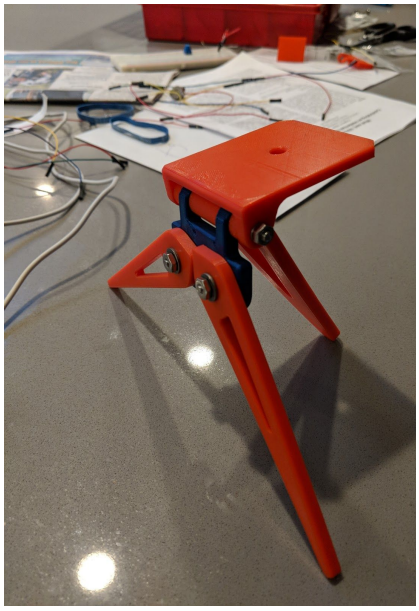
Key challenges

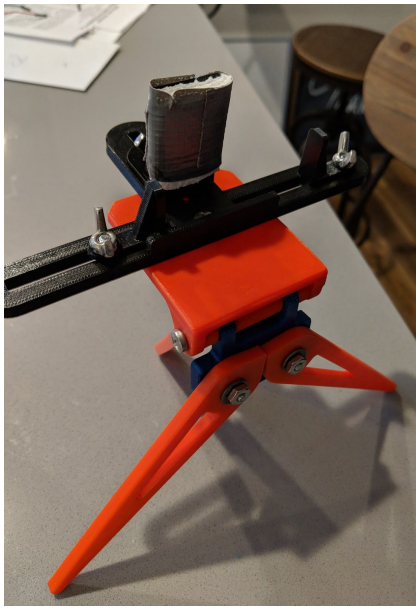
- Determining best rotation for which to print a model in order to minimize need for support material
- Getting sizing and tolerances correct when printing in the ~2mm range
- Iteration time was very long. I first printed my servo stand too small, and when coming back a few hours later and realizing that, all the printers were taken, so I had to wait until the next day to print again. I quickly learned to print small tests to get measurements correct before proceeding with entire model.

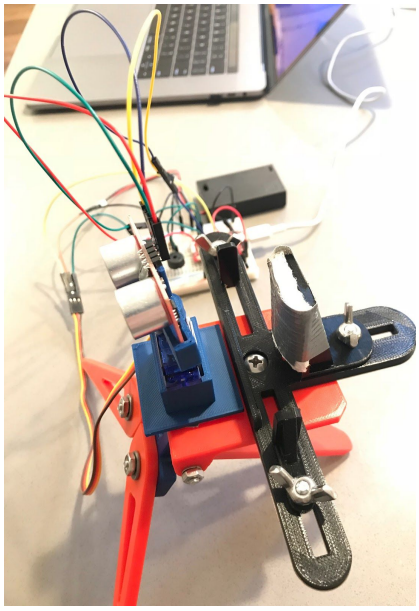
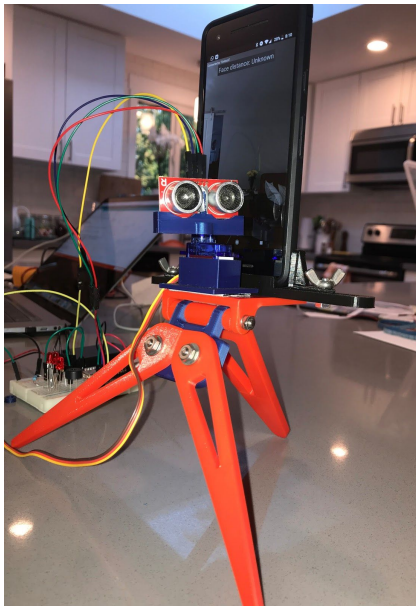
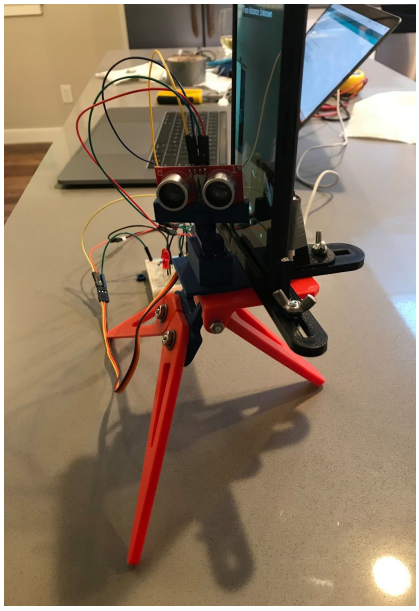
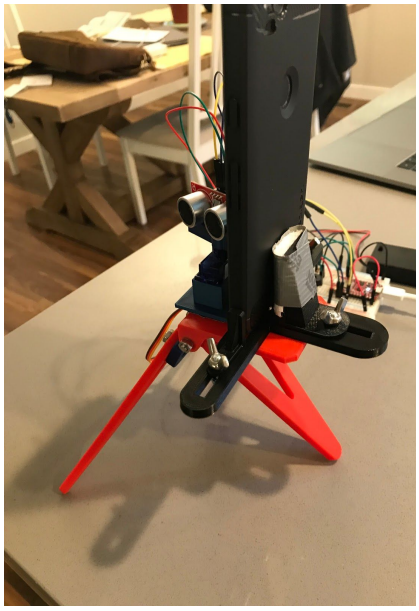
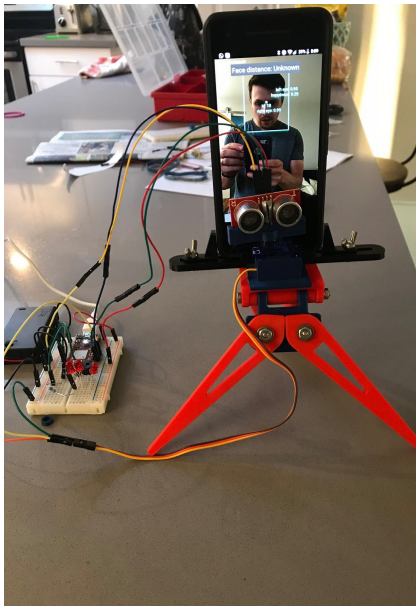
Learnings

- Modeling using AutoDesk Fusion 360
- How to export STL files and import into a slicing tool
- Configuring print settings and print bed layout using Slic3r
- How to use and remove support material
- How to clean jammed print head
- For items with very specific sizing needs, make sure to print very small test of just that piece to quickly iterate and get it correct before printing entire model



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