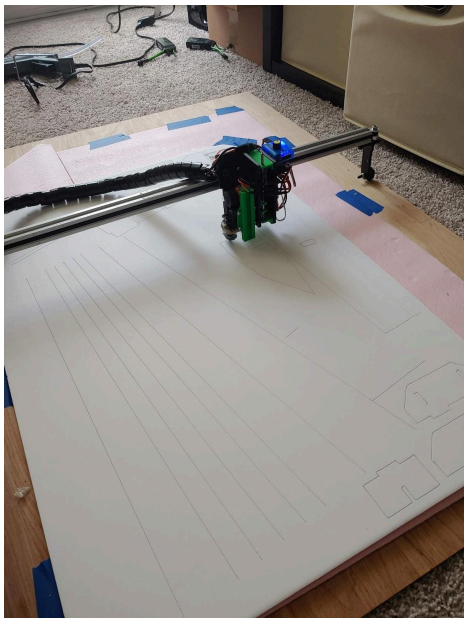
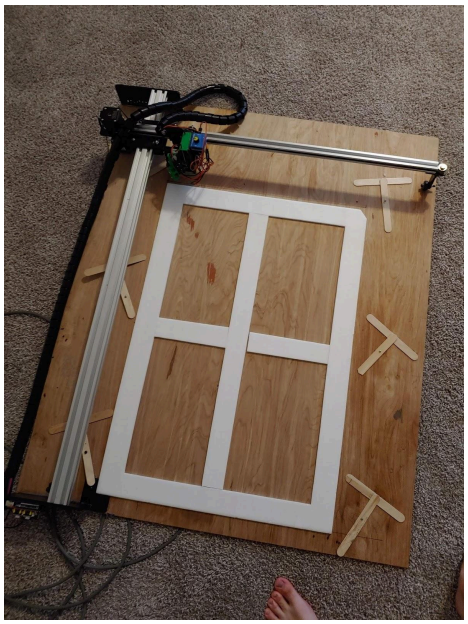
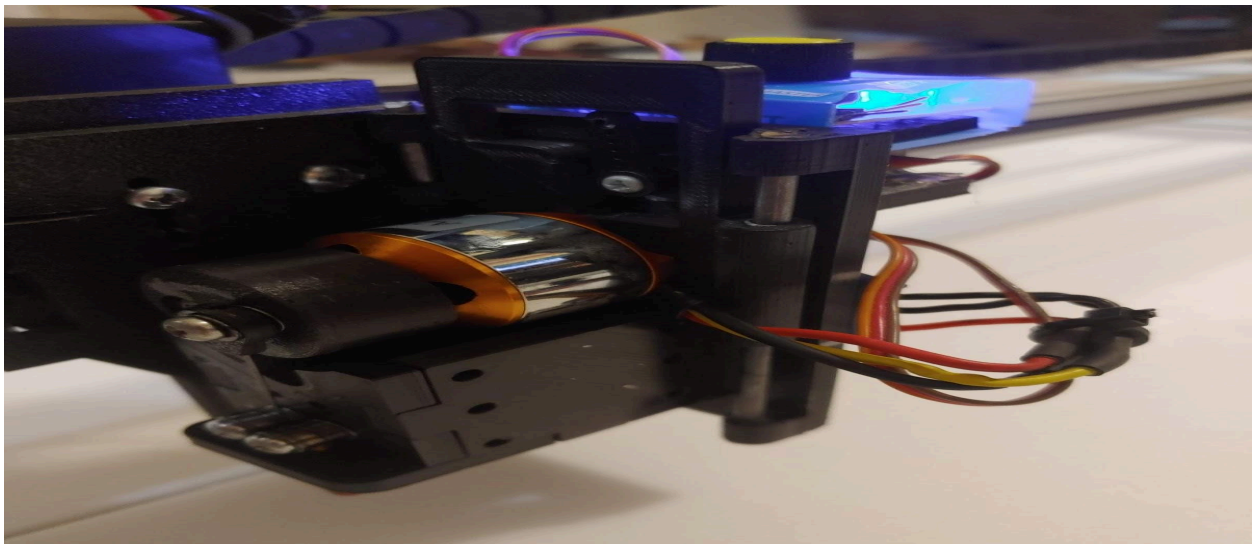
DIY CNC
V.1

Self-Driven project
Problem: The hobby of building RC planes out of foam board requires a lot of time ahead of time spent cutting out parts by hand. The result is only as accurate as your process for transferring plans and your hand's steadiness. Additionally, cutting the parts is not rewarding like the building or flying portion of the hobby is.

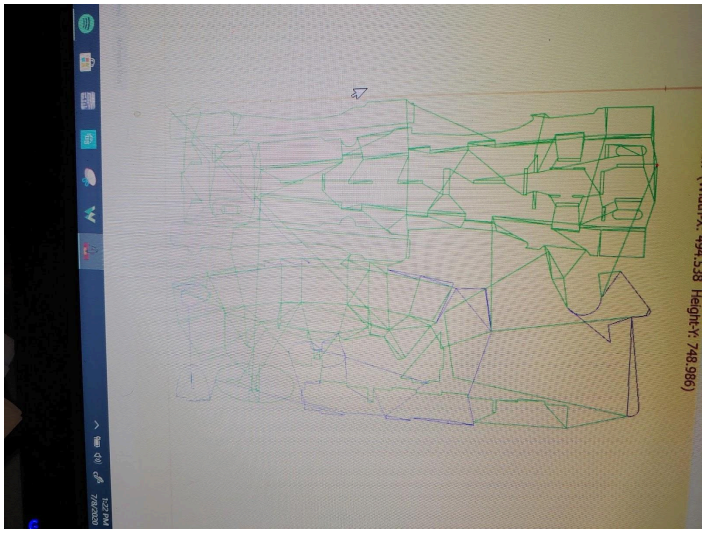
Goal: increase accuracy in parts and decrease time required to cut parts. Also, attain skills and knowledge for building a CNC for building a significantly more advanced CNC in the future.
(did not get many pictures of this iteration, although it lasted several months)Constraints: college student budget

End effector was a reciprocating sharpened wire on a cam that would repeatedly pierce the foam board, creating lines and splines of continues holes, which cut out the parts:



Example of a toolpath for one of the more complex sheets:

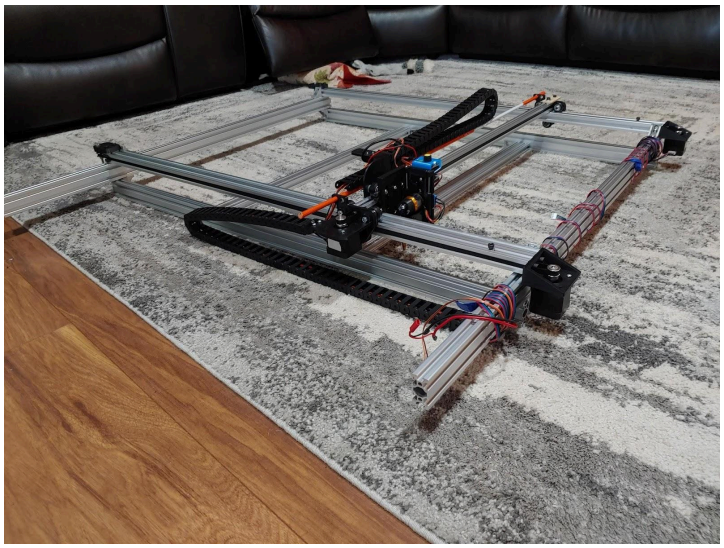


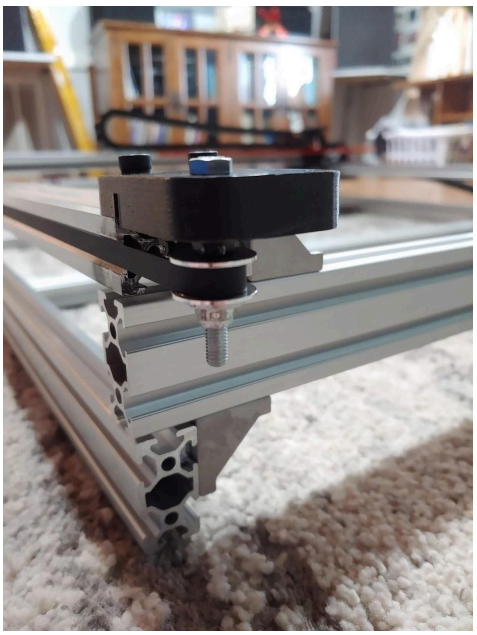
This machine would be able to cut this sheet out in 20 minutes, with less precision than I could cut it out, but it would take me over an hour to cut it out by hand.

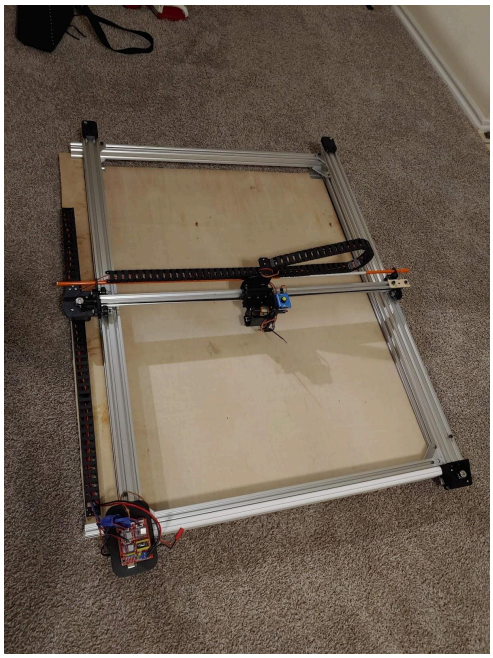
Not all goals were achieved with this version and left room for improvement in the areas of speed and precision.

V.2

Solved failures from V1: 1. Fragile, impossible to transport 2. Y-axis cantilevered and not constrained well enough 3. Slop in the original design of axis connections made precision impossible

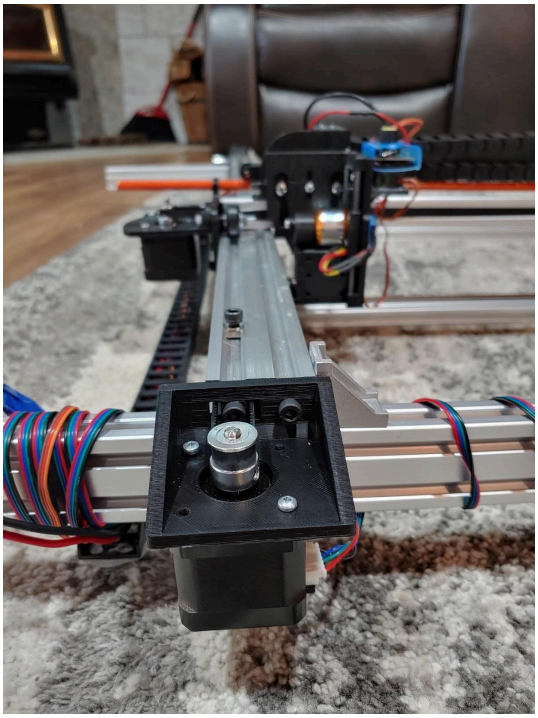


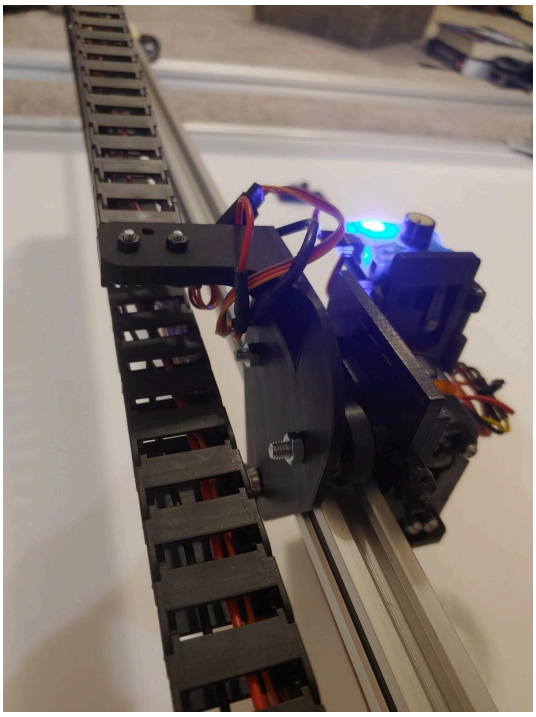




Made the cut-bed more stiff and flat with bracing for better half-depth cut accuracy.

Cable chain replaced the old wire management





Sacrificial layer of foam glue to print bed