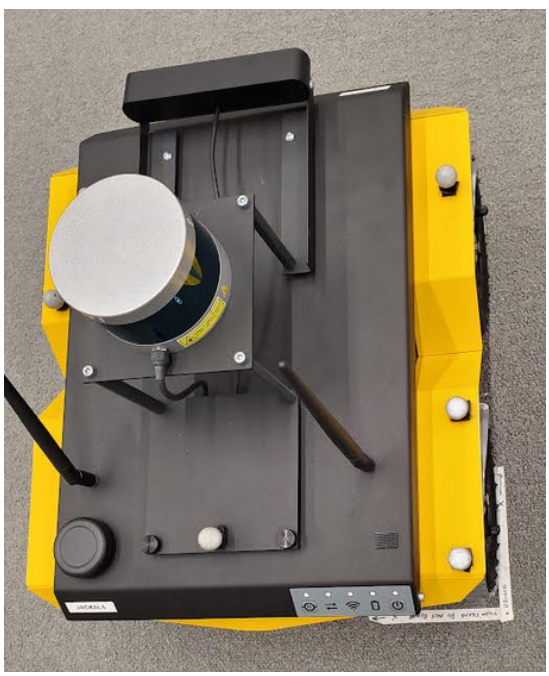
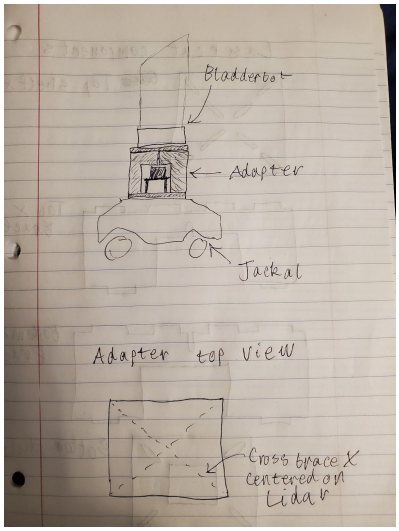
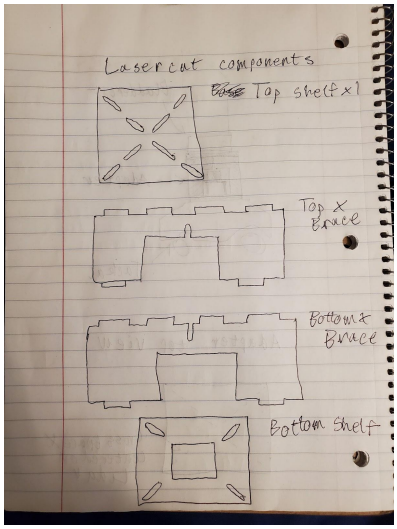
Goal: We want to put the Martha robot on top of the Jackal robot using lasercut plywood. Link to CAD is here.

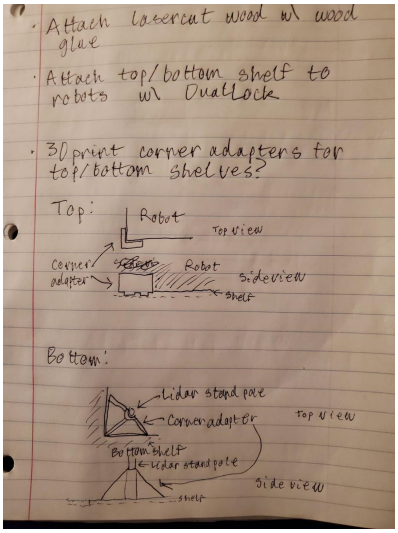



Left: Jackal. Right: Martha

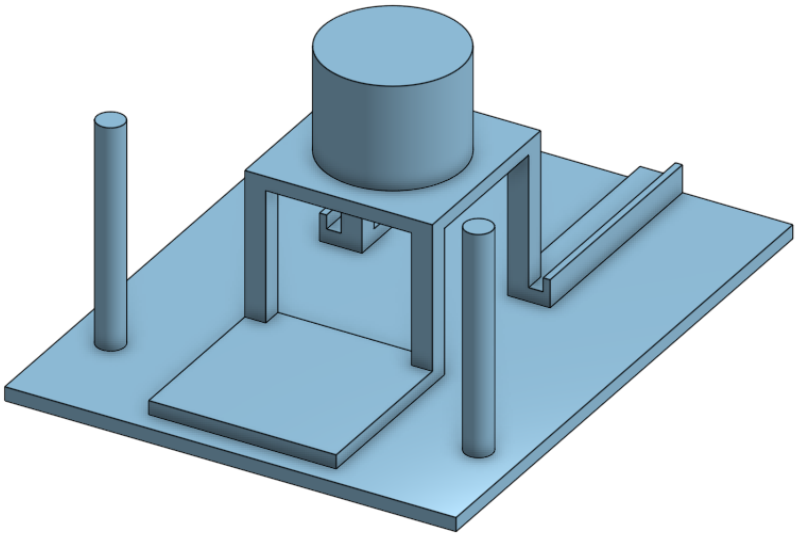
Iteration Zero:
Build a shelf with an X shaped support. The X shape is centered on the lidar, which will minimize the cross-section obscuring the lidar's view.



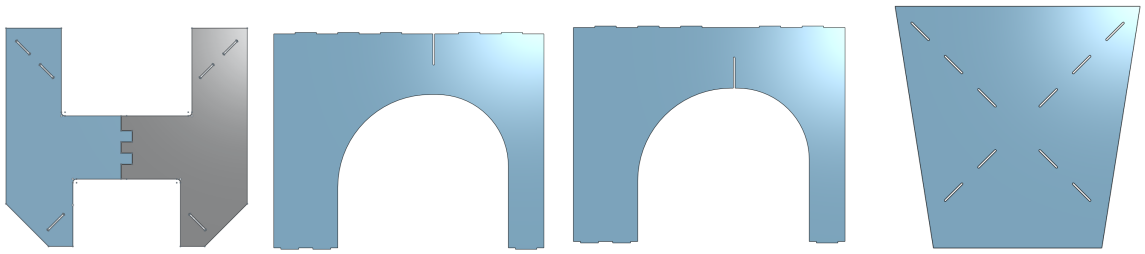




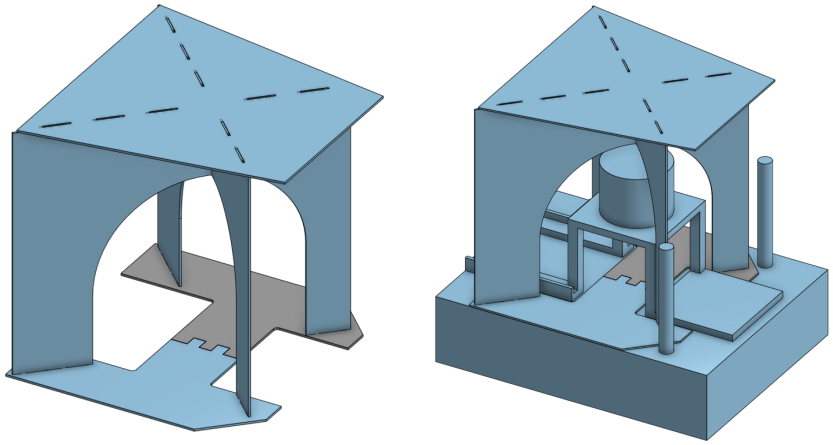
Iteration One:
Unfortunately, the Jackal's top is not a flat object. I took some measurements and made a model of the Jackal's top surface:



Using these measurements and the dimensions of the MarthaBot, I revised the X design. The top stayed largely the same, but the bottom shelf is now in a funky shape to make use of the available free area. Additionally, the bottom shelf will be two pieces with registration tabs so that we can assemble it underneath the lidar platform.



A view of the parts assembled, with and without the Jackal is below.



Physical implementation:

Overall design

Implementation

Current design issues

We made a lasercut prototype of the mount out of cardboard, tested the fit on the robot, then made some modifications before finalizing the design in wood. We secured the prototype to the base and BladderBot with DualLock. Unfortunately, the tabs pops out of the bottom when the robot stops– we've temporarily fixed this with tape. Also, the flexibility of the vertical supports means the top has about +-2 degrees of rotational wobble. That said, this design is good enough for the pilot study.