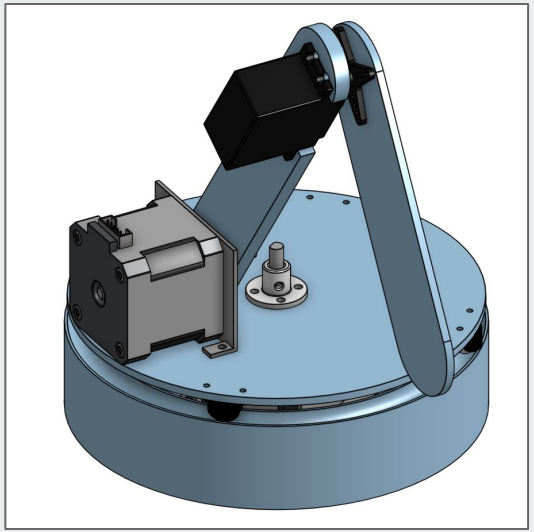
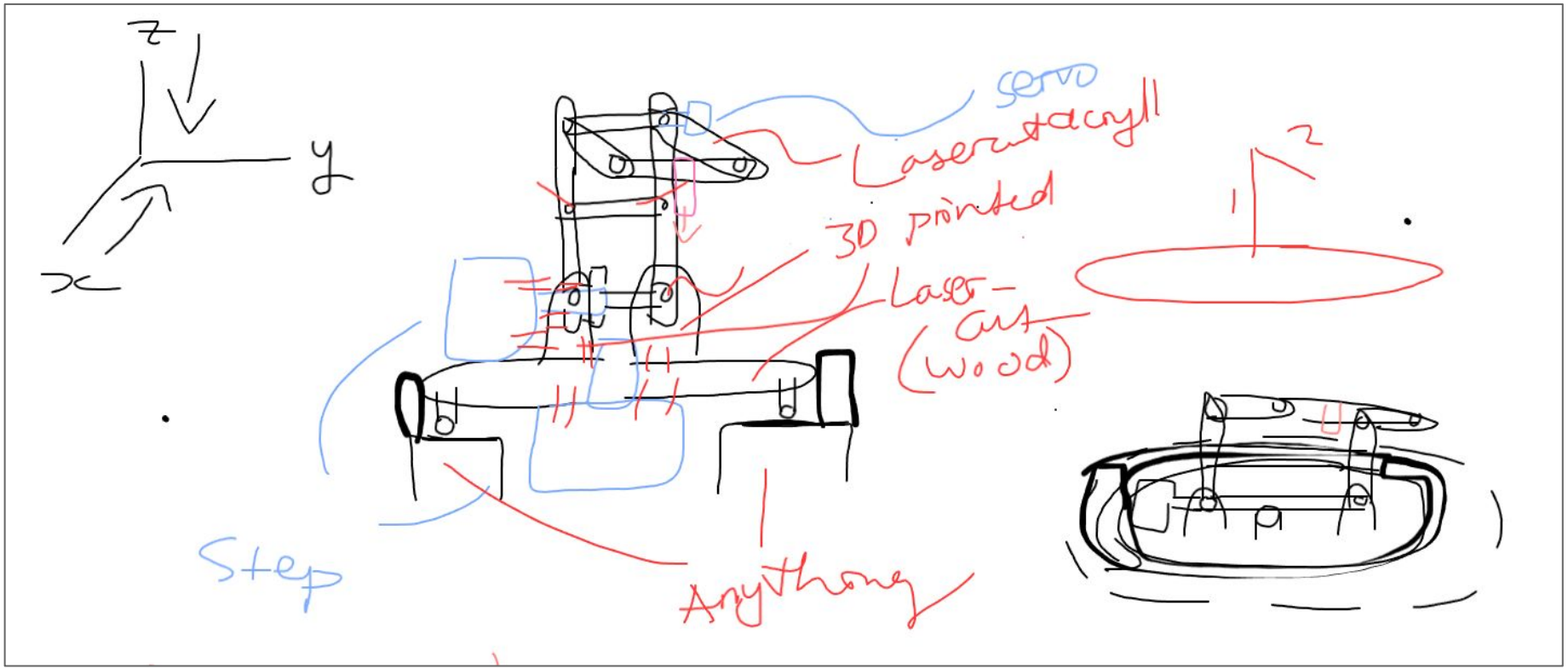
“Wenchoi”, a 3DOF Robotic Arm

ME134 HW #2 CAD Design

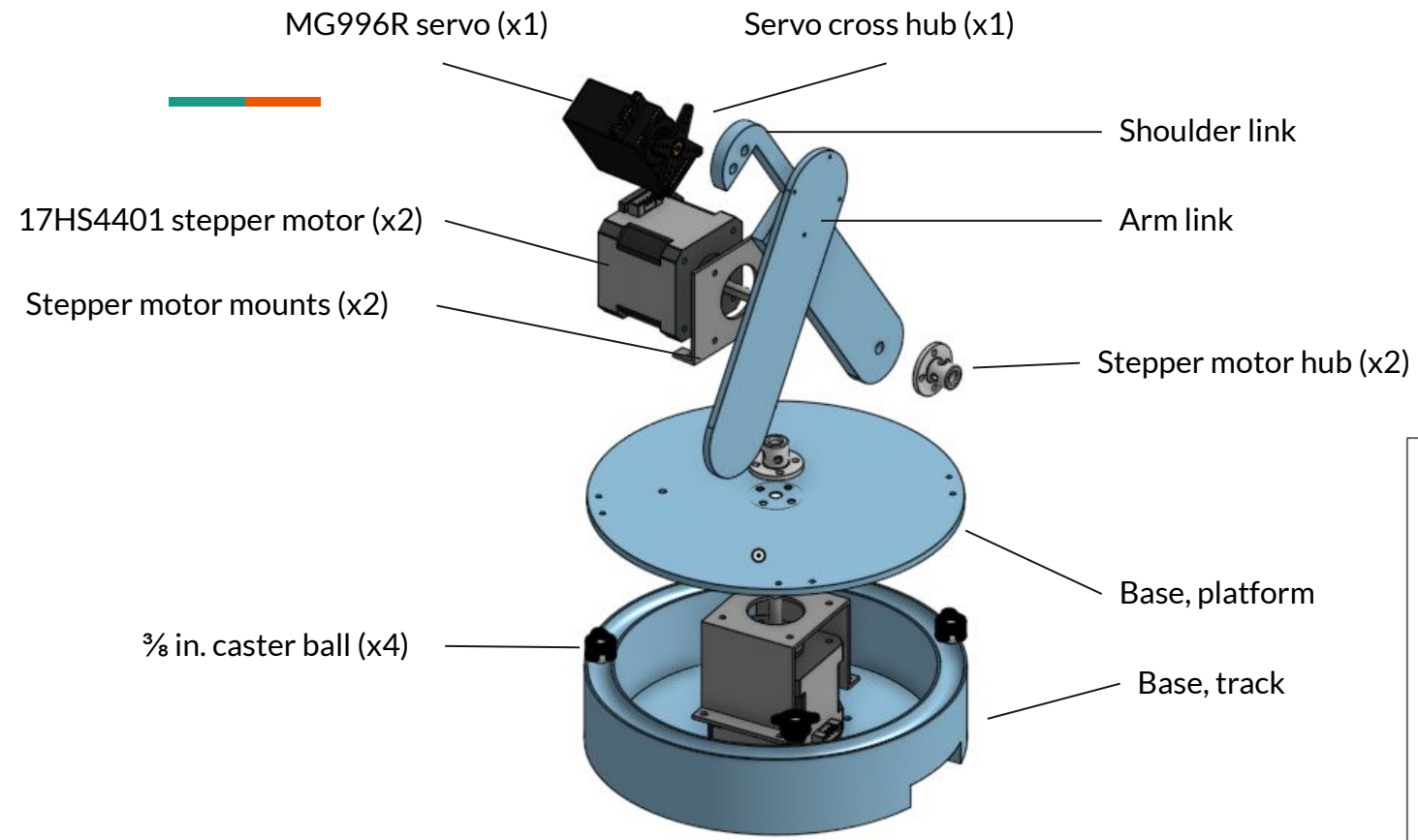
By: Jacob Choi, Wenchang Gao

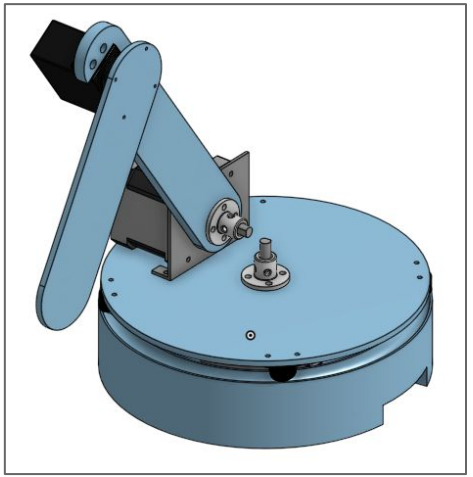


Initial Brainstorming



CAD Overview





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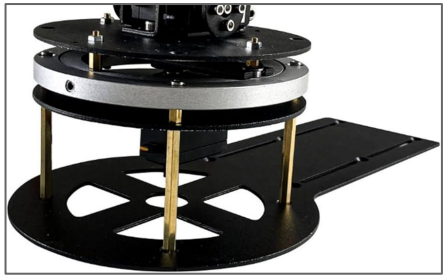
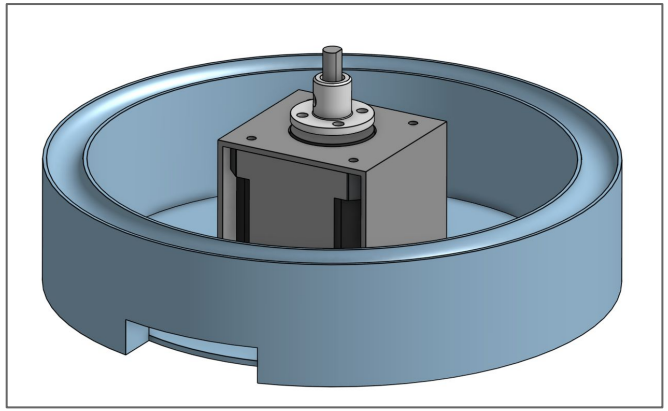
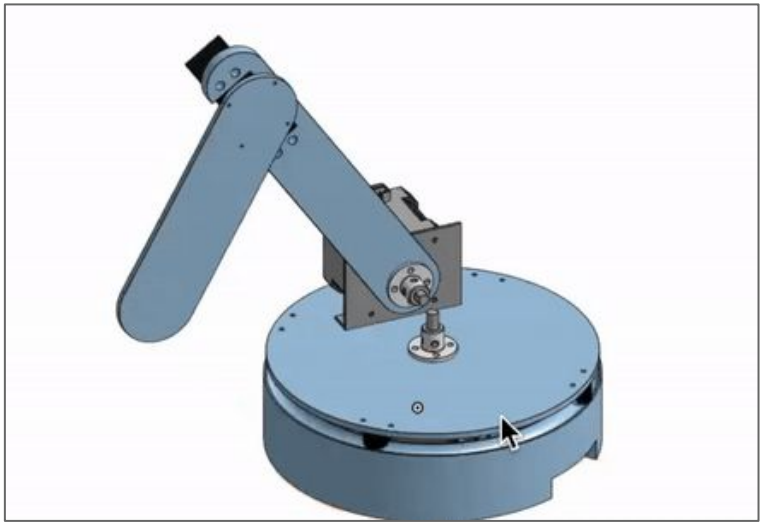
Rotating Base Platform | Creativity & Innovation



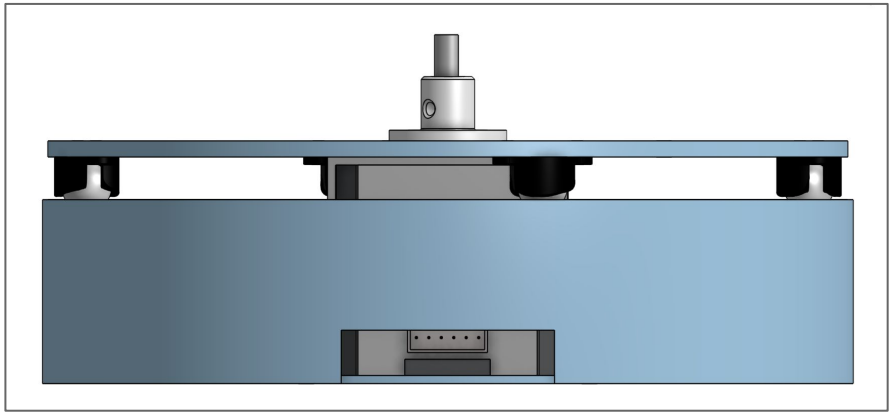
Rotating base mechanisms are expensive ([$106 on Amazon])



Track channel for alignment



Our solution: caster wheels



Caster wheels for rotation and to reduce load on stepper motor

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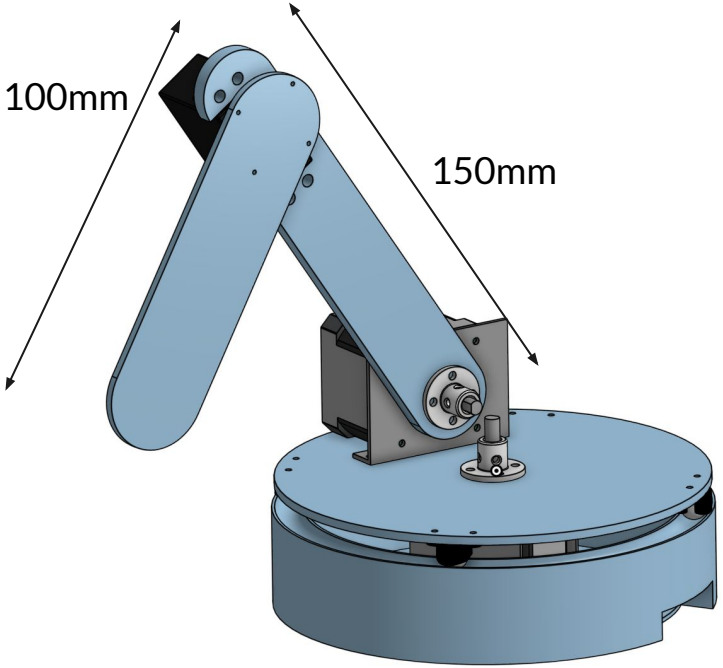
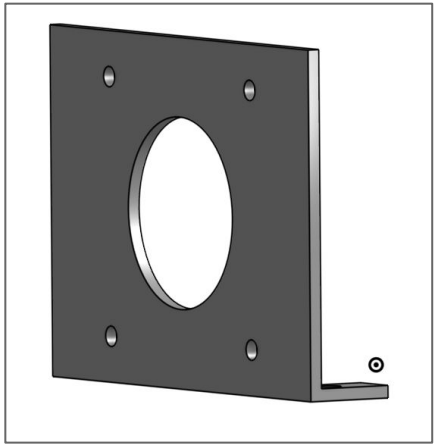
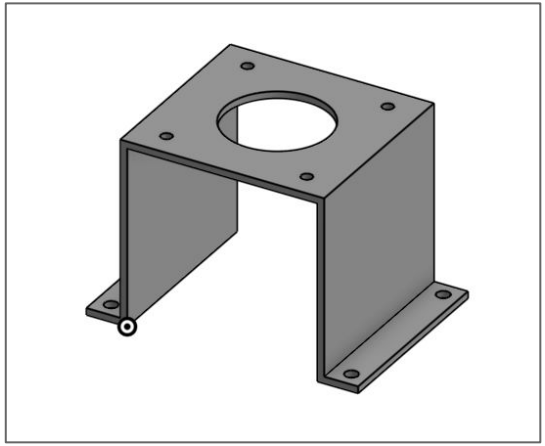
Mounts and Links | Engineering Reasoning



Base platform and track:

Laser-cut for time and **acrylic** for mechanical strength



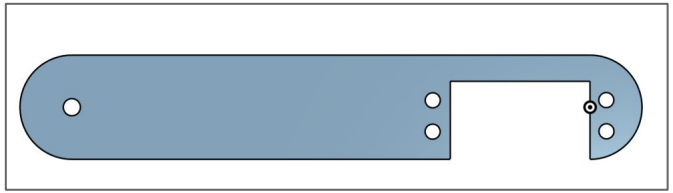


Stepper motor mounts:

3D-printing for geometry and time and **ABS** for compliance and strength

Shoulder and arm links:

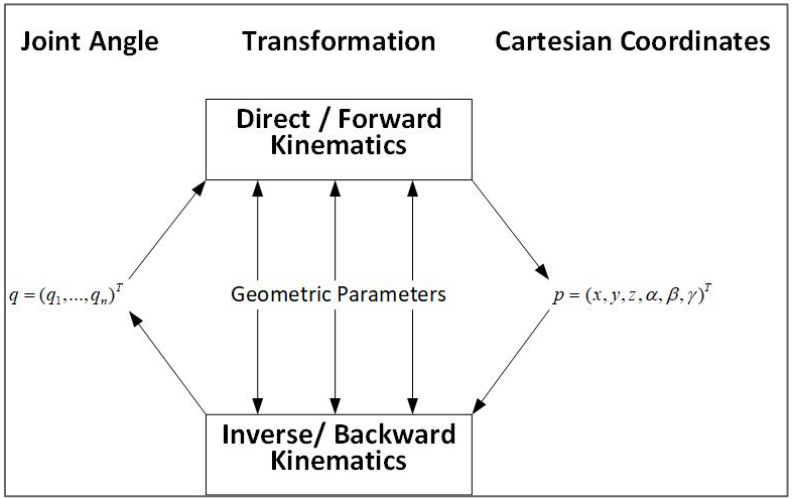
Laser-cut for time and **wood** for weight reduction



Wenchang Gao

Upcoming Work

Math component: inverse kinematics



Affected areas in mechanical design:

- Pen attachment mechanism
- Link dimensions
- Pen pressure

Thank You! Questions?

Sources:

Motor grabcad source

Motor shaft coupler grabcad source

Servo grabcad source