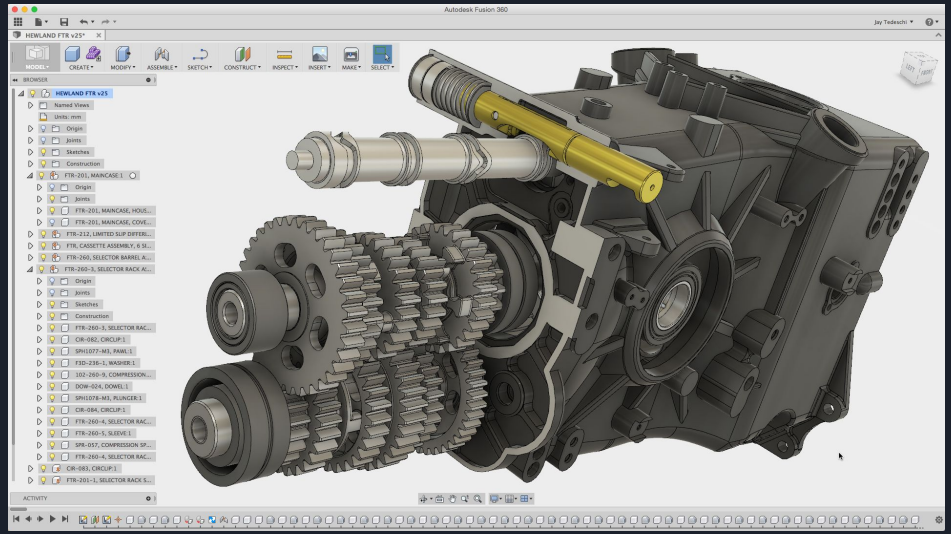
Robotathon Workshop #3

basic mechanical design & 3D printing

First: Install Autodesk Fusion 360

https://www.autodesk.com/products/fusion-360/students-teachers-educators



Logistics

- Charge your robot battery during office hours
- You can pay **dues (due today!)**:
  - At the end of the workshop
- When you can use kits:
  - Office hours (makerspace robotics room, 4-8ish weekdays)
  - Workshops
  - Other times only if everyone has
    - Unanimously consents to kit check-out
- **Checkpoints:**
  - Due by 11:59 PM the day of the following workshop
  - Checkpoint 2 (move a foot) due tonight for full points!

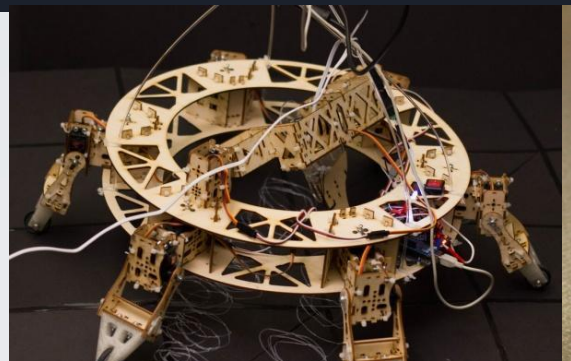
HOW TO BUILD YOUR ROBOT REALLY FAST

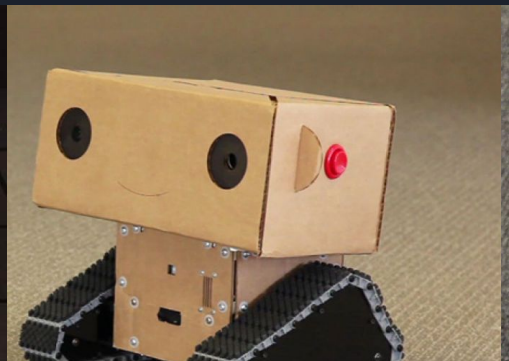
3D printed plastic

laser cut wood

cardboard

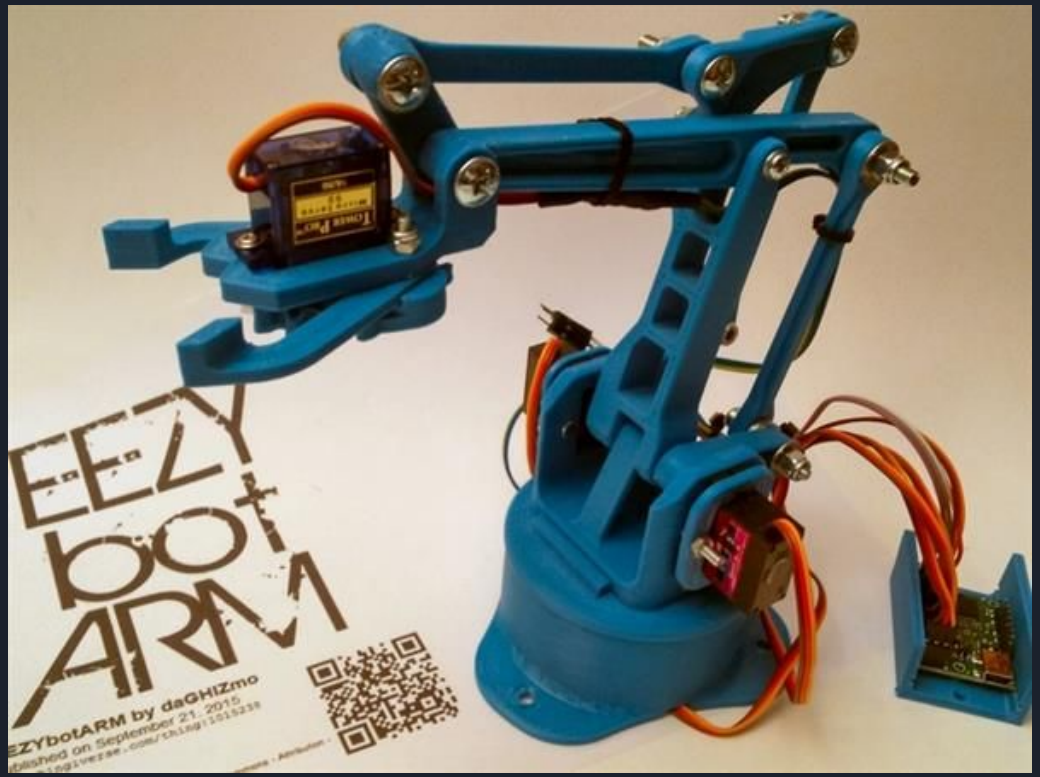
metal





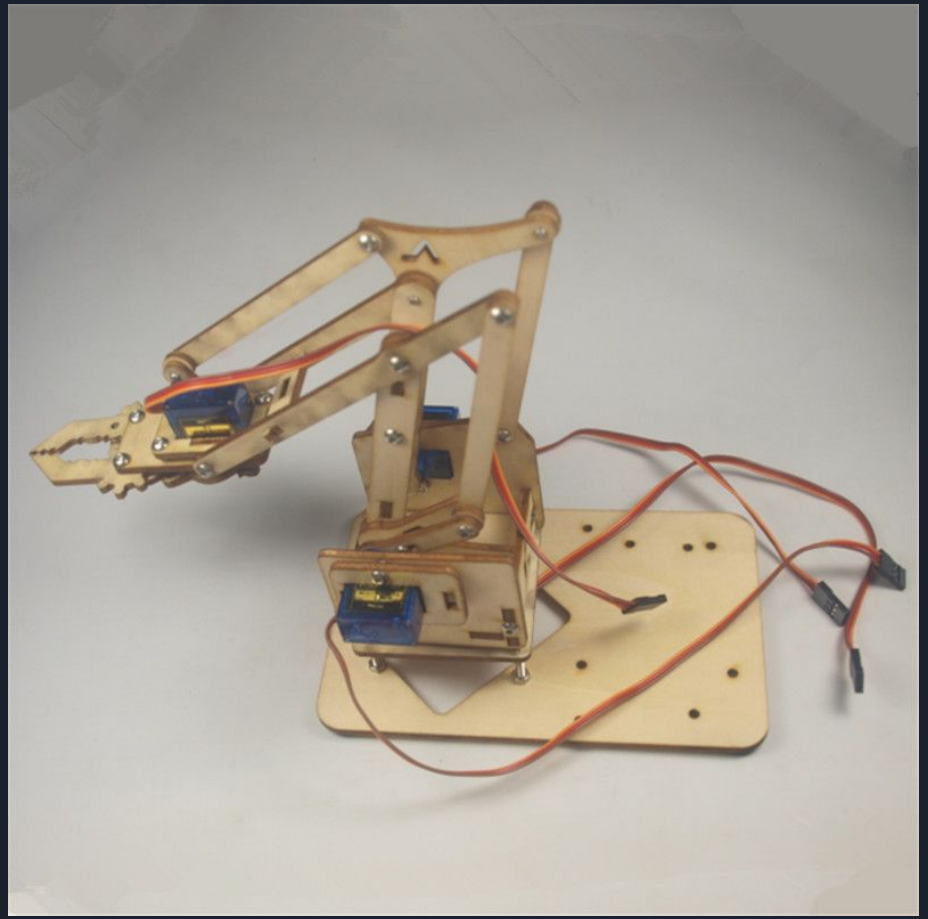
3D Printing

- Design your 3D part
- 3D print in makerspace
- bolt or glue together



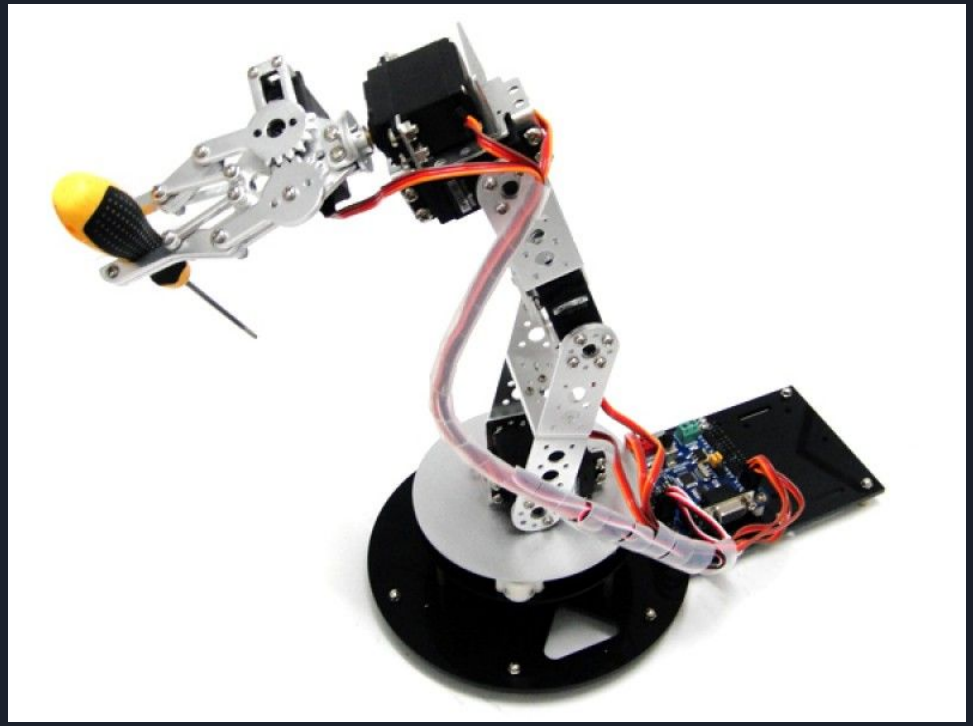
Laser cutting

- Design your 3D part
- Buy wood from makerspace
- Laser cut in makerspace
- bolt or glue together



Metalwork

- Buy metal or pre-made parts
- If you're in ME, cut parts in the machine shop
- Bolt together



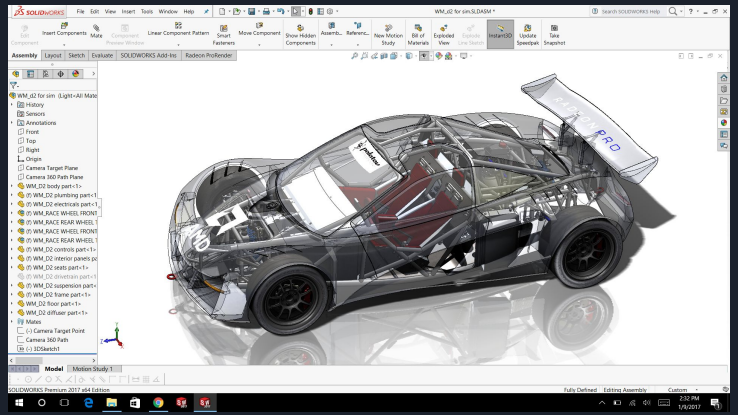
Makerspace

- Open 8-8 weekdays, 2-8 Sundays
- Open to all engineers (and non-engineers with their Robotathon teams can use tools checked out by engineering teammates)

- Check parts out from the front desk on the bottom floor
- 3D printing
  - free!
  - design your part, then ask student employees for help
- Laser cutting
  - buy wood at the front desk
  - sign up for training at front desk
- Hand tools, glue, tape, nuts & bolts
  - check out from front desk

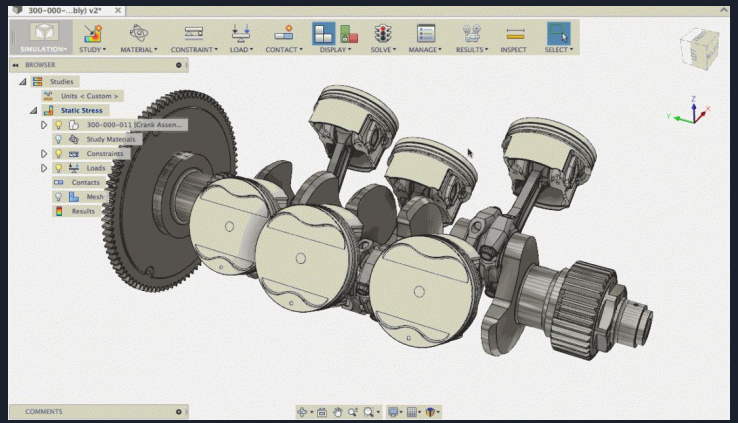
Computer-Aided Design (CAD)

- How to make 3D computer models
- Needed for 3D printing, laser cutting



SolidWorks

- used in industry
- expensive
- available on Cockrell Virtual Desktop



Fusion 360

- popular among hobbyists (and UT makerspace)
- free for students
- cloud-based: easy to work in small groups

Fusion 360 Tutorial!