

Design Process

How to take a robot from idea to reality!

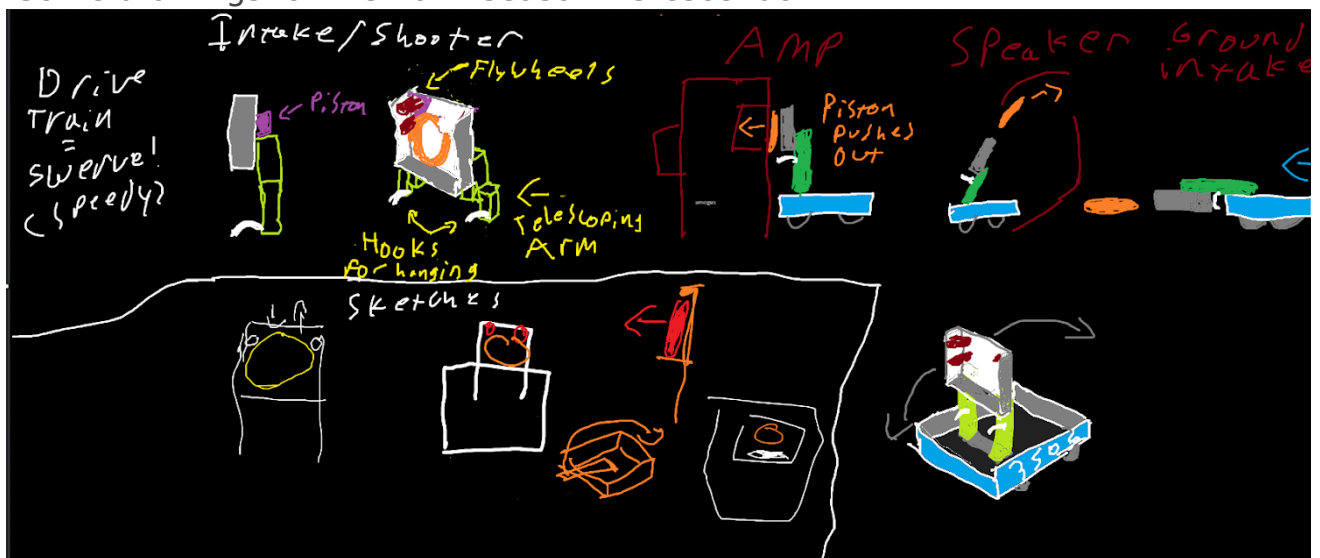
- [Making Prototypes](#)

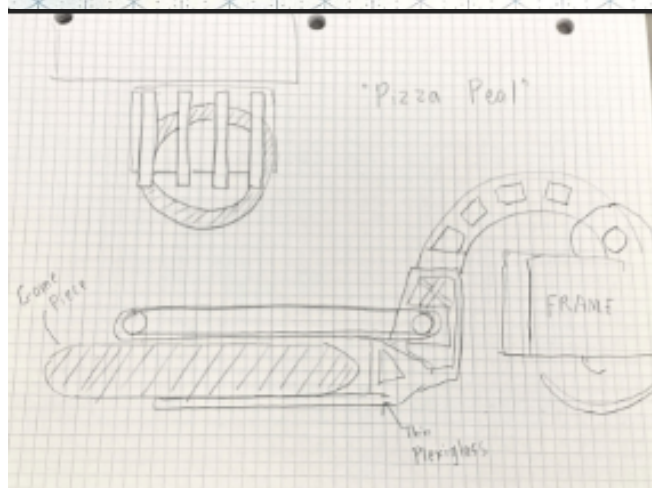
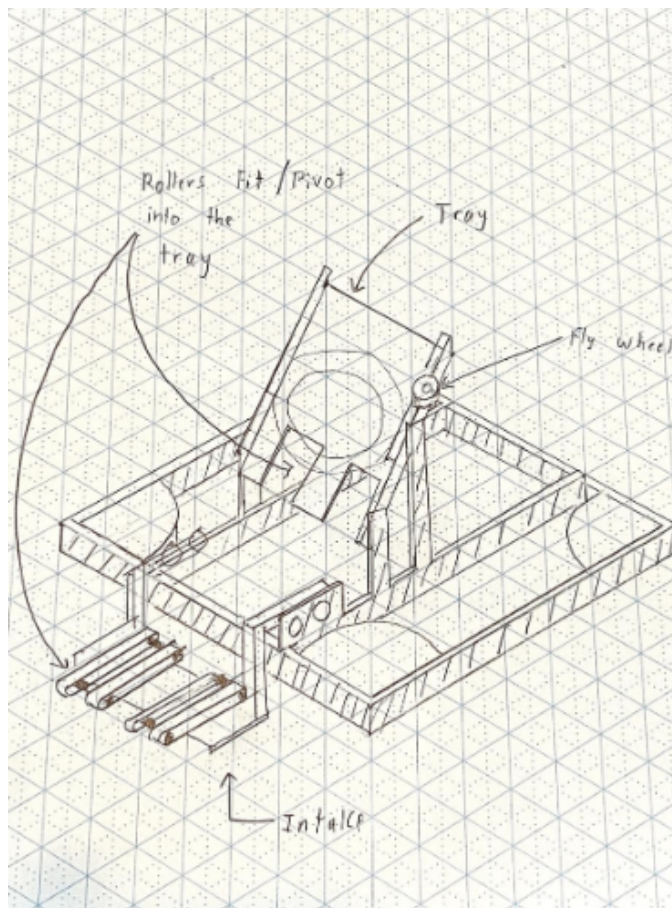
Making Prototypes

When making a robot, we never always land on the best idea first! It is important to try any ideas that seem reasonable before we rule out something and go with a robot archetype. So here is how to try them.

1. Sketch out ideas - Drawings are very important as a way to visualize your design and show it to others.
 - Keep it simple - No need to add pocketing and fasteners in your drawings
 - Add motor/piston positions (if applicable) - things don't move on their own, so leave a spot for motors.

Some drawings for the 2024 season - Crescendo





2. Cartoon CAD - making some basic CAD of what your prototype looks like lets you test the geometry of your idea a bit more in-depth than a drawing.
3. Choose a method to prototype - There are many ways to make a prototype! Here are the most common ones
 1. Polycarbonate with CNC - Most precise option, ideal for things that need a certain level of precision
 2. Wood - Quick and easy to work with, never final for robot, very rarely use wood on a final robot

3. 80/20 - Good for testing elevators because of sliding, and good for testing compression because of the quick adjustability.
4. Other Notes
 1. When making a shooter, the launch angle and speed are the most important, test from key areas of the field (e.g. bump-firing, firing from a field line, etc.)
 2. For later prototypes, make sure that your shooter can actually push your game piece in! It can't just use the force to levitate the ball into the flywheel.
 3. When making an arm/elevator/climber, use a calculator like JVN Calculator rotary mechanism or [ambcalc](#) mechanism ratio to find the optimal gear ratios.
5. Some of our previous prototypes:

<https://www.youtube.com/embed/wOWX4-BQV0Y?si=7gY2p9RYhF-5BHcO>

<https://www.youtube.com/embed/yk53Y2o-L1k?si=TgACv3HLwt87NCLB>