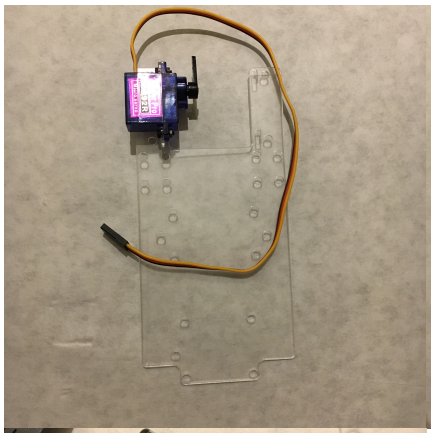
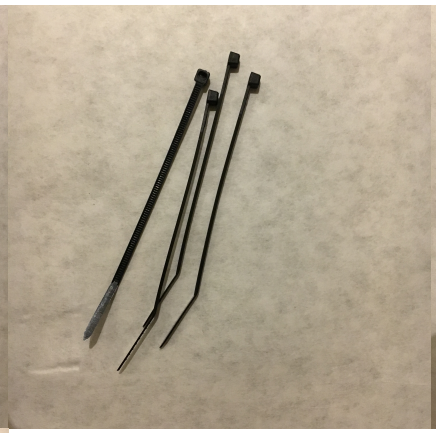
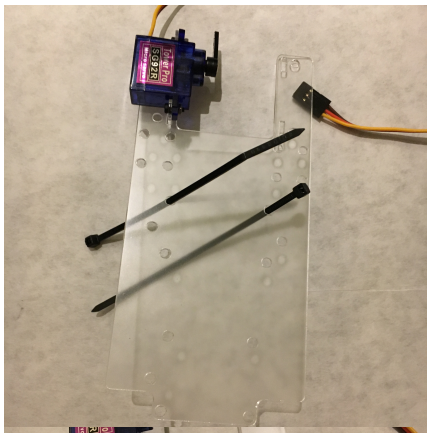
Attaching the battery holder

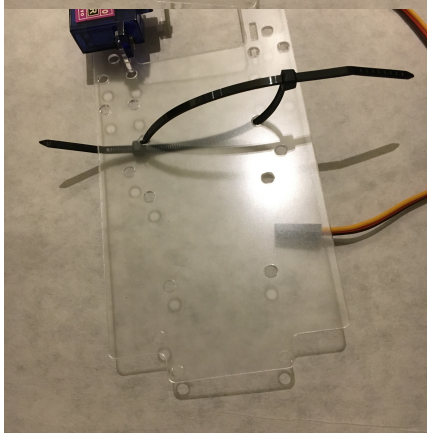


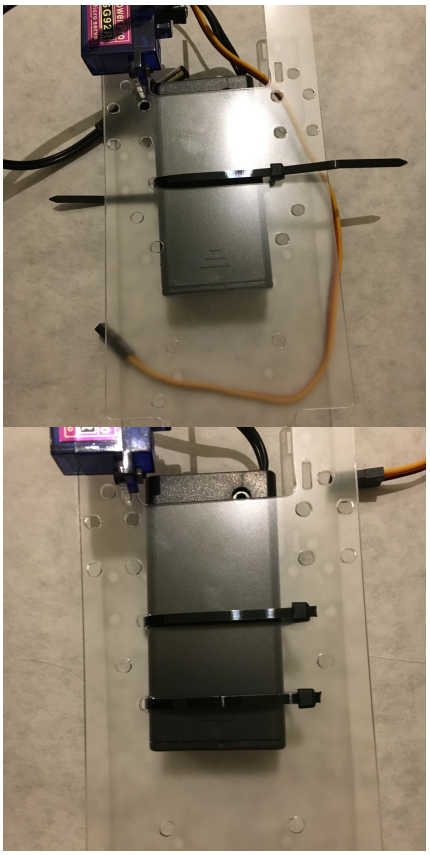


Start with the chassis (with attached servo arm), four zip ties, battery holder and 9V battery (battery not pictured). Note that the battery holder comes with a screw that we do not need (see left). Set aside the screw for reuse. Insert the 9V battery into the battery holder and close the door.

Insert zip ties in opposing directions in the upper battery holder mounting holes. Take care to insert them into the correct holes. The image on the right shows the correct holes.
Connect the zip ties together as shown in the bottom right photo. Pull them just enough to hear a few clicks on each side.





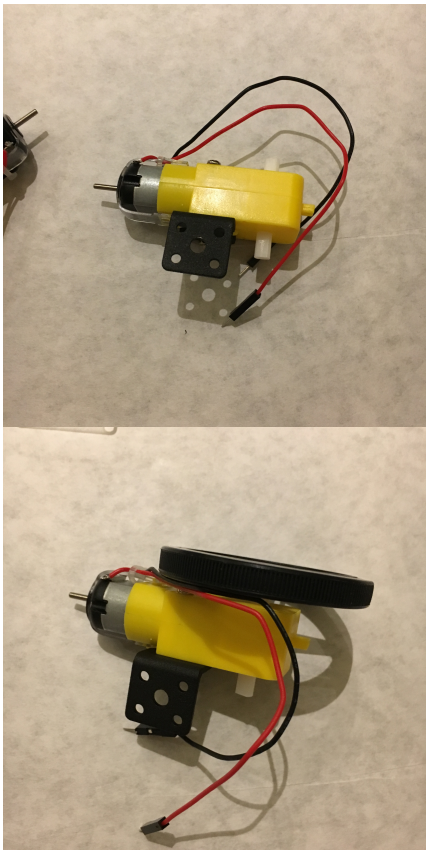


Insert the battery holder and use it as a guide to further pull the zip ties. Try to pull an equal amount on both ends, and pull them as tight as you can. It will still be possible to remove the battery holder.

Repeat the process for the lower battery holder mounting holes. Use scissors to trim the excess zip tie length.

Drive motor assembly

Start with two wheels (one per bag), a pair of motors (two per bag) and two motor mounts (one per bag). Note that each of the wheels come with a screw that we do not need. Set aside the screws for reuse. Attach the mini rubber tires to the wheels.



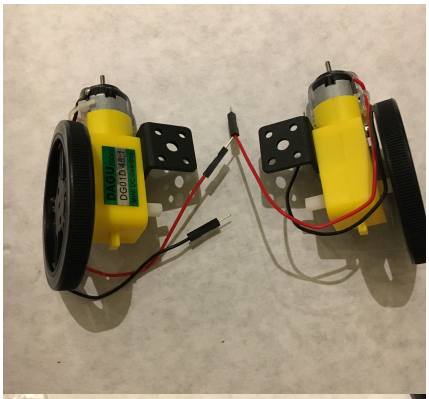
Use the long screws to attach the right motor mount to the right drive motor. Note the following which are very important:

- The wires are on the opposite side of the mounting bracket.
- The sticker on the motor (which you can't see in this picture) is on the opposite side of the mounting bracket

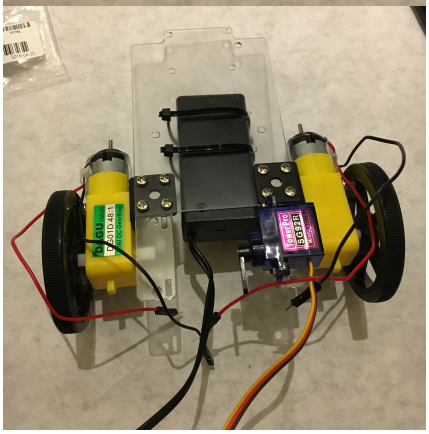
Attach one of the wheels to the right drive motor by pressing them together as far as you can. Note that the wheel is on the same side as the wires.

Perform the same process for the left motor and wheel. Note the following about the left motor and wheel:

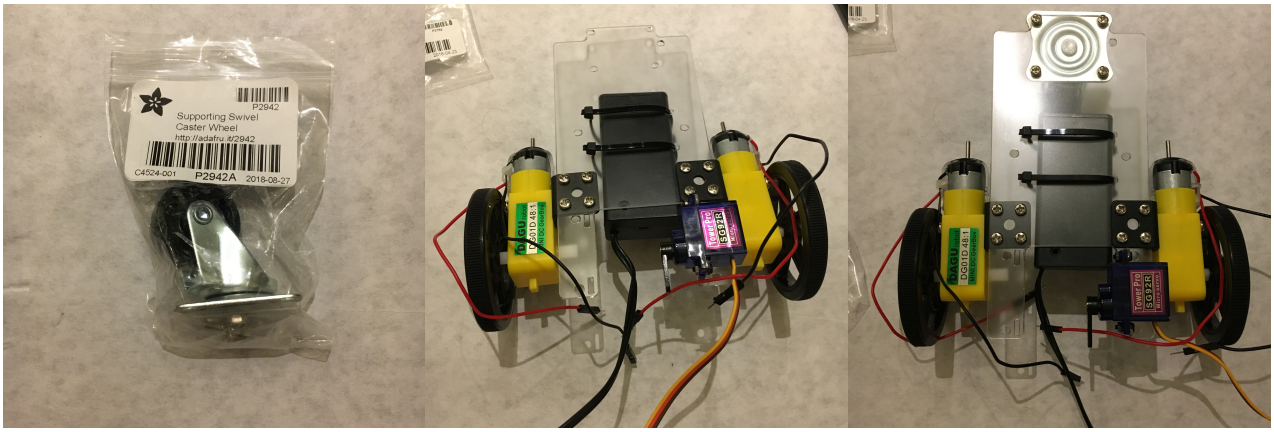
- The wires are on the opposite side of the mounting bracket.
- The sticker on the motor is **on the same side** as the mounting bracket



Attach the drive motors to the chassis using the rest of the screws from the mounting bracket bags.

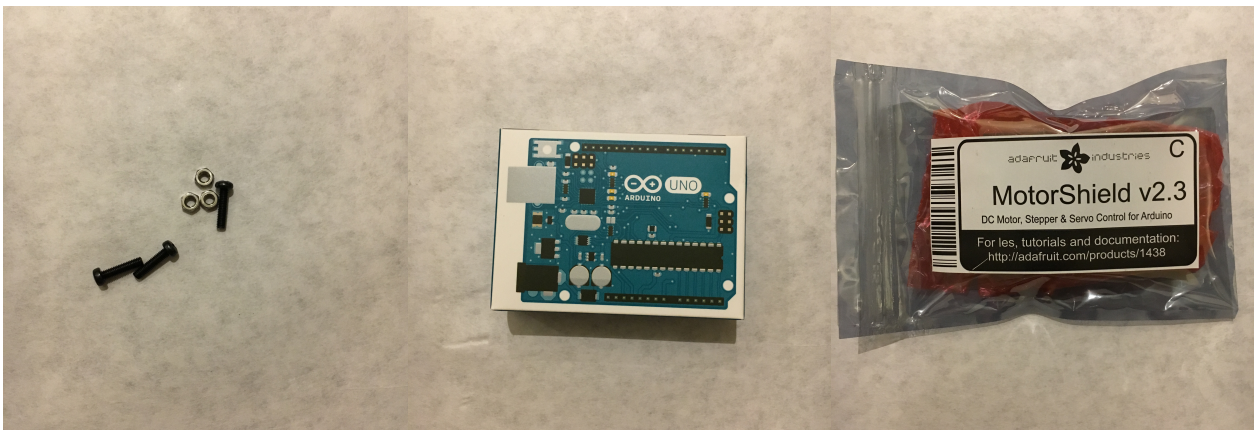


Mounting the caster wheel



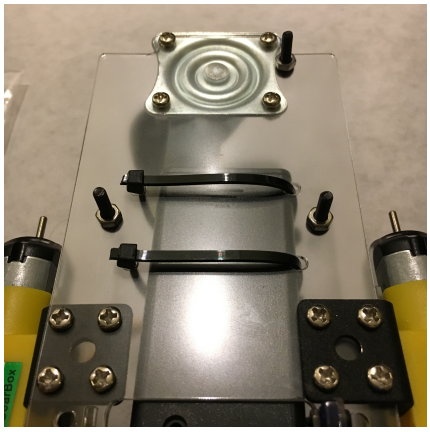
Start with the caster wheel (left) and partially assembled robot (center). The caster wheel bearings need to be lubricated with a few drops of WD40 (not pictured). Gently spray into the bearings and rotate it around a few times. The caster wheel bag contains 4 screw and nut pairs. Use them to attach to the front of the robot as shown on the right.

Assembling and mounting the board stack



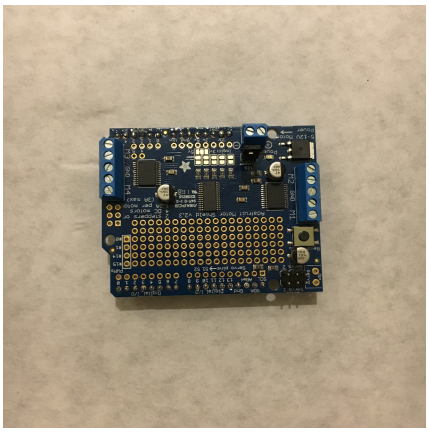
Start with 3 M3 screw and nut pairs (left). These do not come in individual bags - we have a couple of larger bags full of them. You will also need an Arduino (center) and motor shield (right).

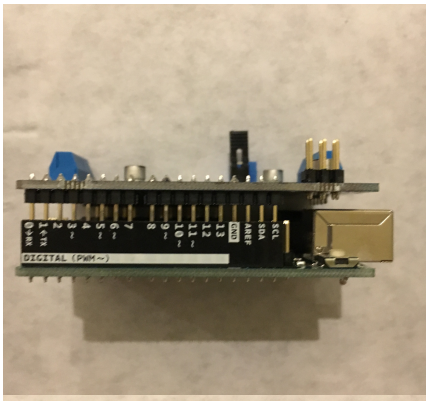
Attach the screws and nuts using the three mounting holes as shown in the image to the right. Note that the threaded side of the screw is facing up.

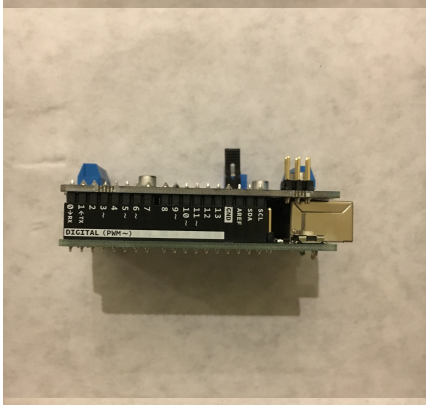


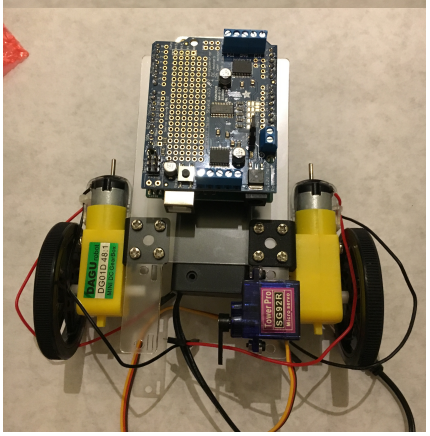
Open up the Arduino box and remove four items. Starting in the top left and moving clockwise, we have:
1. Plastic board carrier. We do not need this right now - place it back in the box for reuse.
2. The Arduino board. Keep this for the next step.
3. A sticker set! You can keep these if you would like. If you do not want them, return them to the box for reuse.
4. An instruction booklet. Recycle this.

Remove the motor shield from the electrostatic bag and bubble wrap. The pink bubble wrap can be recycled. The electrostatic bag should be set aside for reuse.





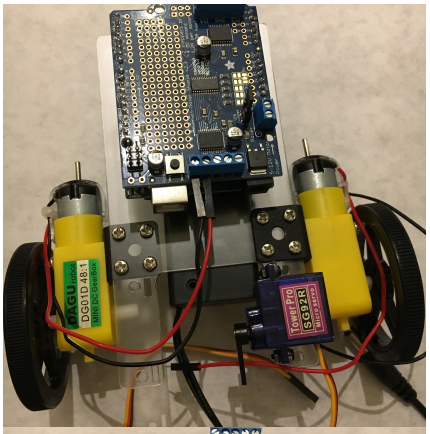




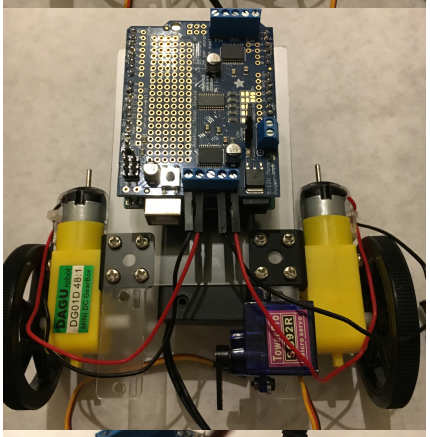
Align the Arduino board and motor shield so that the pins on the motor shield align perfectly with the sockets on the Arduino. Press down until the pins are fully inserted.

Place the board stack onto the robot using the three screws as a guide. Note that the board stack will rest on the top of the robot and will not be secured with further nuts.

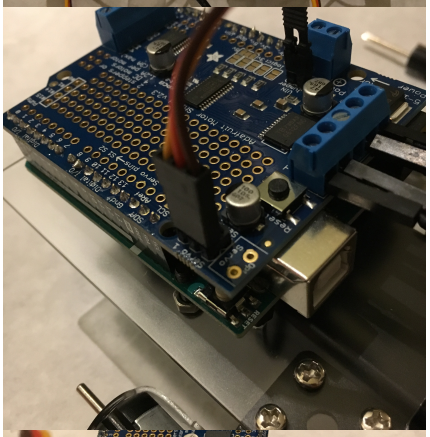
Wire connections



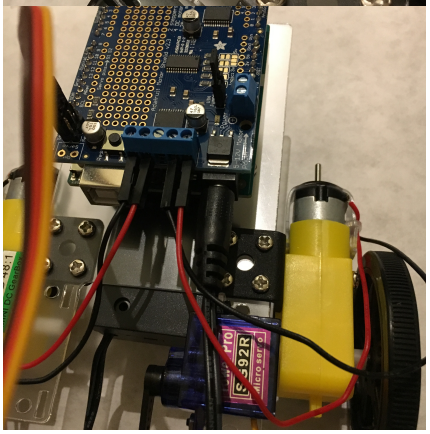
Connect the left drive motor to the motor shield by inserting the pins into the screw terminals and screwing them down as far as they will go. Note that the black lead goes in the left-most position, and the red lead goes next to the black lead.



Connect the right drive motor to the motor shield. Note that the red lead goes in the right-most terminal and the black lead goes next to it. When done properly, there is an empty screw terminal between the two motor connections.



Connect the servo to the motor shield in the left-most position (labeled “Servo 1”). Note that the brown wire is in the position closest to the rear of robot (where the servo and drive motors are).



Connect the battery pack to the barrel jack on the Arduino. This completes the assembly. Bring your completed robot over to Hannah/Evelyn for testing