Building a Swarmie

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# Chassis Assembly

The following is needed for chassis construction.

Tools:

* Phillips screw driver. – M3x6mm screws
* 2mm hex key. – M3x4mm screws

Parts:

* 16 M3x6mm (black) screws. – Packaged with the chassis kit.
* 8 M3x4mm (black) screws.
* 2 pairs of black brackets. – Packaged with the chassis kit.
* 4 DC motors.
* Laser cut bottom plate.
* 3D printed battery base.
* 3D printed battery brace.
* 3D printed battery cross strap.

## Brackets

Using eight M3x6mm screws, attach all four brackets together as seen below.

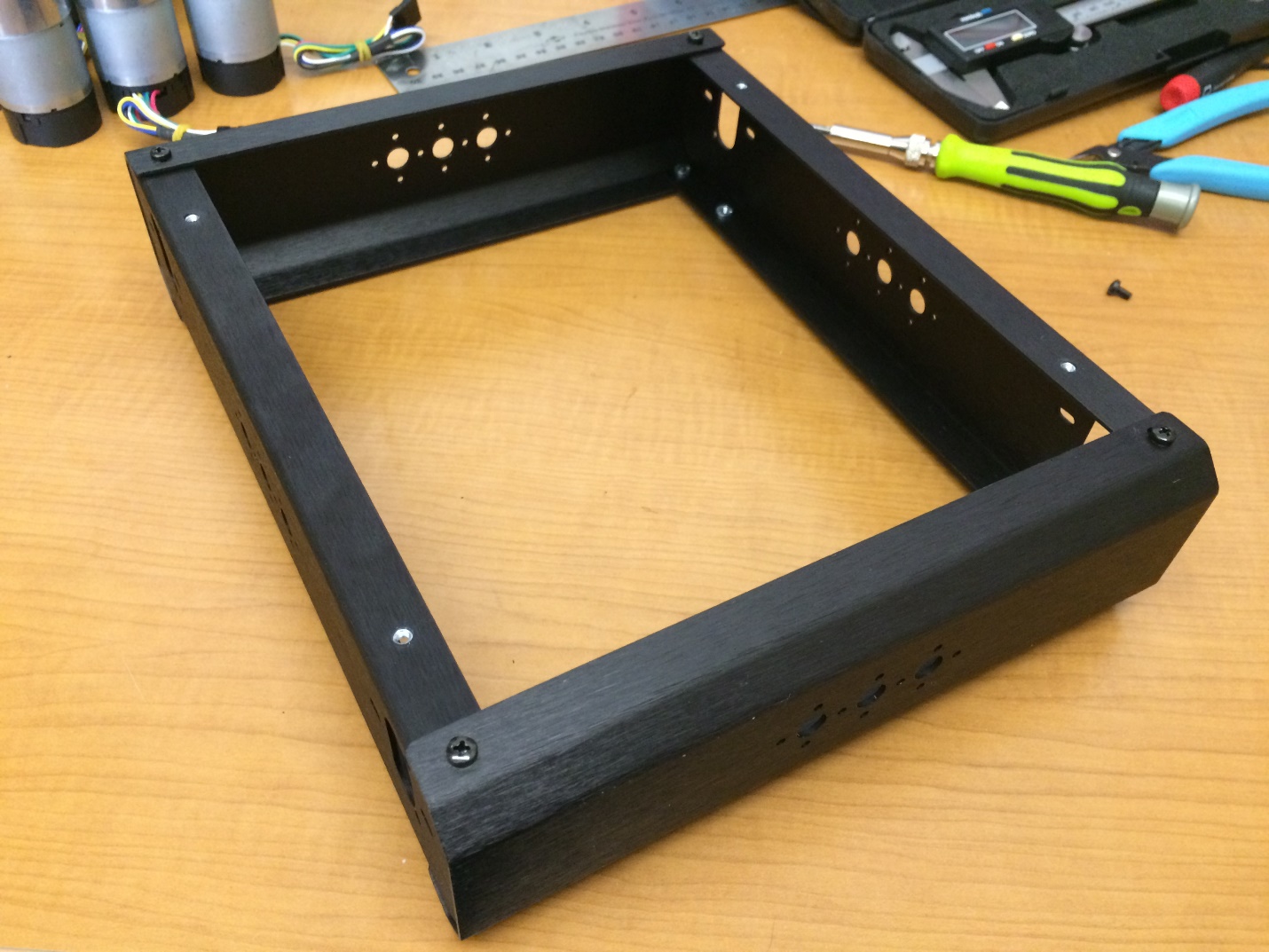


Figure 1: Chassis brackets fully attached

## Motors

Attach motors to mounting holes using two M3x4mm screws per motor. The motor shaft should be towards the bottom of the chassis. See below for detail.

[Picture of close-up motor inside chassis]

[Picture of all four motors attached in chassis]

## Tire Assembly

Wheel assembly instructions have been adapted from Lynxmotion’s instructions found here: <http://www.lynxmotion.com/images/html/build007.htm>

1. First use a utility knife, or similar, to carefully remove any imperfections on the inner part of the rim. This will make things much easier later on.
2. Pull one side of the tire out, so that it protrudes, like in the image. Insert one side of the rim. It helps to insert at an angle in the middle, where the opening is the largest. Rotate the rim slowly, while pressing it in, to help coax it into place.

Figure 2



Figure 3

1. You should end up with the tire and rim looking like Figure 4.

Figure 4

1. Pull out the side of the tire again, so that it looks like Figure 5.



Figure 5

1. Gently press and rotate the rim into the tire. You want to end up with the rim almost fully into the tire with the bead still sticking out, as in Figure 6. If there are any imperfections leftover from Step 1, then it may be difficult to pass the tire over them.

Figure 6

1. Quickly press the rim into the tire from both sides. The bead should now be completely in the flange. This step may require several attempts.



Figure 7

1. Flip the tire over. It should look something like Figure 8.

Figure 8

1. Almost half the bead is in the flange. Just hold that side in and pull the rest of the bead away from the center, and it will retract back into the flange.



Figure 9

1. A completed tire is shown in Figure 10.

Figure 10

## Bottom Plate

[Write about attaching battery base and battery]

[Waiting for newest version]

# Top Plate Assembly

The following is needed for constructing the top plate.

[Tools list]

[Parts list]

[This section includes instructions to attach all 3D printed parts to the top plate as well as electronics (ie. PCB, US, IMU, GPS, switch, buses, NUC, camera)]

[Waiting for newest version of the top plate]

## 3D Printed Parts

[Where and in what orientation to attach]

## Ultrasounds, Camera, IMU, GPS

[Will mostly include pictures of attachment. The US mounts require some assembly as well.]

## PCB, Switch, and Bus Connections

[Great stuff]

## Cover Plate Assembly and Attachment

[Current version of the cover plate is in stock]

# Fully Assembled

[Include information about and pictures of the fully assembled Swarmie]