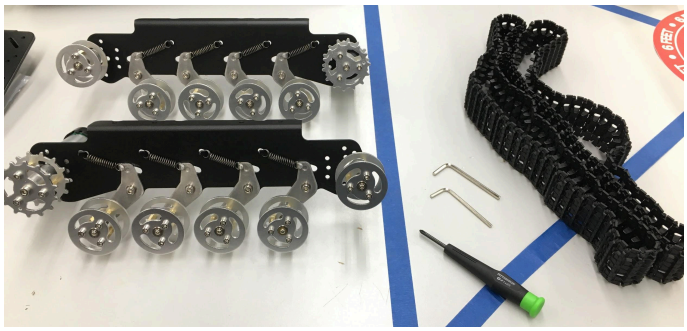
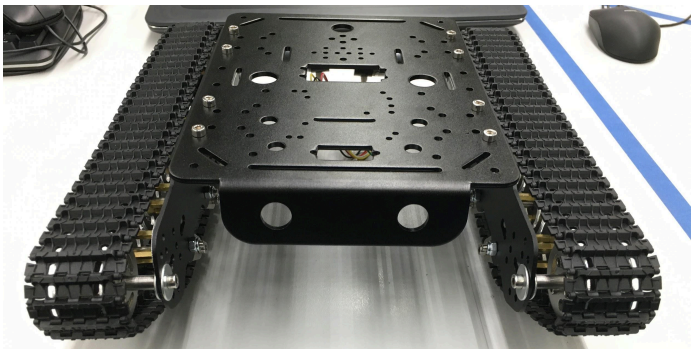
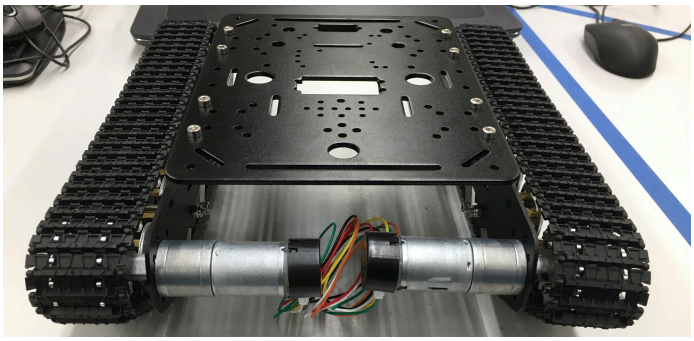
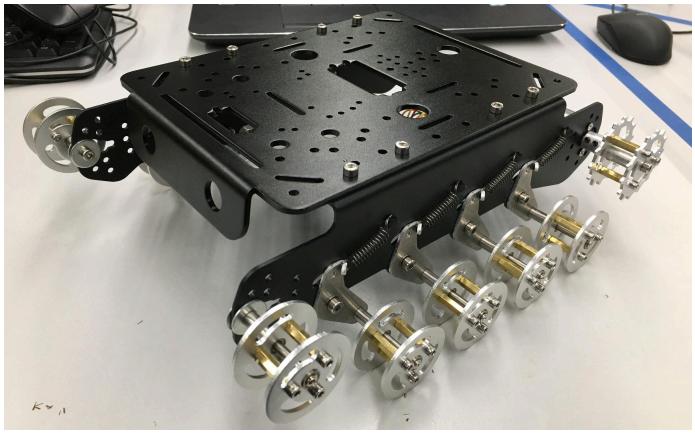
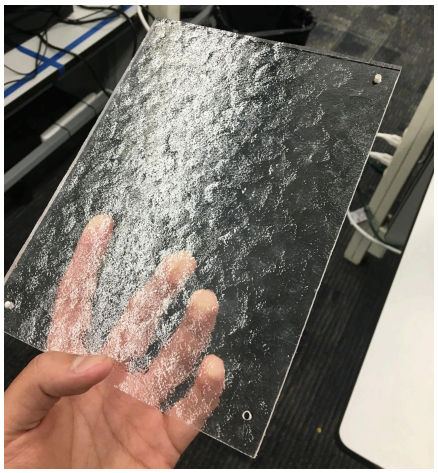
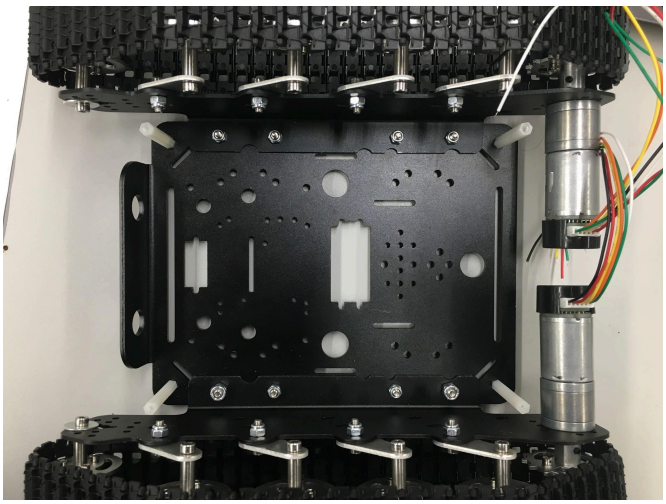
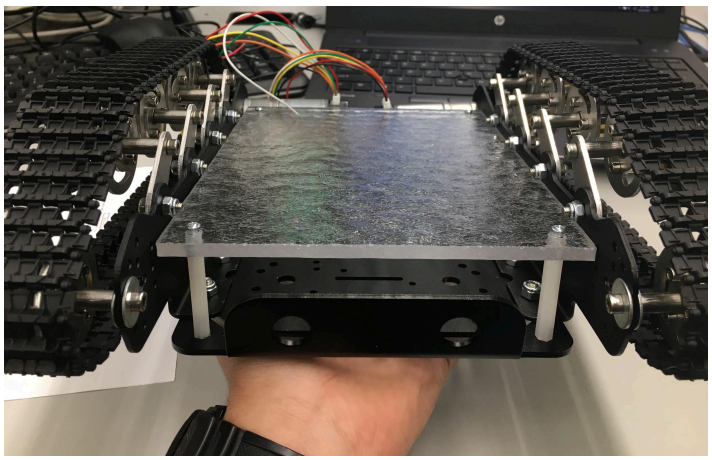
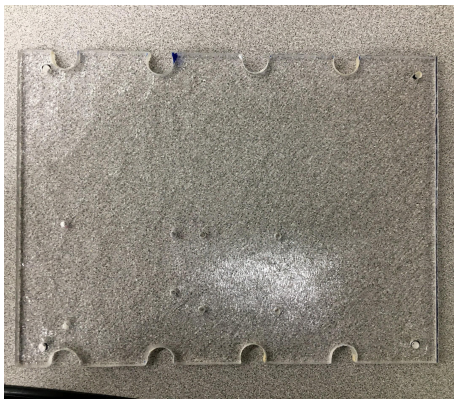
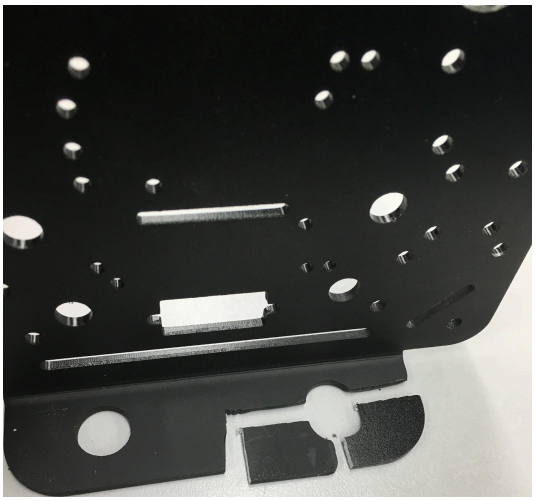
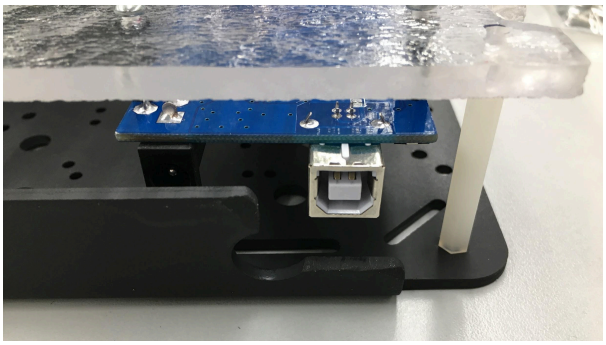
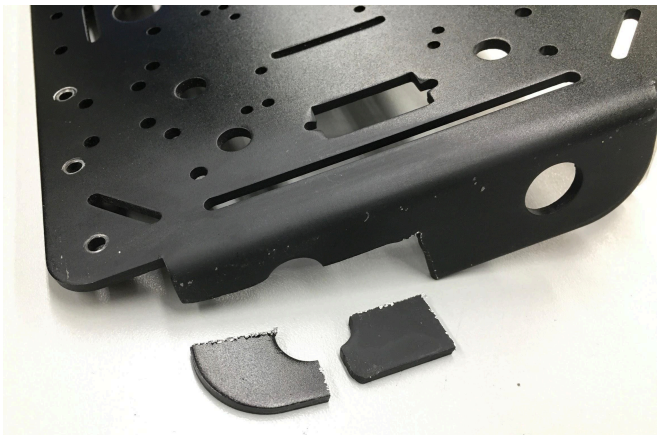
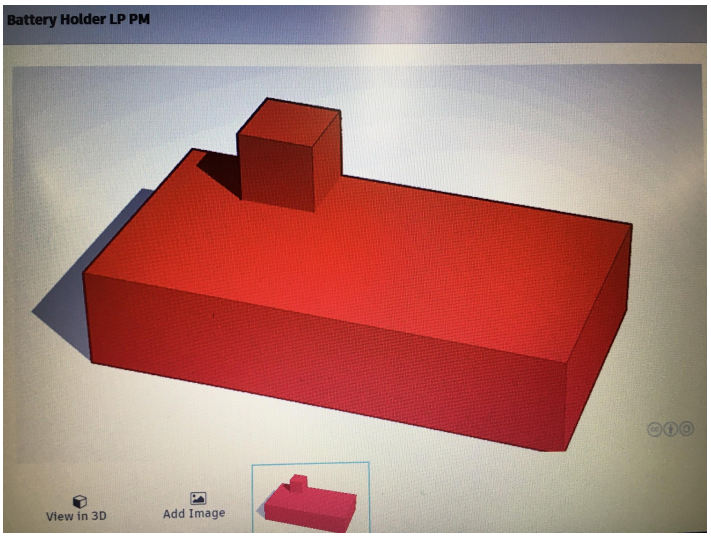
Robot Club Project

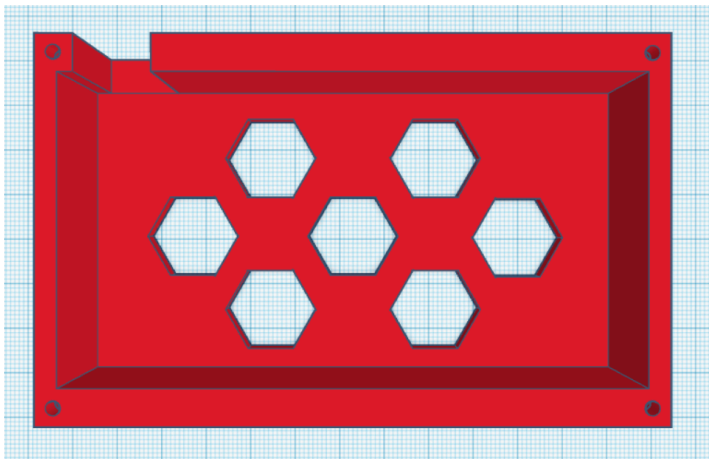
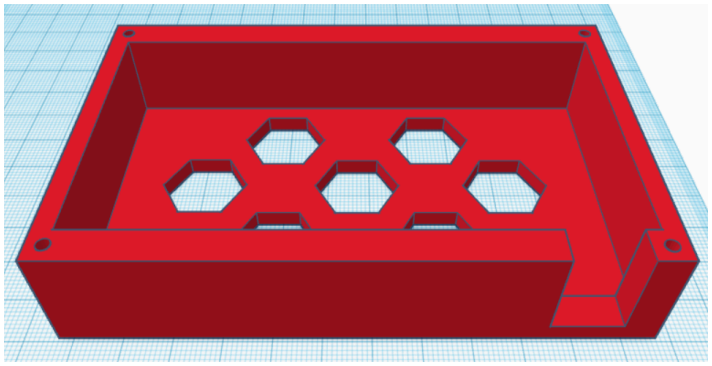
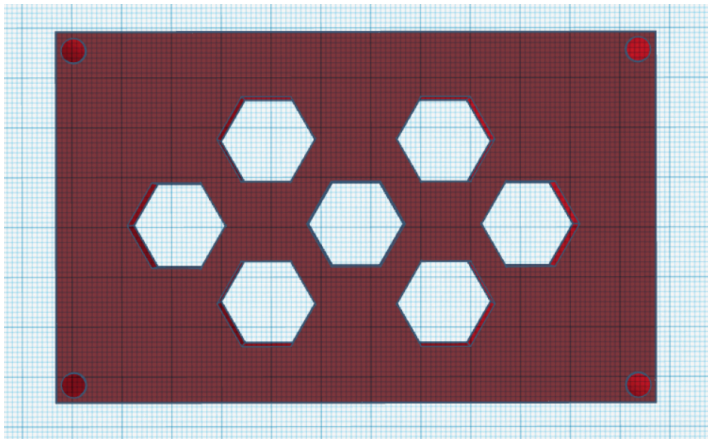
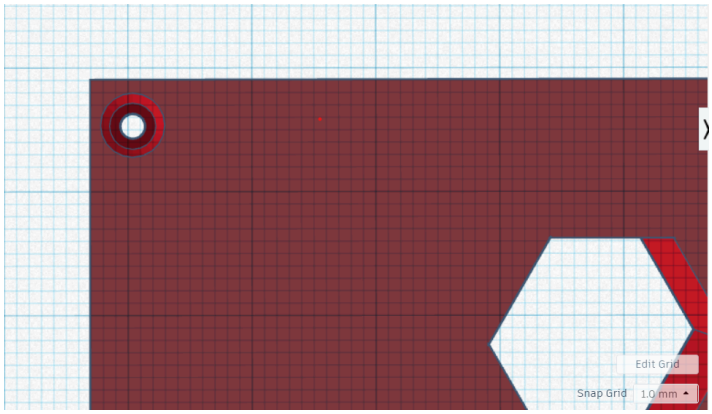
Date	Work Done	Notes
3/23/2021	• Picked club project, the Tank Chassis • Worked on tank chassis assembly, assembled most of the bearing wheels, bearings and all 	• Perhaps mounting a multi-axle robotic arm would be interesting... • One of the wheels' bearing rods had loose threads, so the screw wouldn't grip • I might need to find a slightly thicker screw, or as Burnham suggested, use some sort of compound to hold the screw in place
3/30/2021	• Finished assembling the bearing wheels, along with the two driving wheels • Installed the bearing wheels on the side plates using the suspension pieces • Finished assembling the suspension and attached the shock springs, completing the shocks • Installed one of the motors on one of the side suspension plates	 
4/13/2021	• Attached the other motor to the other suspension plate • Mounted both suspension/wheel plates onto the main chassis plate • Installed the tank treads onto the bearing and drive wheels	• The kit left put 2 of the needed nuts to hold down the screws for the suspension/shock plate mounting • I asked Burnham for some spare bolt nuts, and he kindly found some I could use • The tank treads were unnecessarily difficult to install onto the wheels • I nearly stabbed myself using a needle tool to puncture out the pins holding the treads together

	  	• I had to quite literally WRENCH out the pins using the pliers, fortunately I didn't bend any of them • Once that was done, I had to use the full force of my hands to hold the ends of the treads together so I could slide the pin back in and connect them together  
4/20/2021	• Burnham suggested I mount an Arduino and power module onto the bottom of the chassis, since there is a lot of open space • To do so, I needed to cut a piece of plastic with an area fitting the underside of the chassis • I measured it out using a L-shaped straightedge ruler, marking it with a sharpie • I went to the metalworks lab to use the metal saw, and cut out the plastic piece • Back in the Mechatronics lab, I used the wood drill to drill some holes into the plastic mount board • I was given some plastic stands and screws so that I could attach the plastic mount board onto the chassis underside	

		
4/22/2021	• I attached the plastic mount board onto the underside of the tank chassis • Now knowing that it fit, I mapped out the placement of the Arduino, Power Module, and Battery Pack on the board and drew the screw holes • I used the wood drill to drill out the screw holes • Burnham gave me some plastic stands and screws to attach the components to the board • I tried them out and they fit just 	• Once I attached everything, I realized that there was no way to mount the board back onto the stands on the underside of the chassis, because the components got in the way of the hanging lip on the front of the chassis • The metal lip prevented the board with the attached components to be mounted on the stands • I ended here, I am not sure how to go forward with trying to mount everything on the bottom of the chassis 
4/27/2021	• I realized that instead of trying to mount the board by trying to fit it in through the front, I could just fit it vertically on the underside of the chassis • I went and cut out some indents on the mounting board so that the shock screws wouldn't get in the way	• Since the drill bit was so large, it needed a guide so that just an indent could be cut out • I cut out smaller holes in the marked places to use as guides for the larger bit • Once that was done I could drill through, but the board still needed to be clamped down because the large bit jolted it around too much

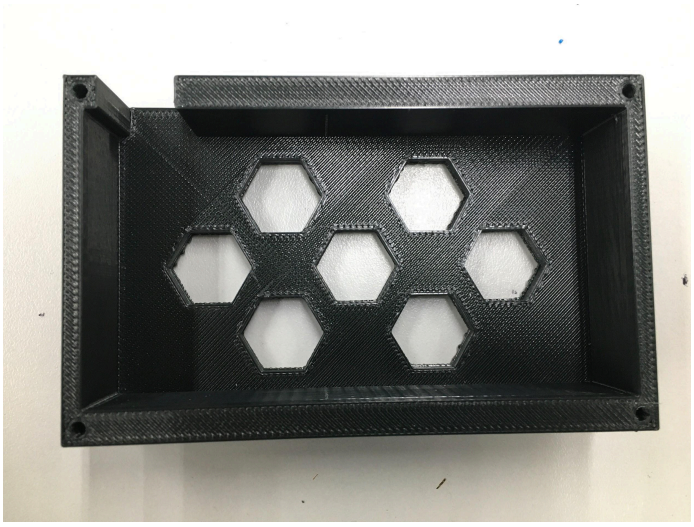
	• Once that was done, the board could fit without issue, now I just need to make sure once everything is mounted the board still fits  	when cutting  
4/29/2021 - 5/4/2021	• Having finished cutting out indents into the board, I mounted the arduino and power module onto the board and attached the whole thing to the bottom of the chassis • After having done that, I noticed that the lip on the main chassis plate got in the way of the arduino cord ports, preventing anything from being plugged into it. • I took the plate to the MetalWorks lab and used their metal saw to chop off half of the lip • Once that was done the board and mounted components could finally be placed without disturbance	• I was an idiot and didn't notice that there were TWO ports on the Arduino, so I had to make an extra trip to the metal saw to cut off more of the lip 

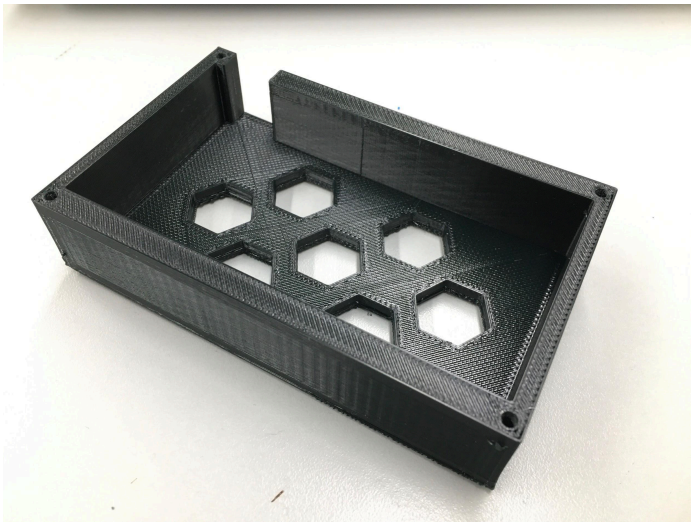
		
5/6/2021	• Now that the mount board was finished I could finally move onto the battery case • I started out by measuring the space at the end of the board, below the Arduino and Power Module • I also measured the battery itself, and added a little extra to each side so that it could have some wiggle room • Once I had the general measurements I went to TinkerCAD and started designing the case • I made two rectangular boxes: one that had the measurements of the box (which was going to be a hole), and the other that was going to be the outer wall surrounding the space of the box • I aligned both boxes and started extending the outer walls a bit • Once that was done I started on the screw holes • I made an screw head hole and a thread hole so that the screws had a countersink • I aligned everything and grouped it together, but unfortunately the case was too large for the printer to print (Maximum: 120mm x 120mm), so I had to go back to the drawing board	• I need to orient the countersink so that I can properly attach the case to the board • I made it so that it's like a "net" for the battery and it hold it in place with screws ABOVE the battery, because if they mounted the case from the bottom, the battery would fall out • When going to redesign the case to fit, I tried to add some sort of "clamps" to hold the battery from falling • I only got to this pathetic block before time ran out • I forgot to take more photos before completely redesigning it, whoops 

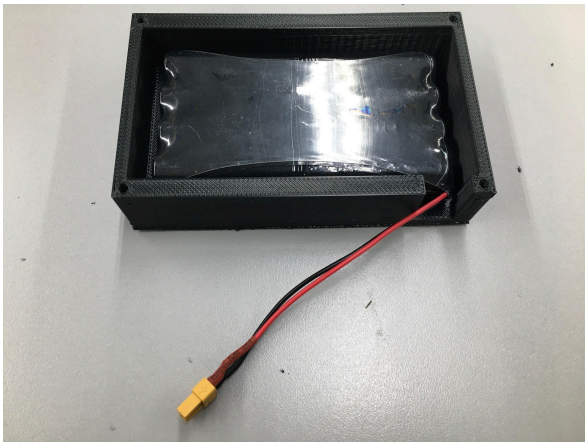
5/11/2021	• Back for round 2, I had to shorten the case so that it could only be 120mm wide and 74mm long, because I was constrained by the available space on the board, AND by the maximum printing size of the printer • I reduced the side walls and floor to be 4mm thick, which was the maximum thickness I could print them to be that was within the printer's capabilities, as well as the minimum thickness they had to be so that they weren't fragile • I had a bit of room on the top and bottom walls, so I increased them to be thicker, but still having the total length of the case within 74mm • I had to decrease the size of the screw holes and countersink because they were too large to fit inside the wall, and they needed to be small enough to both fit inside the walls and not interfere with its thickness so that the wall surrounding the hole wasn't too thin • Once I got that down I cut a sort of vent into the bottom of the case so that the battery wouldn't heat up too much (I made a hexagonal shaped pattern for purely aesthetic reasons) • I thought I was completely finished and went to print the final design, but Burnham stopped me and pointed out a crucial piece of the design I had left out: the wire hole • I cut out a segment of the wall so that the battery wire could fit through, and I made sure it was level with the floor of the case • Now with the FINAL final design, I sent it to be print; it took more than 4 hours, so looks like I will have to see it next class	   
5/13/2021	• I inspected the newly printed case and the battery fits just fine • The holes had support material filling them	• Next time I will drill out holes in the mounting board so that I can attach the case to it • The design printed out a little warped, likely

up, so I took a needle tool and poked out the sticks

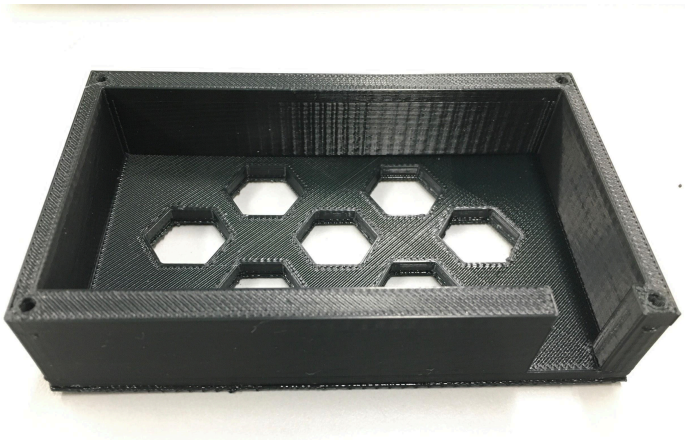
- The holes were still a little rough, so I took a screw head and scraped it around each entry hole, rounding them put so that the head could fit and be stopped from falling out by the countersink

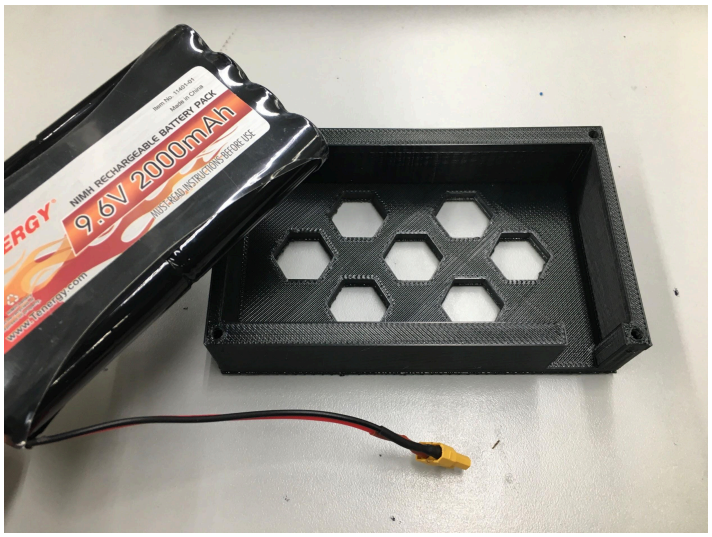


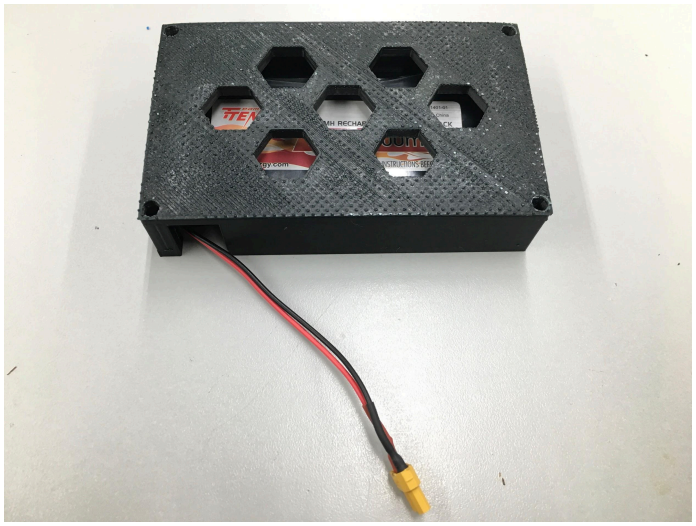


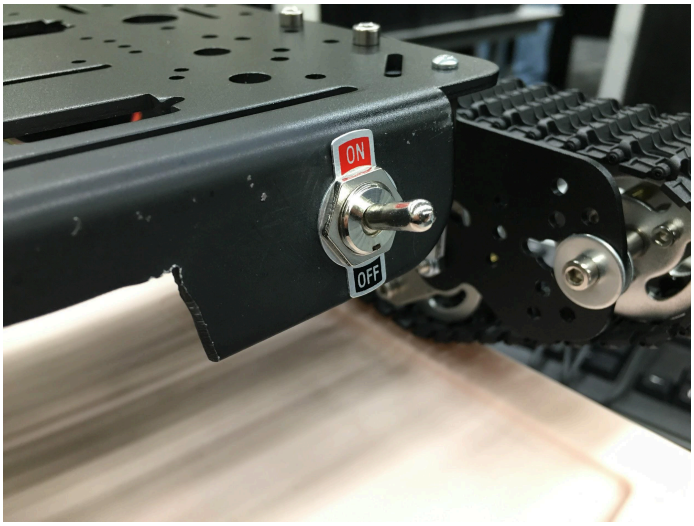
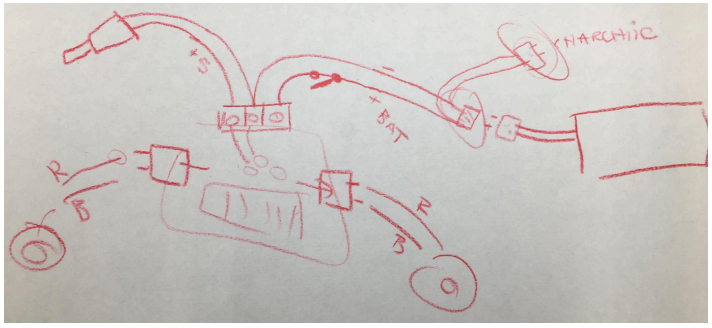
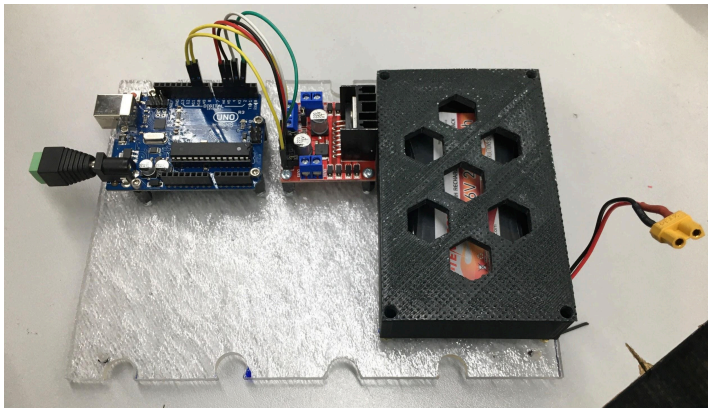


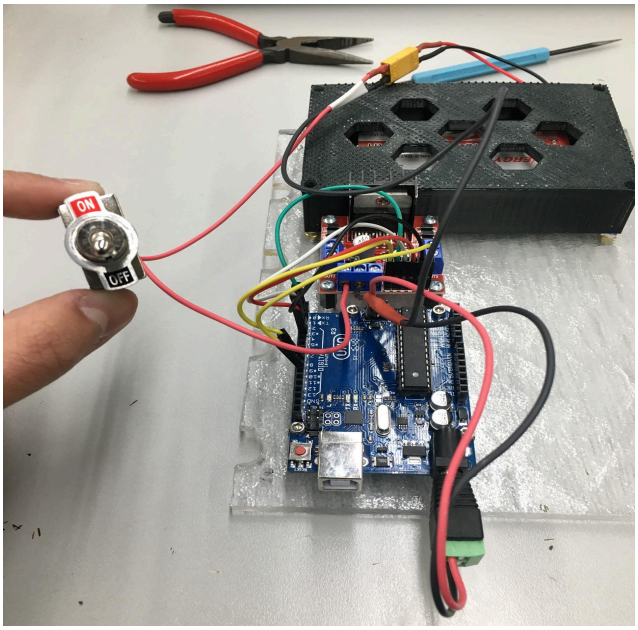
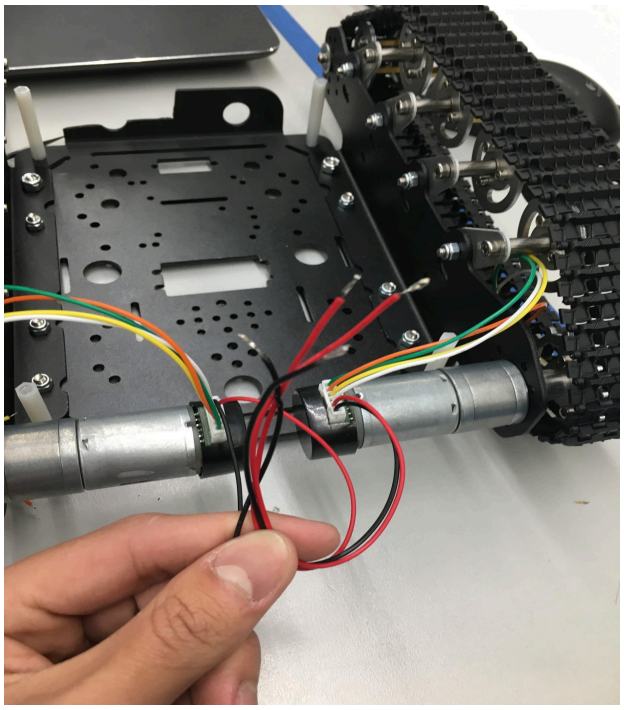
because it had no graft; Burnham used glue to hold the print down, but it looks there is some imperfection in doing so







5/18/2021	• Cut holes into the mounting board so that I could attach the battery and its case to it • Burnham helped me map out the wiring for the tank, and he drew a diagram of what it will look like • I chose a power switch for the tank and mounted it to the very conveniently located and sized hole on the main chassis plate • I wired the Arduino and Power Module a bit 	• Next time I will finish wiring the tank, and connect the battery and switch to the power module   
5/20/2021	• Burnham provided the connectors and wires for the rest of the components on the tank • I took the wire plan and tinned all the wires • After tinning, I connected them up to the Arduino, its power port, and battery I ran into trouble with tinning the wires for the power module; I am complete ass at stripping wires, and I kept cutting them shorter and shorter by accident, to the point where they weren't long enough to reach the	• Didn't finish all of them, but I'll do that next time • Stripping wires is hard, I keep ripping off most of the exposed wire and I have to cut it off completely

	module • Going back to the soldering station, I took some wire and fused them to the other wires to make them longer 	
5/25/2021	• Turns out stripping THIN wires was hard, thick wires like the ones I used for extension were not hard at all to strip • I finished tinning the wires, and connected them all up at long last • I crammed all the wires inside the tank and screwed down the mounting board • Burnham sent me the code to use for the tank, so I copied and pasted it all into the Arduino editor and compiled it • The default pins were incorrect so I set them to what they were on the tank itself, but in the code • I uploaded the code and switched on the tank, and it works • I changed the speed to its max, 255, and so far I have only made it go forwards and backwards	• I want to code the tank to a remote so that I can control it using the remote, but Burnham said I need to go through a Raspberry Pi to communicate to the Arduino over the internet to use a remote • I found this link: https://roboticsbackend.com/raspberry-pi-arduino-serial-communication/#:~:text=The%20easiest%20way%20is%20to,Arduino%20IDE) • https://raw.githubusercontent.com/jimTheSTEAMClown/DIYRoboCars/master/myBigTruck2 • https://raw.githubusercontent.com/jimTheSTEAMClown/roboCarWorkshop/master/MotorTest_2_STEAMClown
	https://www.thingiverse.com/thing:2989205	

Note: Make this like a blog, where the latest henry is at the top. Copy this template for new entries above.

<New Date> <Title... Compelling Title of today's work, success, etc... Like "10/12/2018 - Got Motors Connected"

What Was The Plan:

Tell a short story about what you wanted to do today…

What I Learned:

Briefly tell what you learned… What did you not know and now you do?

What Worked - What Steps Did I/We Solve:

1. Short description of what your team did today… Date driven... as you enter entries, keep the latest at the top. Also, whenever you post an update here, also update the Project Resource Page as well…
2. Other things that worked…

Challenges, Questions, or Roadblocks:
List all the current issues that are a challenge and preventing forward progress on this project

1. Next step..
2. Next Step…

Details & Descriptions:
Here you can do into a deep dive of what you did. Show images and diagrams, and more detailed descriptions on how to recreate the work. The goal is to let someone else be able to replicate your work… so more information can go here.

Team Members: <list the individuals who worked on this entry>
