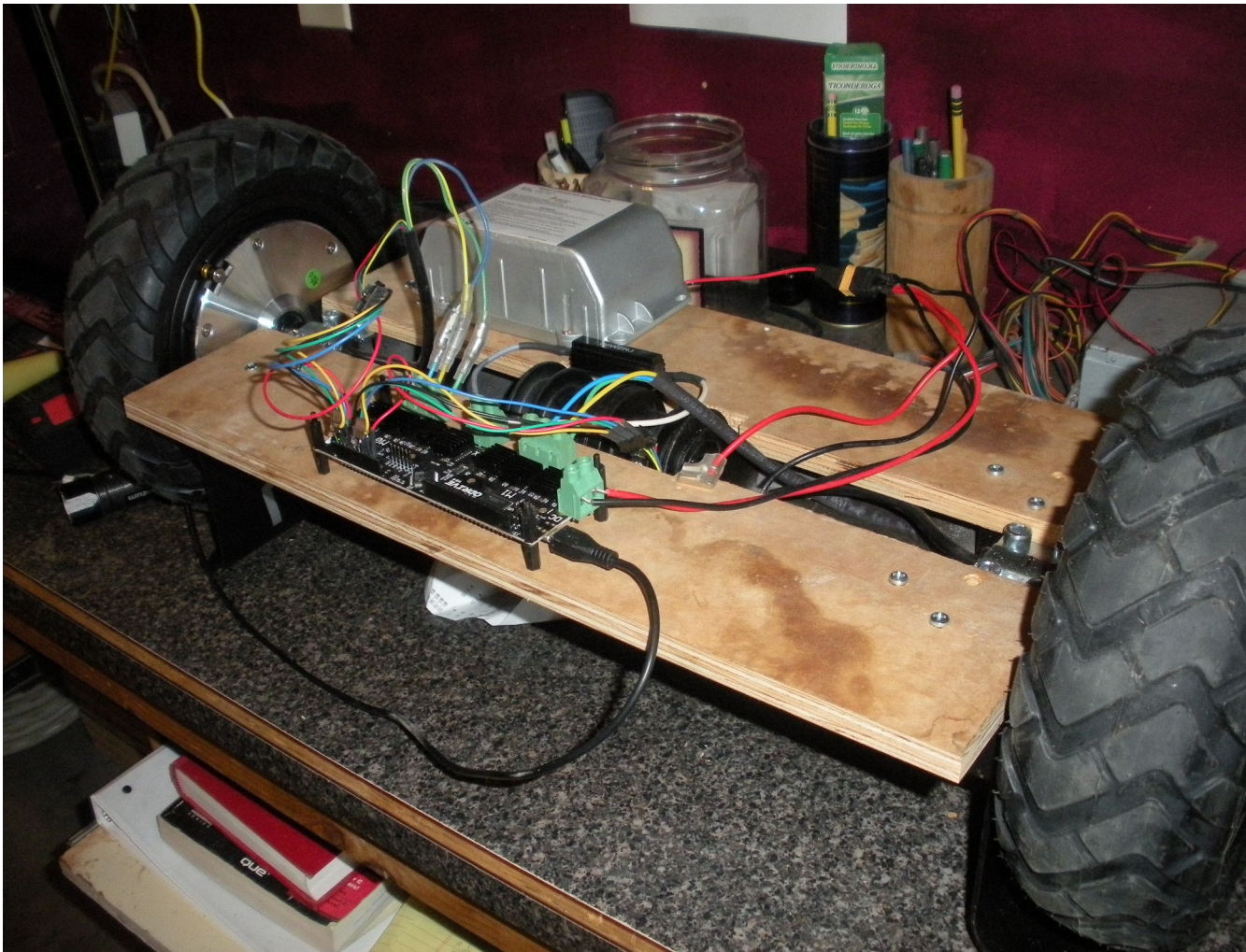


Field Donkey (FD) Notes

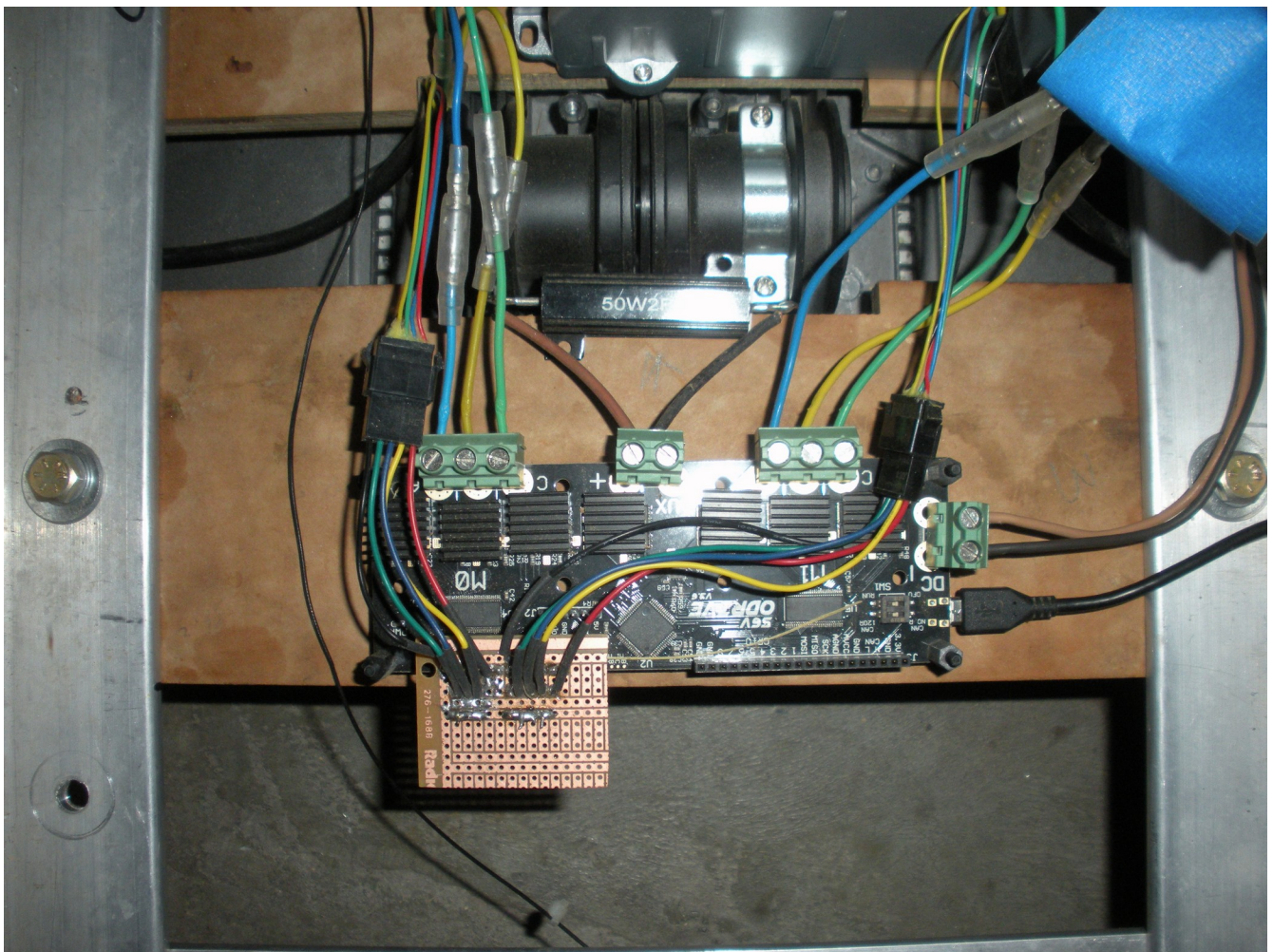
Mon 27 Jun 2022 04:21:49 PM PDT

I purchased two Swagtron T6 off road hoverboards for roughly \$620 the middle of June. Four motors were rated at 300 watts each. The wheels are tubeless 9.5" diameter ~3.5" wide with off road tread.

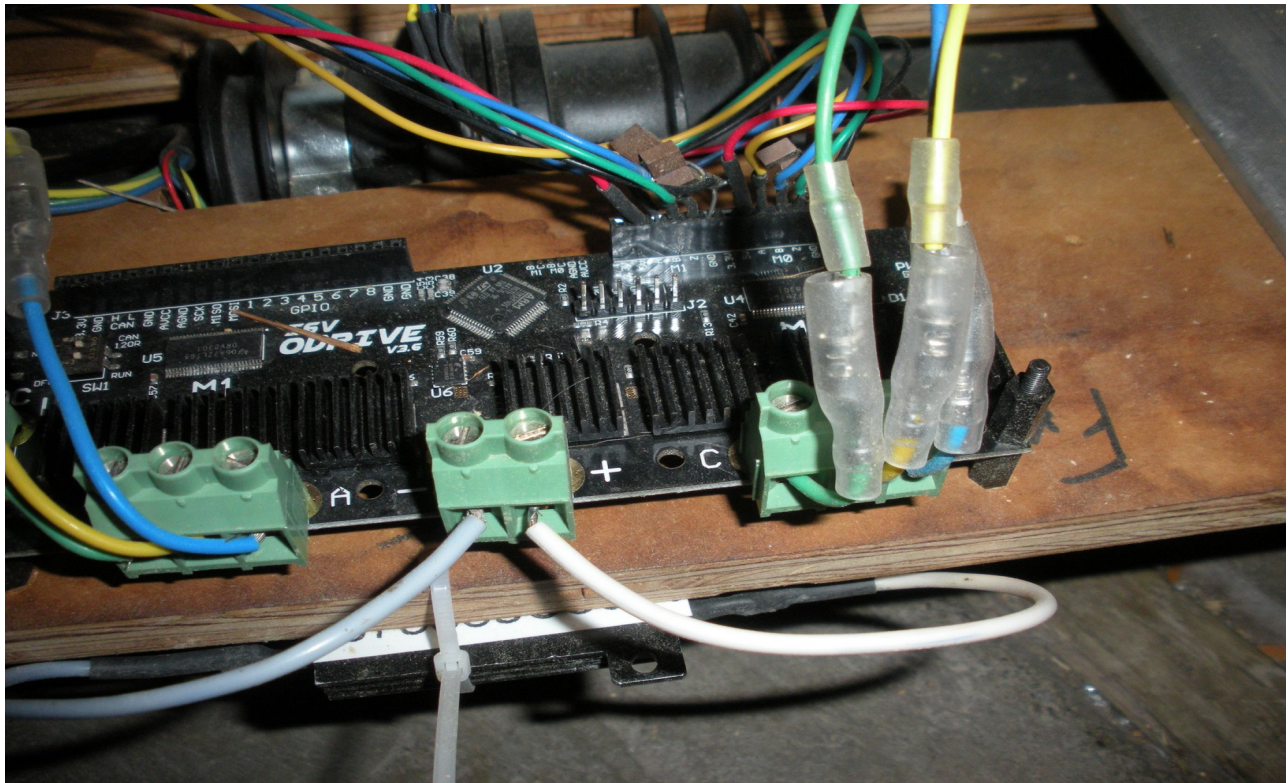


They have hall sensor encoders, hopefully these will be sufficient . Hall sensors can create some noise on their inputs so 22 nf caps are a must to keep noise suppressed. I am testing with two types of layouts.

One is on a proto-board with the 6 -22nf caps solder under neath, one for each hall sensor, 3 per motor and common to ground.



The other is just a group of 22nf caps solder closely together in a group which works also.



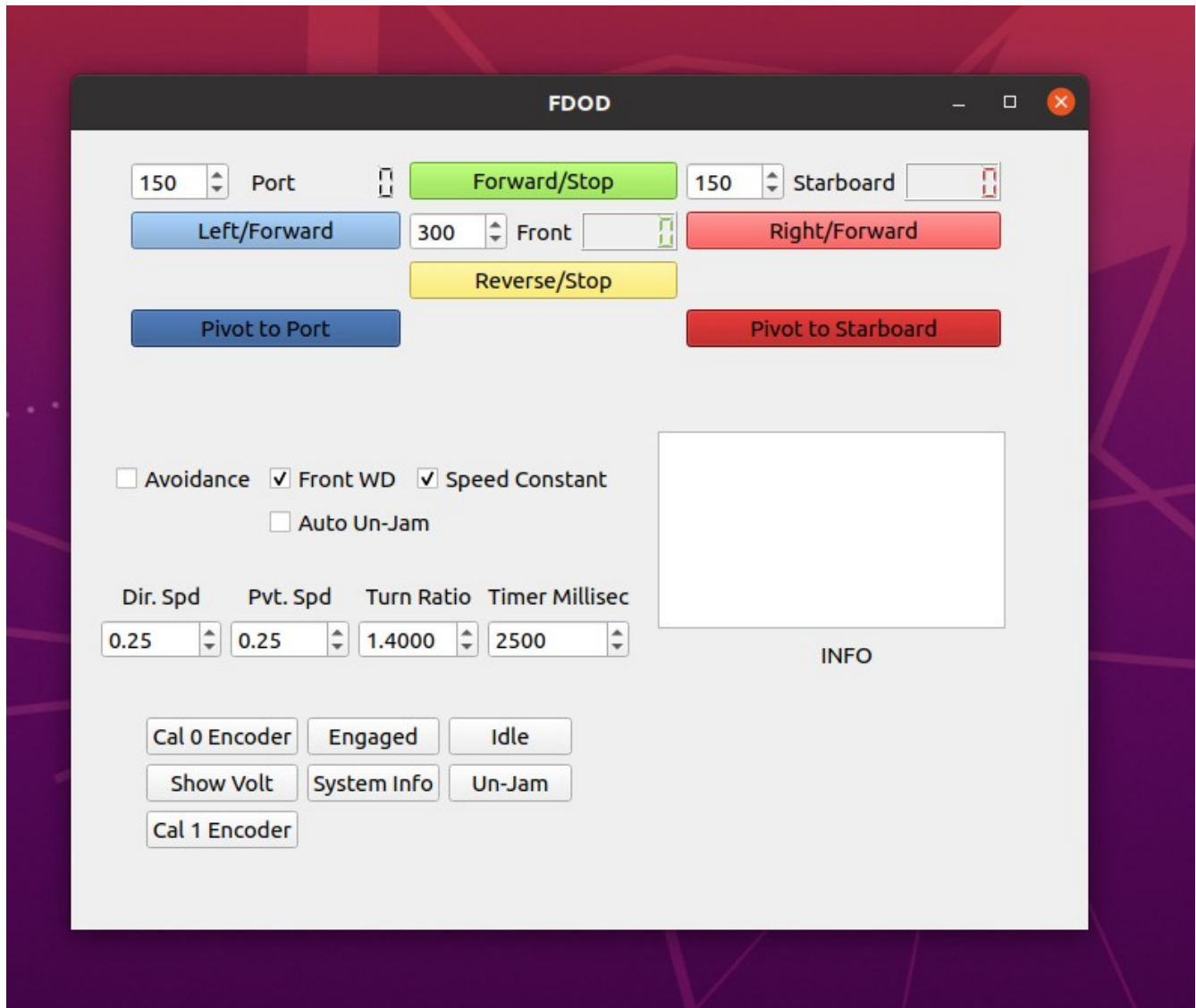
Wed 29 Jun 2022 03:07:31 PM PDT

Started fdod program for field donkey. These notes will contain configuration details or file names of details for T6 motors with hall sensors. Wheel base of FD is ~ 27.5"

Sun 10 Jul 2022 06:58:15 AM PDT

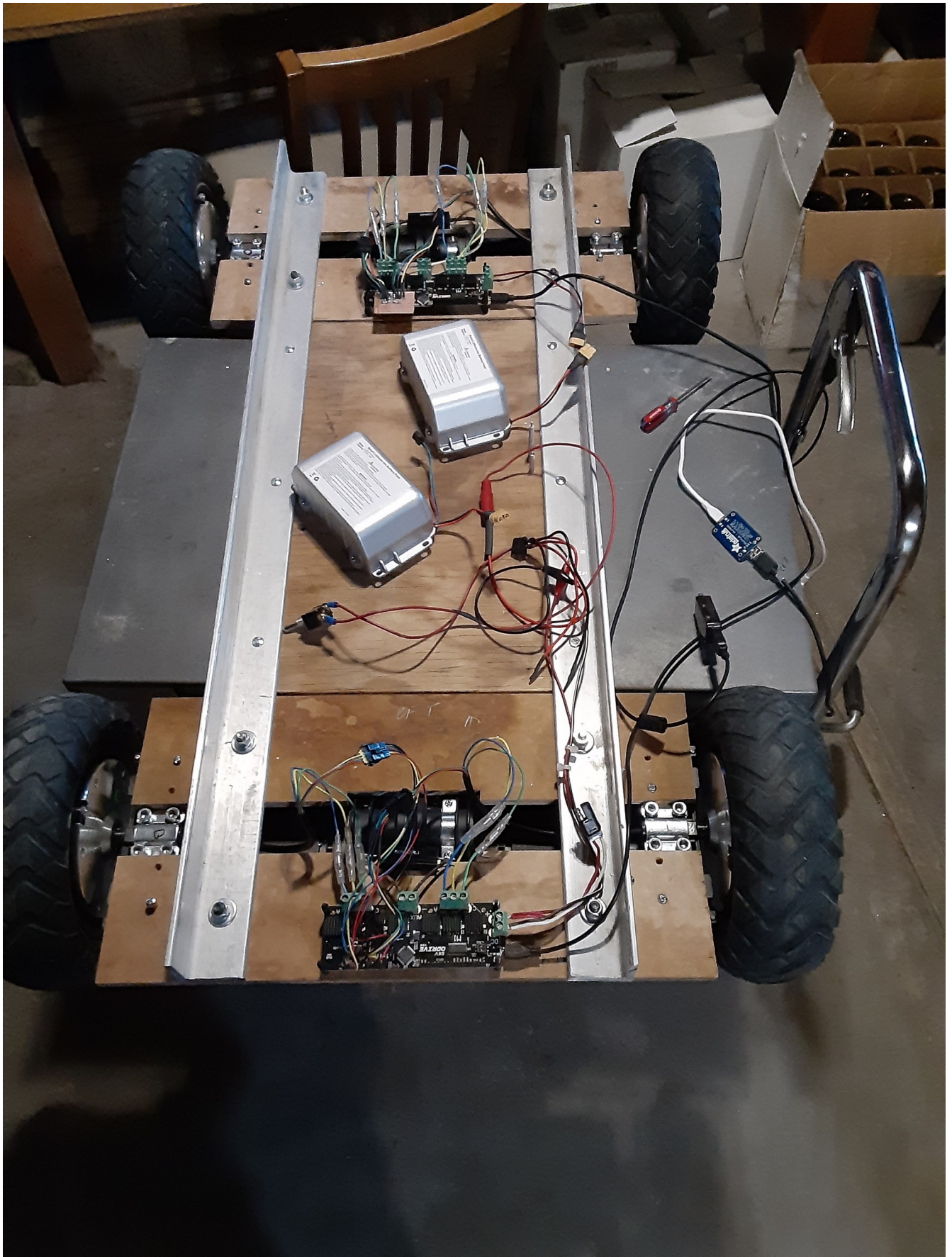
Velocity is in turns per second so start up speed is .25 or a quarter

turn per second. A complete turn on a 6.5" wheel is 21.5" and a 10" wheel is 32". Hopefully will come up with routine to turn wheels 1 turn and use time of flight to measure exact distance.



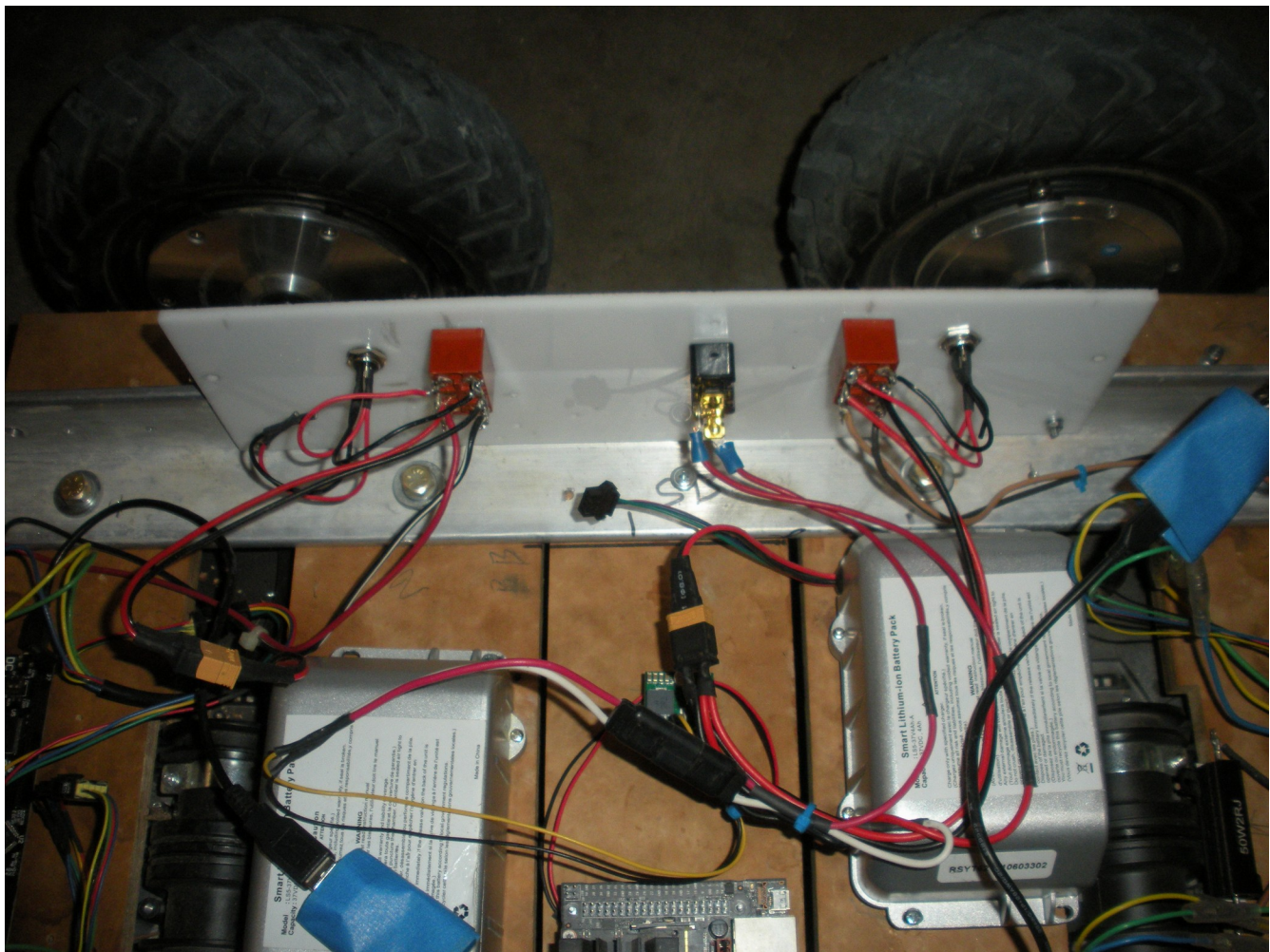
Thu 21 Jul 2022 06:05:11 AM PDT

Yesterday I built a sub chassis for a 4 wheel odrive donkey 4wod. It is 27" x 39". No wheels have a pivot at this point so it will turn like a tank; maybe later will incooperate pivot turn. The odrive unit serial numbers will be the id for each hoverboard drive. The "front" will be called "3" and the rear will be called "2".



Fri 22 Jul 2022 07:27:58 PM PDT

created an app "w4od" and started to check out. Had a lot of hiccups and disconnect when running from my PC thru two opto-isolators. Believe it to be caused from long USB cables. Found some shorter cables and things seem to get better. The hoverboards came with 37v LiFePO4 batteries in aluminum cases. These are rechargables; need to figure out at what voltage to charge them. I may have calibrate these motors at each power up of the Odrives so I did switch the phase windings on one hoverboard motor so they would turn the same direction during calibration. Each hoverboard set can be calibrated indepent of the other; also each hoverboard set can be "engaged" CLOSED_LOOP_CONTROL and placed in "idle" from each other also. That may change later.



Sat 23 Jul 2022 01:08:43 PM PDT

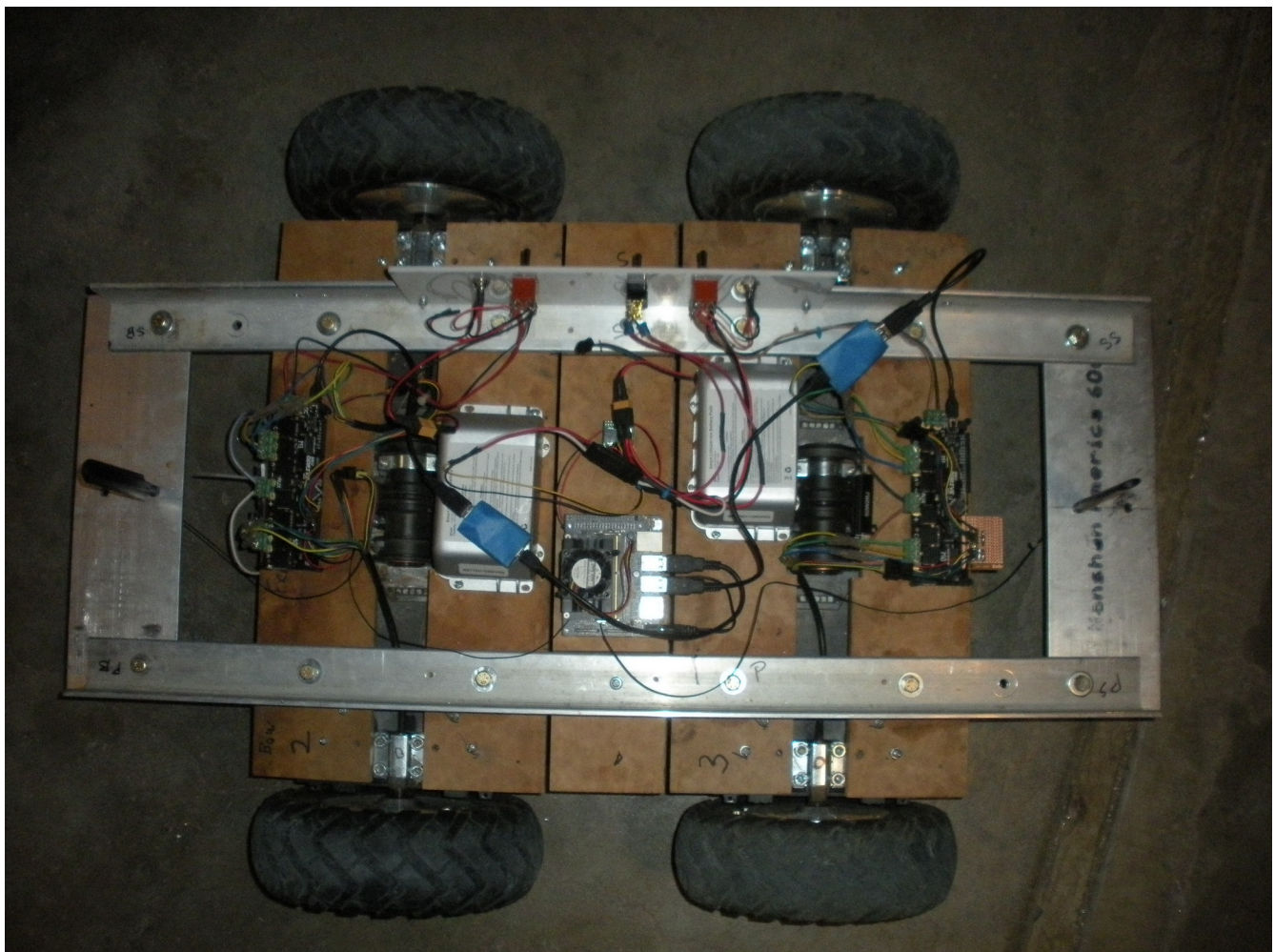
Very bad on turning and pivot, believe I need more torque at lower velocity. Also I need to change gui to reflect the position of odrive and hoverboard motors. odrive 3 is in front so should be top on gui.

Sun 24 Jul 2022 07:00:15 AM PDT

Am going to make a shorter chassis out of the old 33" long aluminum angle pieces. Will also move hover boards to respective locations so that I don't have to change my gui.

Sun 18 Sep 2022 01:29:05 PM PDT

I need to keep more up to date on this field donkey.



Below is a towing test that failed. Not enough traction.



Test that passed was the 38 percent grade climb and hold!



Except when a payload of 120 lbs was on board the Field Donkey would carry the load up the ramp but would fail when it stopped and would go to Idle and roll down the ramp uncontrolled.



Screen shot of field donkey running w4od (converted from fdod) and two gstreamer cameras.

