

Weekly Updates - 4/2/19



Team P.V.I.R

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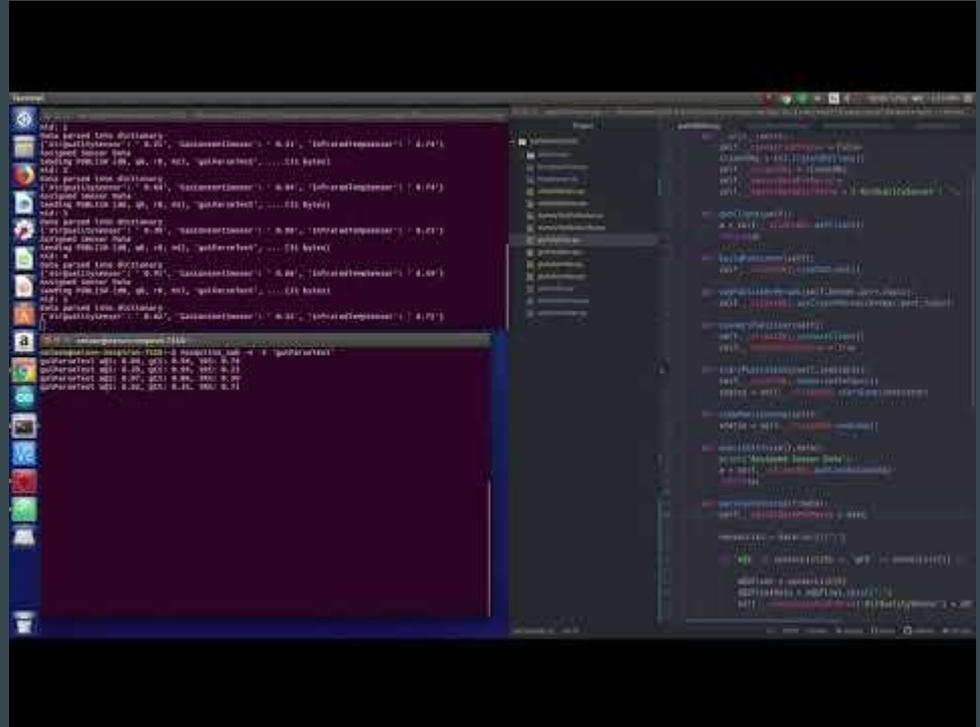
Mechanical Arm Update

- Robot lid, sensor platform and circular plates that connect to T-Slots have been cut
- Machining Left To Do:
 - Hole on Lazy Susan
 - 3D printing
 - Modified U-bridge holder for Nema17
 - Sensor Package Case
- Assembly of T-slot tower starts on Friday (hopefully)



Serial Comms Update

- Completed the gui data depackaging method
- Cleanly separates the custom string into float values
- Values are placed in the dictionary as output to be read by the GUI
- Working on pulling the data directly from subscriber class



Hardware Testing

- Nema Stepper motors and motor controllers have been tested and are working
- A labeled wiring diagram is with one of the motors

```
StepperTest$
#include <Stepper.h>

const int stepsPerRevolution = 400; // change this to
// for your motor

// initialize the stepper library on pins 8 through 11:
Stepper myStepper(stepsPerRevolution, 8, 9, 10, 11);

void setup() {
  // set the speed at 60 rpm:
  myStepper.setSpeed(300);
  // initialize the serial port:
  Serial.begin(9600);
  // L298N for Robojax.com
  pinMode(2,OUTPUT); // for EN1
  digitalWrite(2,HIGH); // enable EN1
  pinMode(3,OUTPUT); // for EN1
  digitalWrite(3,HIGH); // enable EN2
}

void loop() {
  // step one revolution in one direction:
  Serial.println("clockwise");
  myStepper.step(stepsPerRevolution);
  delay(500);
}
```

Order Status

The following parts have been ordered:

- 2 Grove MQ2 Gas Sensor (\$7.53)
- 2 Grove Infrared Temperature Sensor (\$9.90)
- 1 30pcs Protoboard set (\$10.85)
- 1 130pcs Jumper Wire Kit (\$7.89)
- 1 3pcs Solderless Breadboard (\$7.99)
- 1 Arduino DUE board (\$37.40)
- 1 Waveshare RPi Camera F Module (\$25.99)
- 1 Sandisk 32gb micro SD card (\$8.90)
- 2 Parallax Carbon Monoxide Sensor (\$5.99)

Order 1 Total: \$145.86

- 8 Samsung 30T 21700 Battery (\$7.99)
- 2 EFAN 4 Channel Battery Charger (\$9.97)
- 4 21700 Battery Tray (\$5.25)
- 1 10ft Ethernet Cable (\$5.99)
- 1 8" Aluminum Lazy Susan (\$17.00)
- 1 USB Breakaway cable for Xbox 360 (\$3.99)
- 1 6061 Aluminum plate 12" x 12", 1/4" thick (\$47.11)
- 1 6061 Aluminum plate 12" x 24", 1/8" thick (\$43.12)

Order 2 Total: \$220.07

- 1 Test Pressure Gauge (2-1/2")(\$1.61)
- 1 General Purpose Pressure Gauge (2-1/2") (\$3.59)
- 1 Liquid Filled Pressure Gauge (2-1/2") (\$4.85)
- 1 Xbox 360 Controller, Wired USB controller (\$16.99)
- 4 T-slot sliders (\$5.50)
- 3 30mm x 30mm T-slotted profile 6ft (\$19.23)
- Timing Belt Kit (Includes timing belt, pulleys, tension spring, clamp mount) (\$12.99)
- 5 Zinc-plated steel corner bracket 2" x 2" (\$0.92)
(Note: Steinberg also ordered the item from the additional link which costs \$9.99 for 16 L-brackets)
- 1 6061 Aluminum plate 12" x 12", 1/4" thick (\$43.12)

Order 3 Total: \$167.44 (Note: The additional \$9.99 was NOT included in this calculation)



Items on Final Order

- 2 Nema Stepper Motors
- 1 ¼" diameter round belt
- 1 pulley for round belt
- 1 6061 Aluminum Sheet 1/8" Thick, 12" x 12"
- 4 Zinc-Plated Steel Corner Bracket, 5/8" x 1" x 1/2"
- 1 Foamular board (For testing environment) 4' x 8'
- Waterproof DC/DC 12V Step Down to 5V 3A 15W Voltage Buck Converter
- Zinc-Galvanized Low-Carbon Steel Rod (3ft)
- AutoEC 20A Inline ATC ATO Waterproof Fuse Holder (1 Set)
- GiBot Cable Glands - 25 Pack Plastic Waterproof 3.5-13mm Cable Glands Joints Wire Protectors
- 304 Stainless Steel Screw and Nut 515pcs, M3 M4 M5 Metric Socket Head Bolt and Nut
- Male-Female Threaded Hex Standoff
- 10-32 x 1-1/2" Hex Head Cap Screw Bolts, External Hex Drive, Stainless Steel 18-8, Full Thread, Bright Finish, Flat Point
- 1 6061 Aluminum ½" thick x 10 inch wide - 2ft
- Qunqi L298N Drive controller board DC stepper
- Spiral-coiled ethernet cable (2ft-9ft)
- #6-40 x ¾" flat head screw 100 pack
- #6-40 Tap
- 6 ft. USB 2.0 to USB Micro-B, Coiled, USB Type-A to Micro-B

Total: \$319.28

Expense Summary

Order 1 Total: \$145.86

Order 2 Total: \$222.07

Order 3 Total: \$167.44

Order 4 Total: \$319.28

Grand Total: \$854.65

Remaining Budget: **-\$354.65**

(Again, note: additional \$9.99 was not included in this calculation)

Items to be Discussed

- Task Status: Arm CAD design, Sensor Package Schematic, Control System Design
- Action Items for the week
- Concerns:
- **Important Dates:**
 - Last day to order parts: April 8 at 7am
 - Next scheduled lecture: April 8
 - Capstone Design Expo: April 23
 - Team and all team members have been registered
 - Our registered set-up time is 2-3pm