

Weekly Updates - 2/5/19



Team P.V.I.R

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Meeting in Lab 1/30/2019 Updates

- Existing Parts from Previous Robot:
 - **2 Motor Controllers:** Status: Using Note: need connectors for large ends
 - Have been tested with arduino (1/31)
 - 3 Relays (1 master relay 2 slave relays): Status: Not using
 - **1 Arduino DUE:** Status: Using
 - **2 Motors: Status:** Using Note: They have encoders
 - 1 Spectrum Signal Receiver: Status: Not Using
 - 1 Spectrum Controller: Status: Not Using
 - **1 Arduino Power Cord:** Status: Using

Ordered Parts - Updates

The following parts have been ordered:

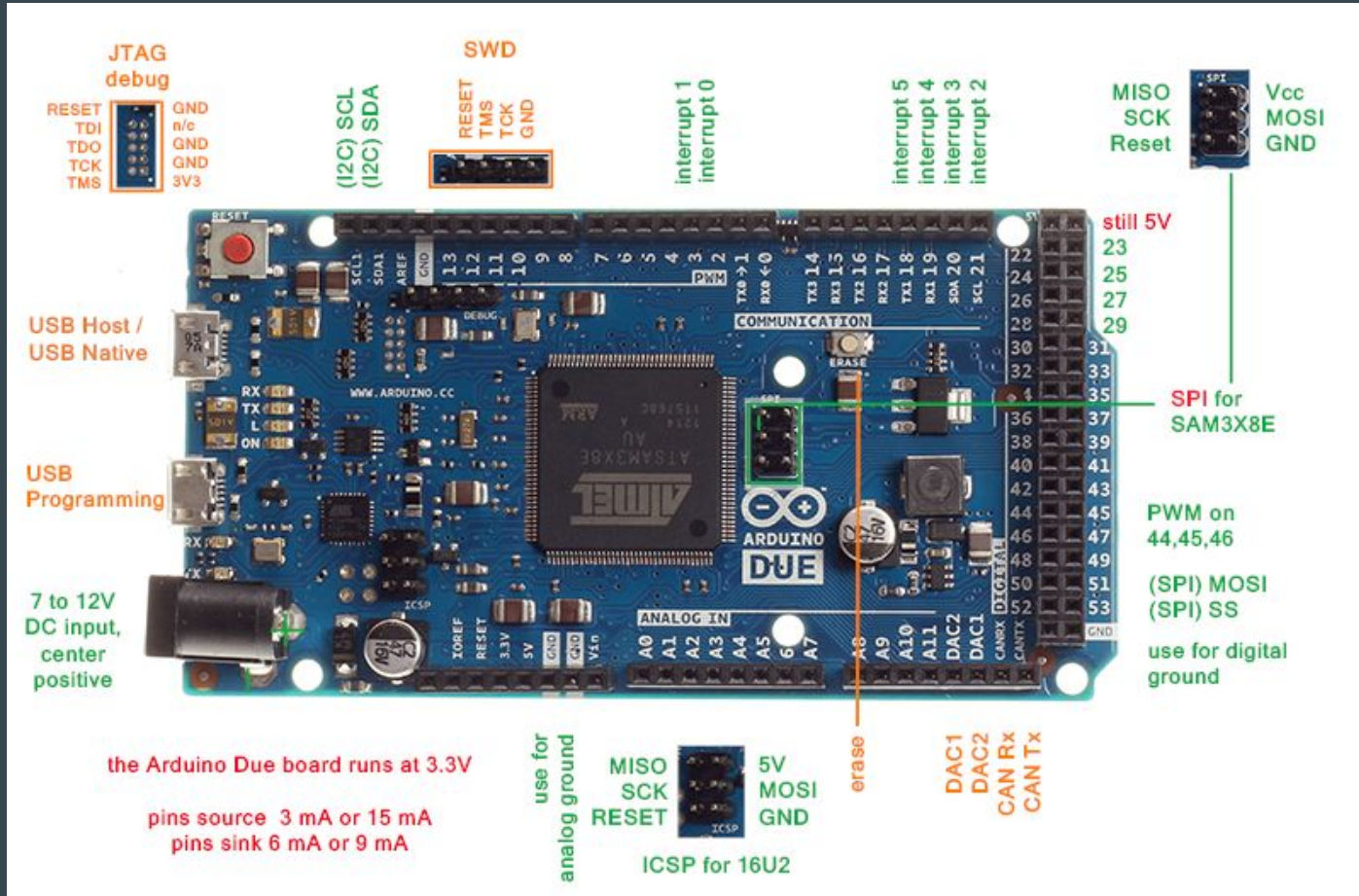
- 2 Grove MQ2 Gas Sensor
- 2 Grove Infrared Temperature Sensor
- 1 30pcs Protoboard set
- 1 65pcs Jumper Wire Kit
- 1 3pcs Solderless Breadboard
- 1 Arduino DUE board
- 1 Waveshare RPi Camera F Module
- 1 Sandisk 32gb micro SD card
- 2 Parallax Carbon Monoxide Sensor

Total Spent: \$132.89 (assuming first link was used when ordering)



Arduino Due

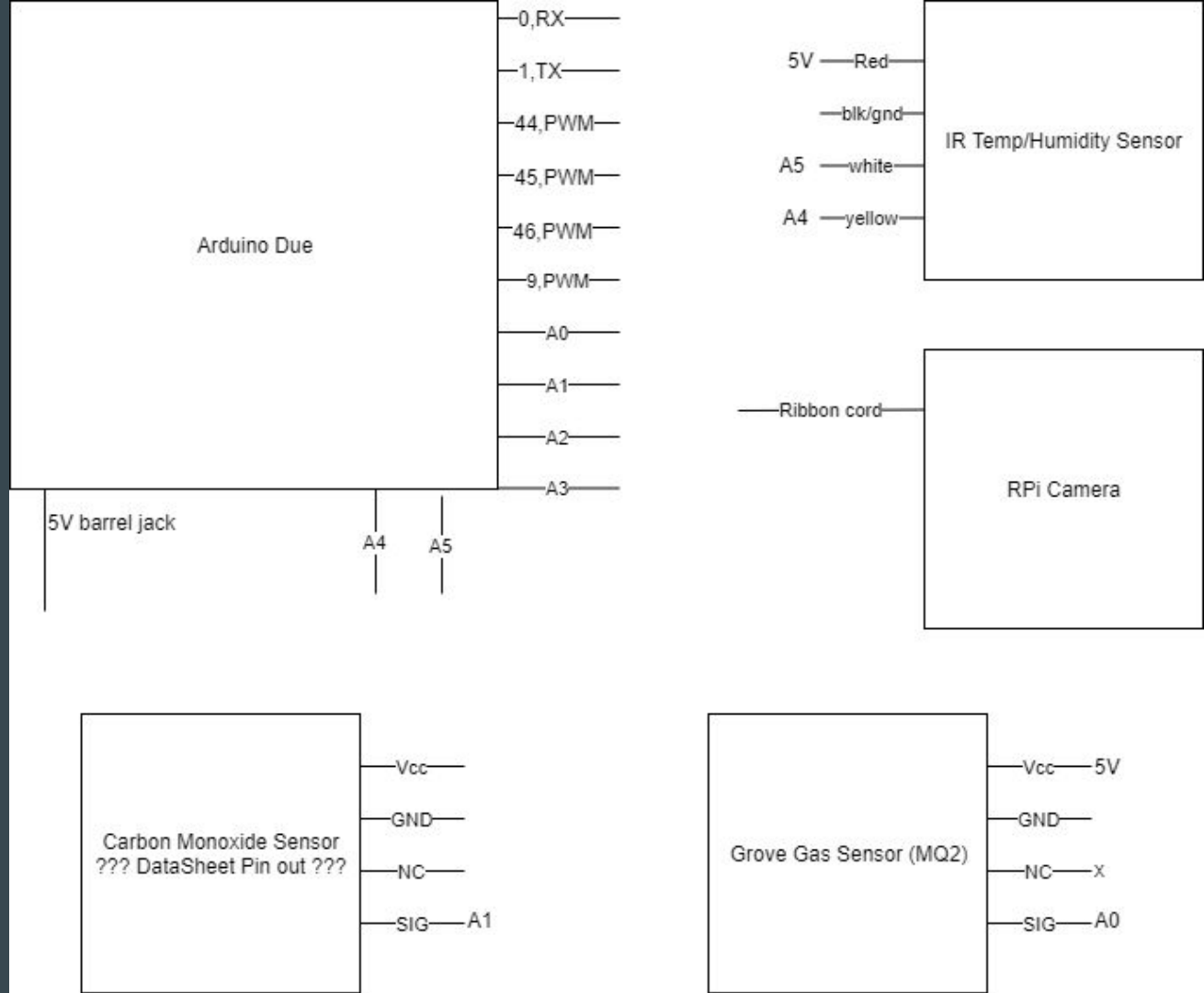
- More processing power than the Uno
- Has 2 I2C ports
- Requires 7 to 12 V for power
- 3 PWM pins at 44,45,46



Schematic for current parts ordered

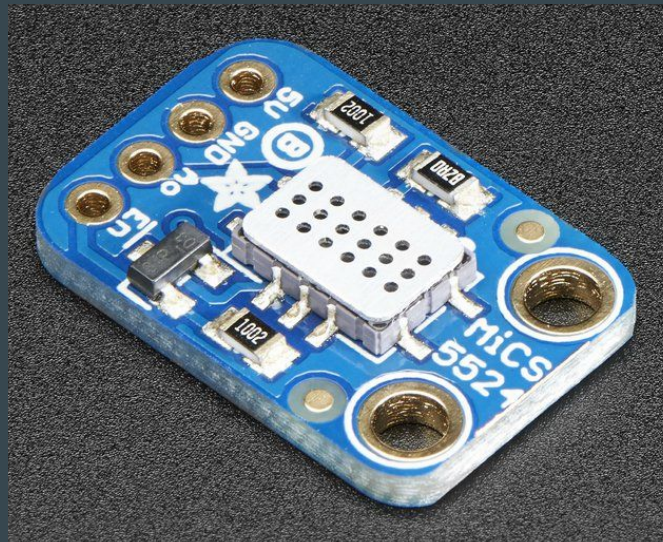
Issues:

- Datasheet for CO Sensor doesn't provide a clear pinout



Parts Update - Gas Sensor Alternative If Needed

- Adafruit MiCS5524 CO, Alcohol and VOC Gas Sensor Breakout (<https://www.adafruit.com/product/3199>)
- CO, Ammonia, Ethanol, H₂, and Methane / Propane / Iso-Butane
- CON: can't tell you which gas it has detected.
- PRO: doesn't use I2C



GUI

Working Aspects:

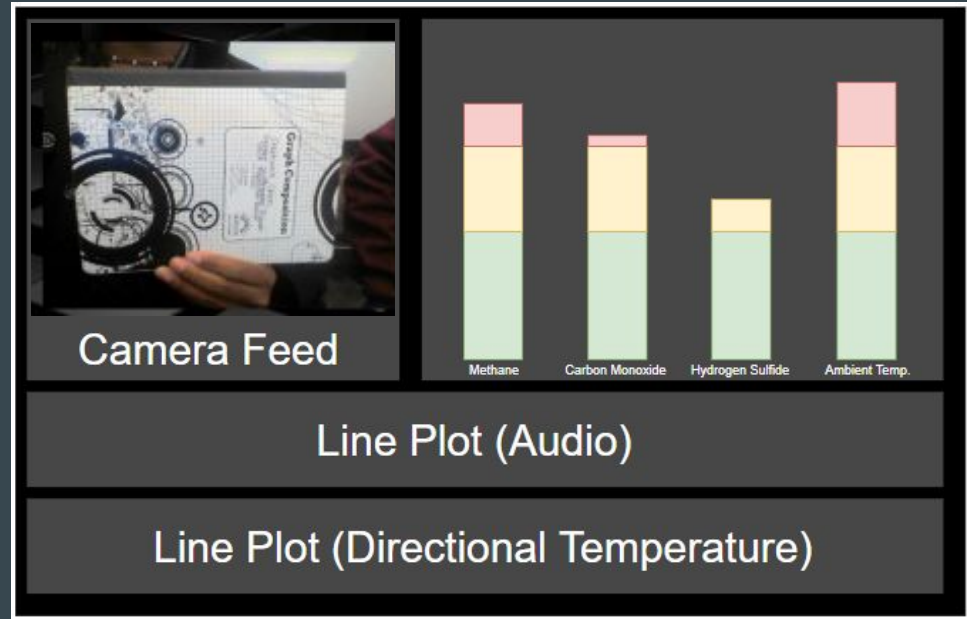
- Live Streaming
- Log-in window functions
 - Error messages
 - Allows Log-in
- Data Logging
- Error Catching, Formatting, Clean up
- Page Navigation (in progress)



GUI Update

Data we want to display:

- Dangerous Gases:
 - Methane - Bar Gauge
 - Carbon Monoxide - Bar Gauge
 - Hydrogen Sulfide - Bar Gauge
- Temperature
 - Ambient - Bar Gauge
 - Directional - Time Plot
- Audio (Corona leakage) - Time Plot
- Live Camera Feed - Picture



Power Supplies

- Requirements
 - Rechargeable
 - 12V supply for motors/arduino due
 - 5V supply for sensors/pi
 - Powering AC motors with 230W max output power (value taken from previous ME group)
 - $P = VI : 230W = 12V * I \Rightarrow 9.5A$ per motor at 12V
 - Fit inside robot casing
- Solution
 - a heavy duty power supply for the motors and a separate one for the microcontrollers and sensors
 - Will need to buy a battery charger, connection cables in addition

5V/12V Combo Power Supply

- Will be able to power the pi and arduino/sensors



12V/6000mAh
Lithium ion Battery
Pack with 5V USB



12V/8300mAh
Lithium ion Battery
Pack with 5V USB

Model	YB1206000-USB	YB1208300-USB
Color	Black	Black
Size	28*85*145mm/ 1.1*3.35*5.7in	39*80*138mm/ 1.5*3.1*5.4in
Input (DC5521)	12.6V/3A max.	12.6V/6A max.
24V DC5521 Output	No	No
12V Output	DC5521 12V/3A max.	DC5521 12V/6A max.
9V Output	No	(DC5525) 9V/1A
5V USB	5V/2A max.	5V/2A max.
Spec. of charger	12.6V 1A	12.6V 1.5A
Weight	348g/12.28oz	498g/17.57oz

12V Power Supply - for AC motors



Rechargeable 153.6Wh 12V
12Ah Lithium Iron
Phosphate (LiFePO4)
Battery Pack
\$83.99
Output Current Max 15A
3.25pounds



12 Volt 18 Ah Rechargeable
Battery with Nuts and Bolts
\$38.99
Output Current 18A
10.55pounds
(possibly too big to fit?)



2 x ExpertPower 12V 9Ah
Sealed Lead Acid Batteries
\$39.99
Output Current 9Ah
11.2 pounds
Pack of 2 so each motor has
a battery

RPi Case with Fan

- https://www.amazon.com/Miuzei-Raspberry-Heatsinks-Supply-Compatible/dp/B07BTHNW9W/ref=sr_1_9?ie=UTF8&qid=1549315439&sr=8-9&keywords=rpi+case+with+fan
- Compatible with RPi 3B+, 3B, 2b
- Will help prevent the RPi from overheating as easily
- Will probably not use the on/off power switch
- \$16.59



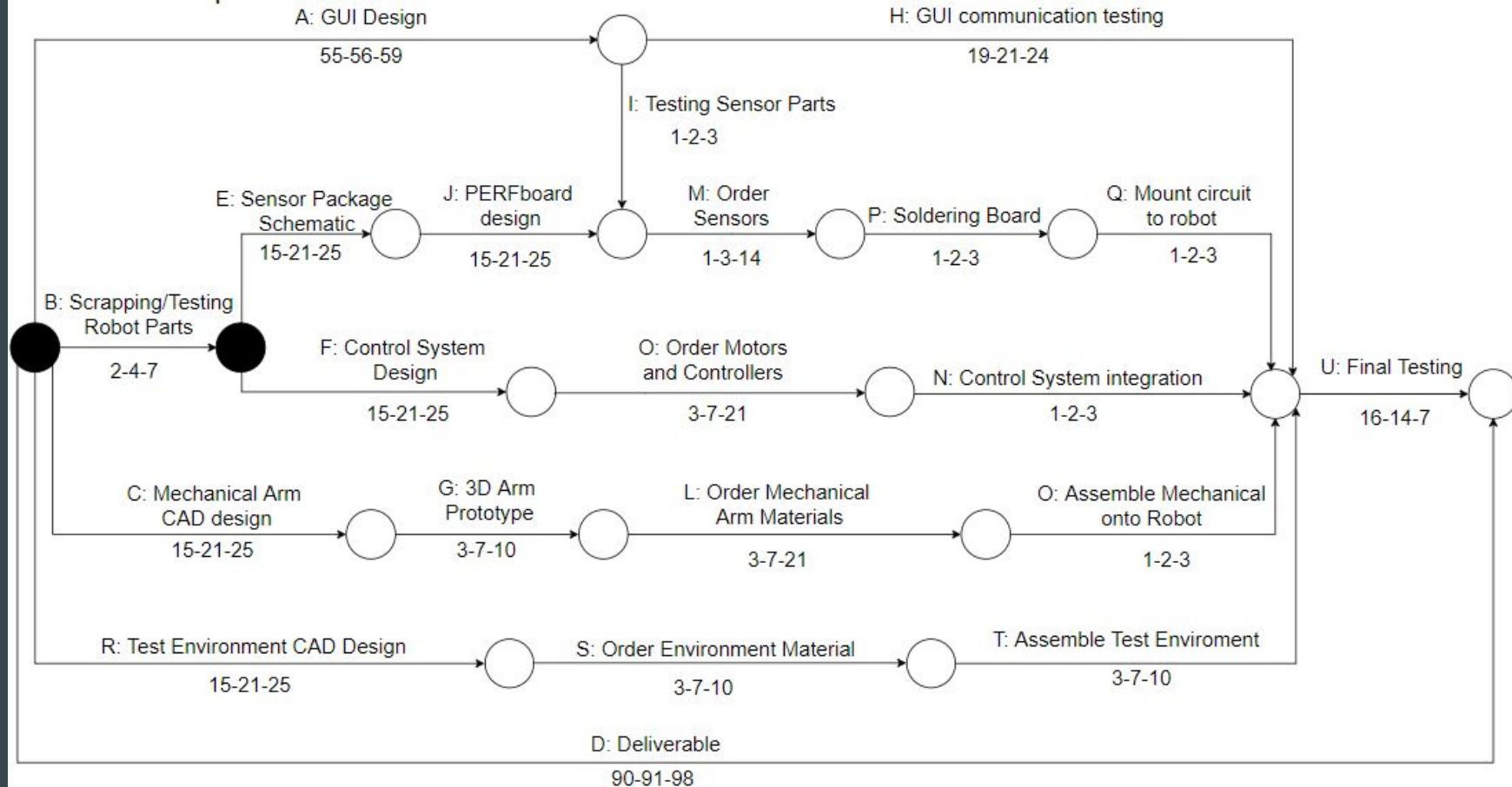
RPi Night Vision Camera Mount

- <https://www.thingiverse.com/thing:2737276>



PERT CHART

To-Tm-Tp



Items to be Discussed

- Discuss, vote and decide which **Mechanical Arm** design we are going to pursue:
Lead screw, scissor lift, or bike chain
- Discuss and decide on which **Power Supply** we should use
- Scheduling: Looking at the gantt chart we are **behind on schedule** with Sensor package schematic, Control System Design, and GUI Design
- Action Items for the week

Action Items for 2/12/19

Stephanie



Elizabeth



Nelson



Adrian



Lemek

