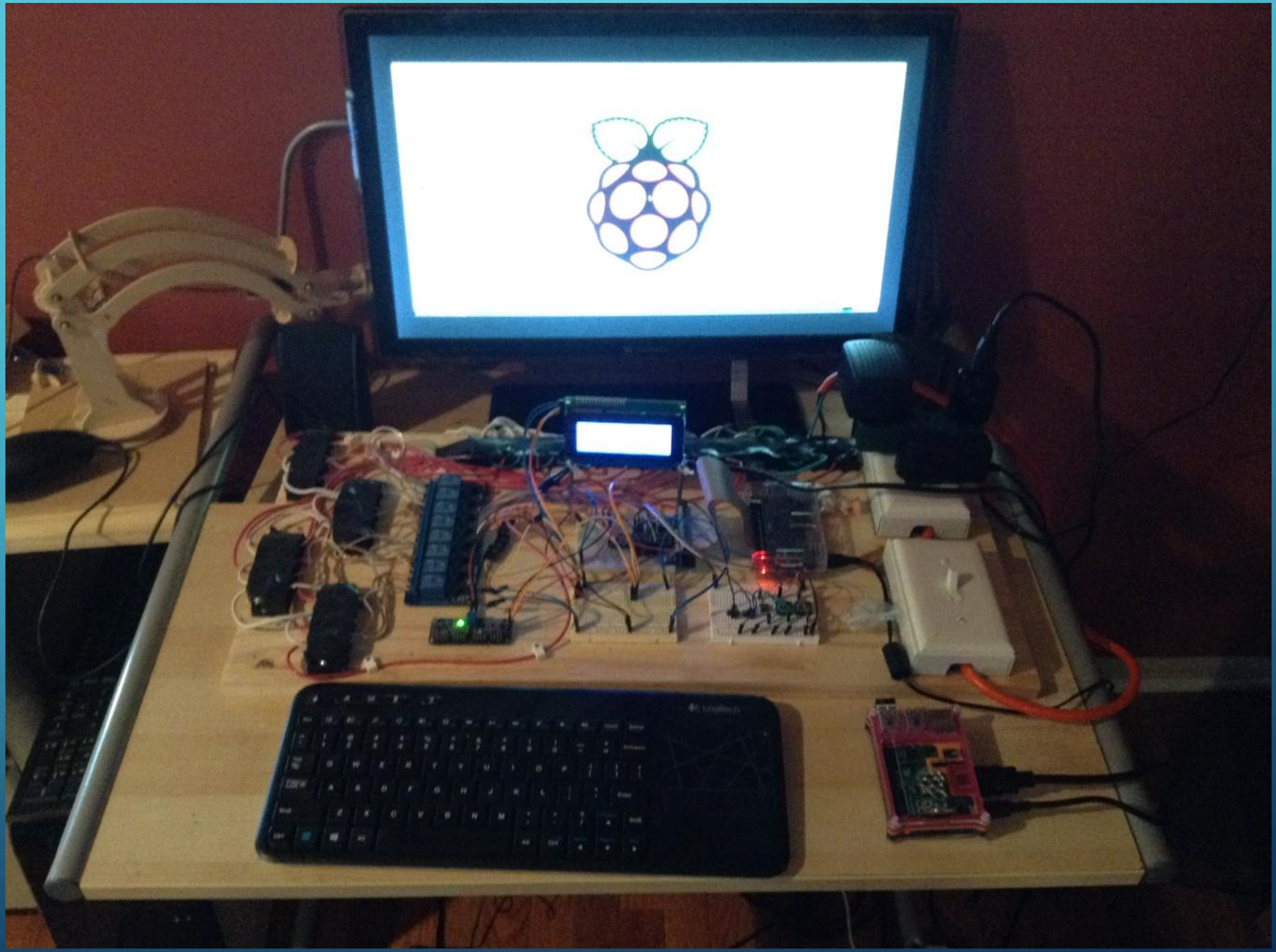
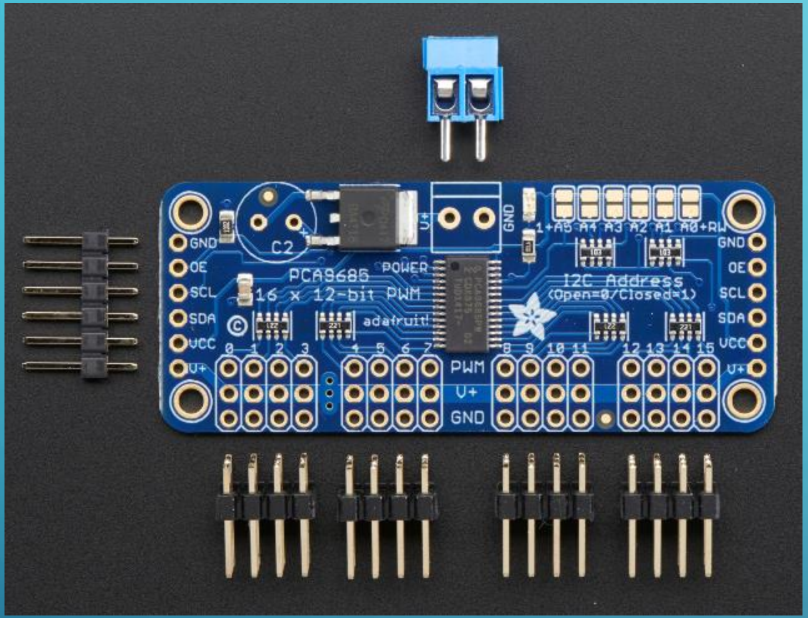
RASPBERRY PI

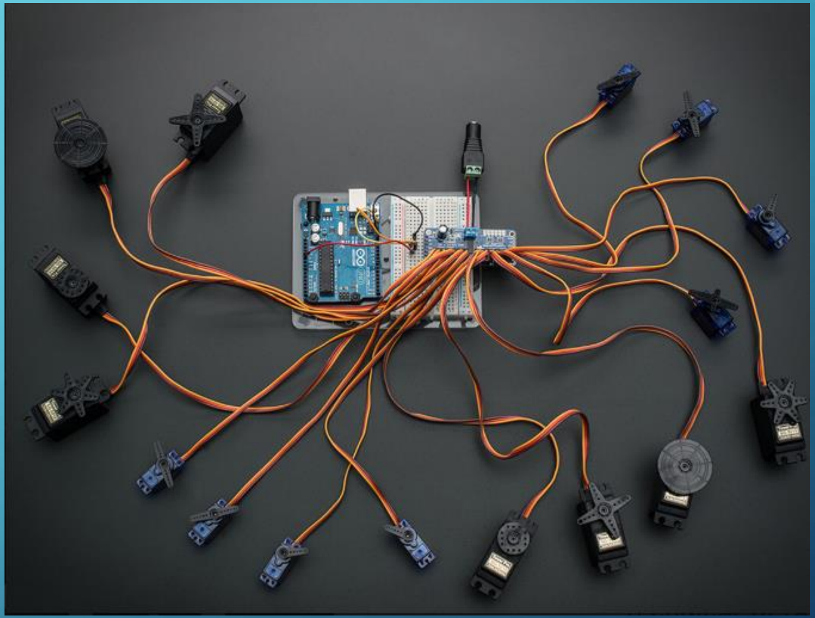
UTILIZING A RASPBERRY PI TO DRIVE A ROBOT

MY TEST BOARD



ADAFRUIT SERVO CONTROL MODULE





http://www.adafruit.com/products/815

Robotic and RC type servos are nothing more than regular motors with special control circuitry accessed by a 3rd pin that responds to a certain type of signal. A 'typical' servo requires a continuous signal with a High pulse width of:

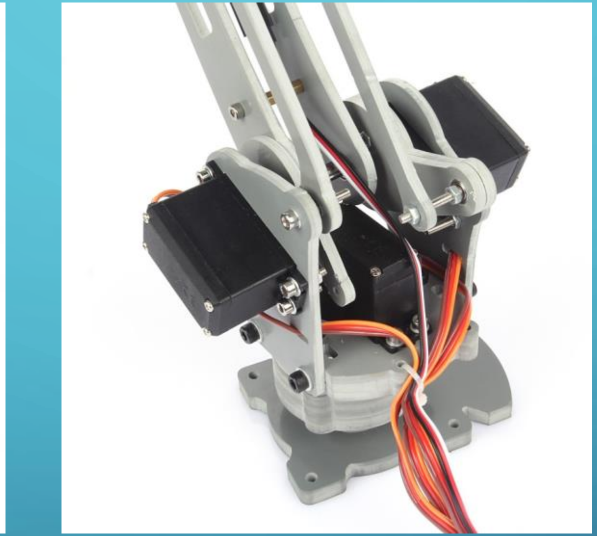
.5 msec every 20 msec to position at 0 degrees (fully ccw)
1.5 msec every 20 msec to position at 90 degrees (neutral)
2.5 msec every 20 msec to position at 180 degrees (fully cw)

With the above information in mind, whatever program we use needs a couple things from us. First it needs a frequency that results in a 20 msec cycle time by using the formula 1 / Cycle Time = Frequency. So, 1 divided by .020 results in 50 Hz, which is one input needed by our program.

Next let's divide our 20 msec cycle by 4096 units, and we get 4.8 usec per unit. Now we can divide the pulse widths needed by a typical servo by the resolution of our controlling device.

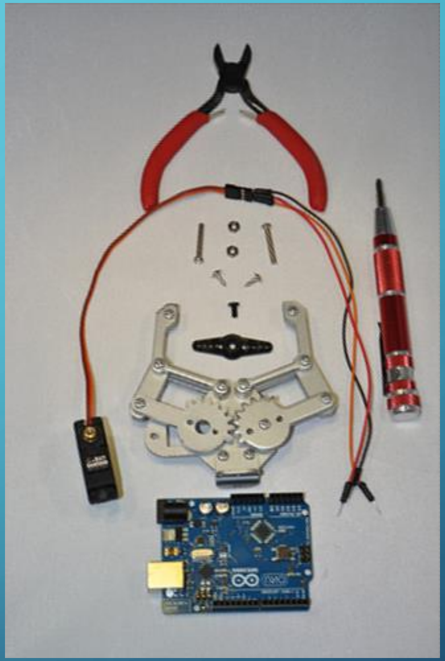
.5 ms / 4.8 usec = 104 the number required by our program to position the servo at 0 degrees
1.5 msec / 4.8 usec = 312 the number required by our program to position the servo at 90 degrees
2.5 msec / 4.8 usec = 521 the number required by our program to position the servo at 180 degrees

SAINSMART 4 AXIS ROBOT



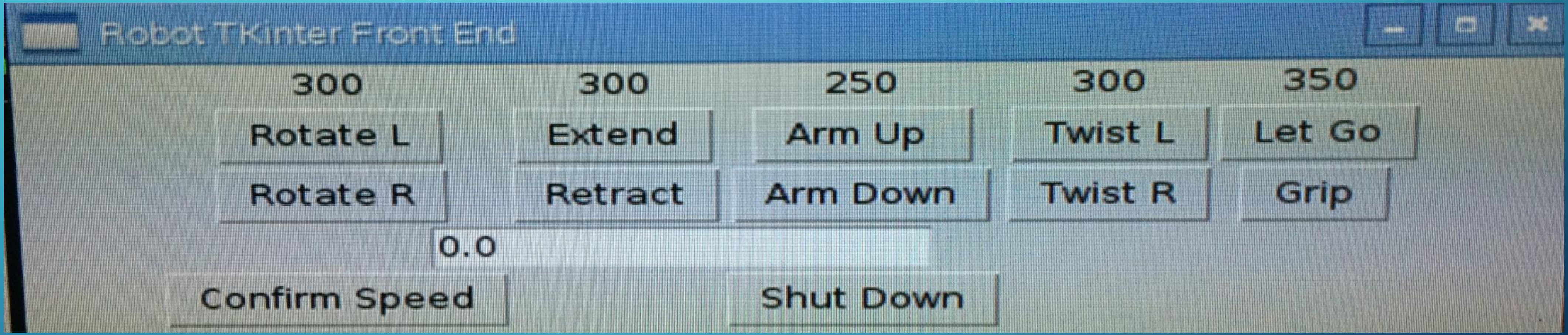
http://www.sainsmart.com/diy-4-axis-servos-control-palletizing-robot-arm-model-for-arduino-uno-mega2560.html

ROBOTIC CLAW



Robot Claw Tutorial - SparkFun Electronics

TKINTER FRONT END


Robot TKinter Front End
300
300
250
300
350
Rotate L
Extend
Arm Up
Twist L
Let Go
Rotate R
Retract
Arm Down
Twist R
Grip
0.0
Confirm Speed
Shut Down