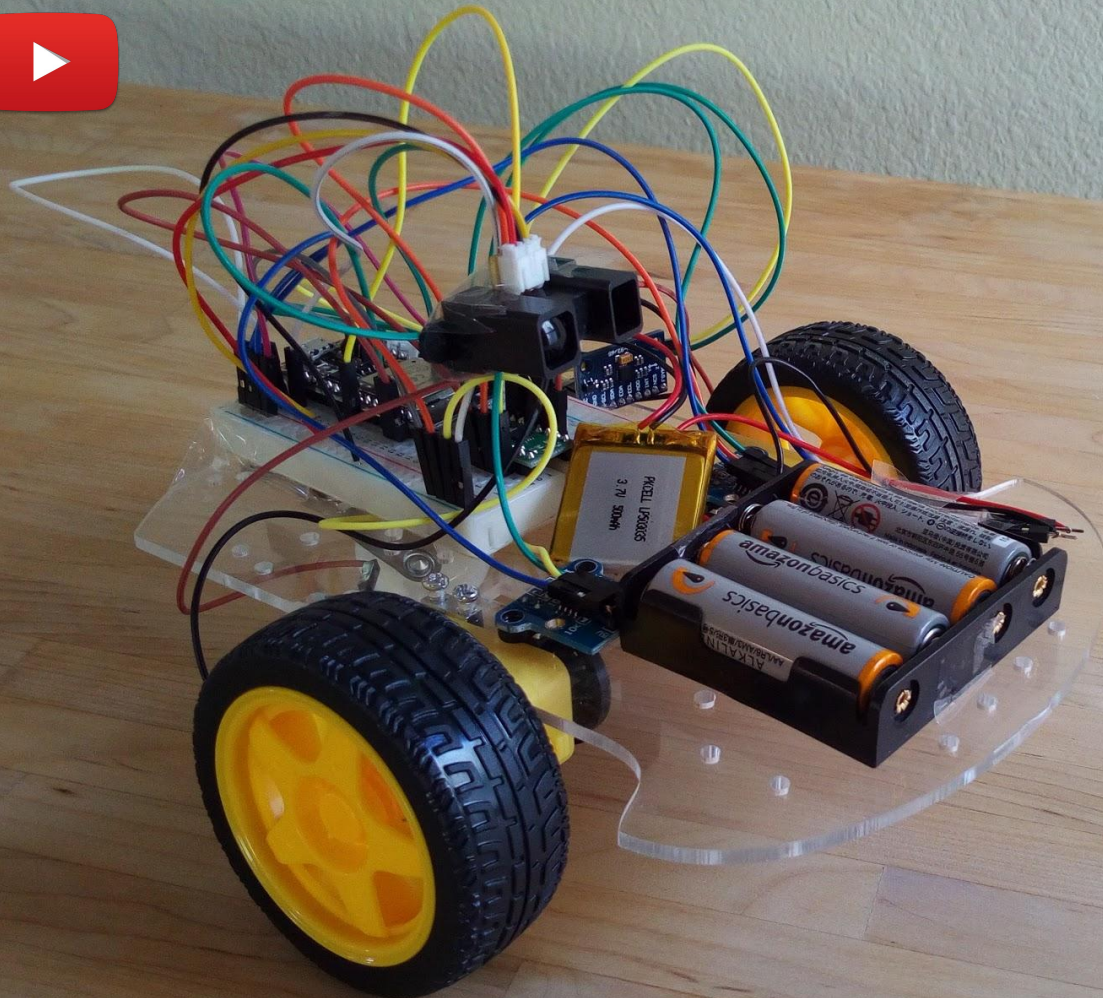


# WALL-EE 49



Andrew Shacker  
Samantha Yang

EE49 S'18, Boser



# Operation Flow

Connect to Internet,  
Broker

Initialize MPU  
Temperature, IR  
Distance Sensors

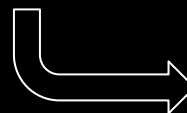
Turn robot 360° using  
PWM and encoder

Obtain encoder count  
of largest obstacle-free  
distance and turn

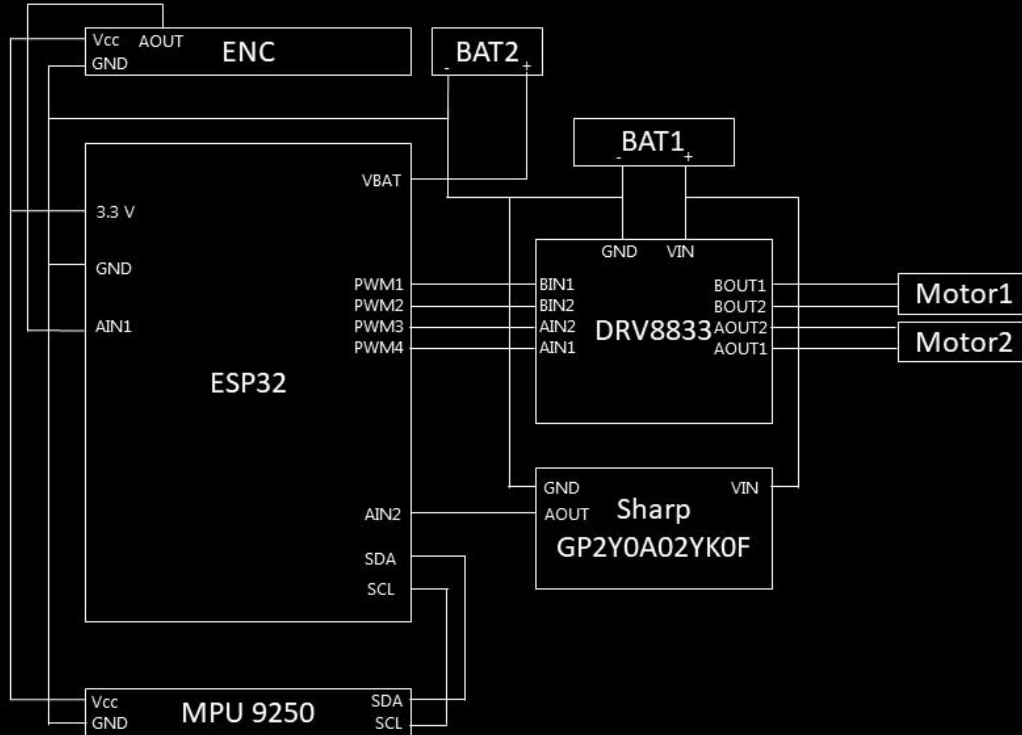
Convert IR  
Sensor ADC  
code to distance  
(in.) and travel  
this length

Sample  
temperature  
using MPU and  
send to  
ThingSpeak via  
MQTT

Repeat robot  
movement using  
timer interrupt



# Circuit Diagram and Code



```
from machine import Pin, I2C, ENC, Timer, ADC, PWM
from board import A10, ADC6
from board import A10, A5, A8, A6, A20, A21, SDA, SCL
from time import sleep
import time
from network import WLAN, STA_IF, mDNS
from mpu9250 import MPU9250
from plotclient import PlotClient
from mqttclient import MQTTClient

#Connect to WiFi
wlan = WLAN(STA_IF)
wlan.active(True)

wlan.connect('2WIRE030', '3922451880', 5000)

while not wlan.isconnected():
    print("Waiting for wlan connection")
    sleep(1)

print("WiFi connected at", wlan.ifconfig()[0])

# Advertise as 'hostname', alternative to IP address
try:
    hostname = 'veryviruswifi'
    mdns = mDNS(wlan)
    mdns.start(hostname, "MicroPython REPL")
    mdns.addService('_repl', 'tcp', 23, hostname)
    print("Advertised locally as {}".format(hostname))
except OSError:
    print("Failed starting mDNS server - already started?")

# start telnet server for remote login
from network import telnet

print("start telnet server")
telnet.start(user='veryviruswifi', password='1111')

# fetch NTP time
from machine import RTC

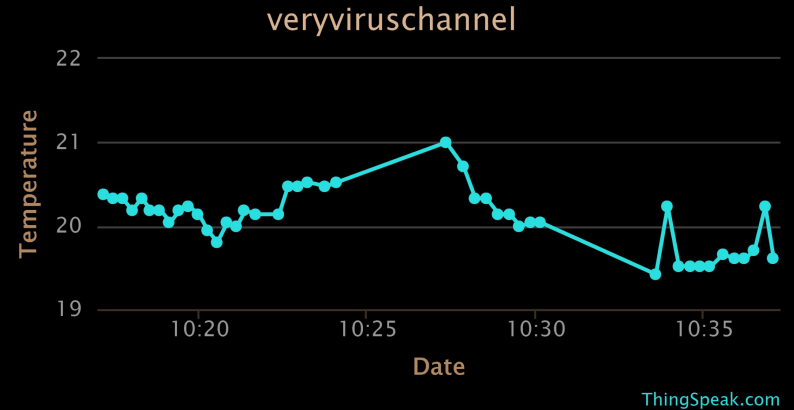
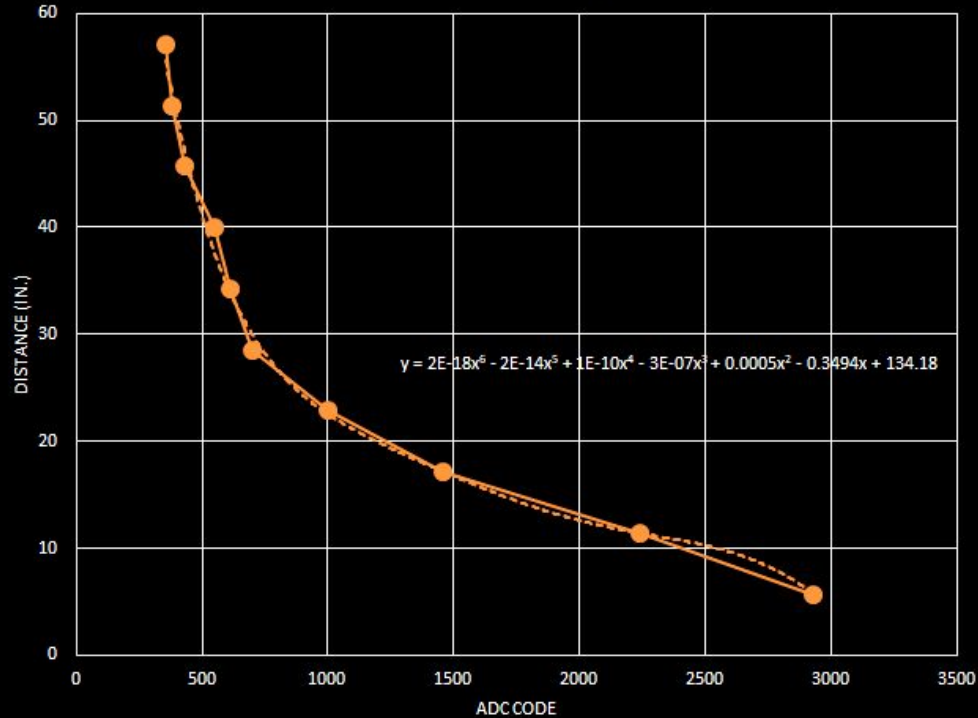
print("inquire RTC time")
rtc = RTC()
rtc.ntp_sync(server="pool.ntp.org")

timeout = 10
for _ in range(timeout):
    if rtc.synced():
        break
    print("Waiting for rtc time")
    sleep(1)
```

Code: [github.com/astroshacker/Wall-EE49](https://github.com/astroshacker/Wall-EE49)

# Distance Correlation and MQTT

IR Sensor ADC Output





# Applications

Volcanic Research



Food Delivery



Medical Robots

