

Final Lab Project

TECH 4234

Fall 2024

Ver 1.0

Project Summary

Last semester, you used the robot created for our Volkswagen Robotics Camp back in 2013, to create a collision avoidance robot.

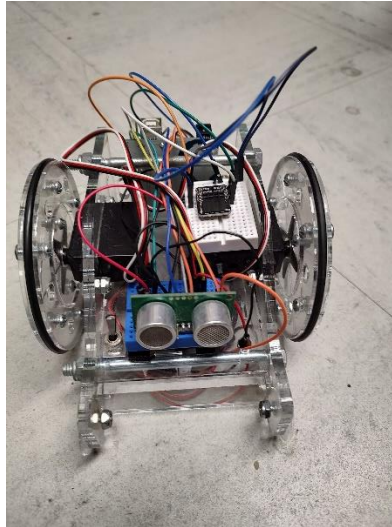


Figure 1- Simple Robot Base

This semester, you and your team of up to 3 people will add the ability to drive your robot via a UDP/TELNET connection directly to the ESP8266 module on the robot.

We will use the follow keys to command the robot:

- W – Forward
- A - Turn Left
- S - go backwards
- D - Turn right
- X – Stop
- Z – Collision Avoidance Mode
- Q – Quit Collision Avoidance Mode

We will set up the ESP8266 as an Access Point (AP) once again, like the last lab. This time, instead we will use port 23 (telnet) instead of port 80 (Web Server).

Lastly, before entering the loop, we will start a Telnet Server by using the following command:

```
AT+CIPSTART=0,"UDP","0.0.0.0",4445,4445,2
```

Once a computer connects to your AP with putty running, when they press a key, you should see a response as follows (in this example they pressed the key W"

```
+IPD,1,1:W
```

Each response should be 12 characters long so you will need to wait in a loop until the input buffer x[] has at least that many characters by waiting for the counter (c) to reach or exceed that count.

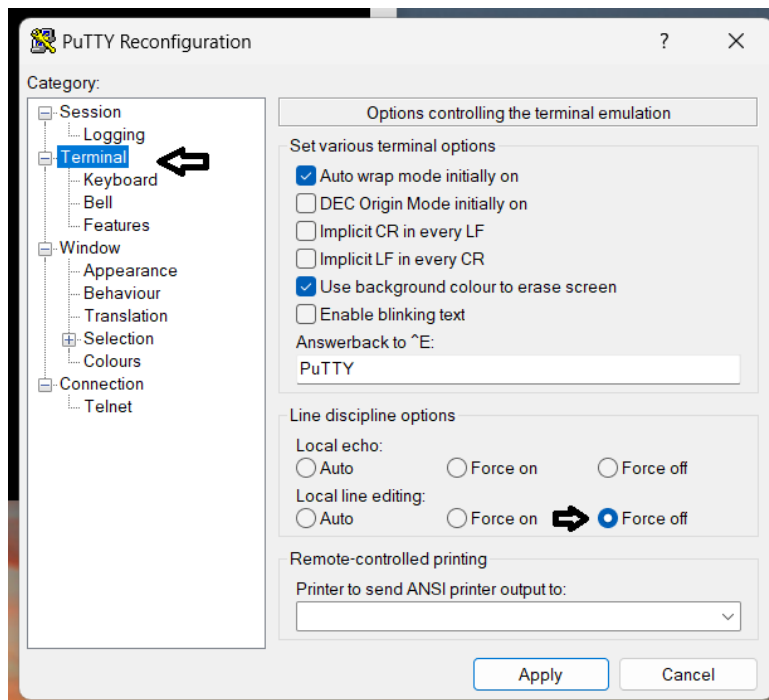
You will not need to do an AT+CIPSERVER=0 since we want to keep the connection opened to wait for the next key being hit.

If putty closes you will receive a message from the ESP8266 like the following:

```
1,CLOSED
```

But the ESP8266 will listen for a new connection, without the need to resend the CIPSTART.

Since we want the server to receive one character at a time (and not wait for a CR/LF) we will need to set up putty to send each character as it is typed. To do this go into putty, but before making a connection, go into the settings as shown below:



Then apply and start the telnet session using the IP address returned by the AT+CIFSR command (using the STAIP address returned by the execution of the command).