Weekly Report Two

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Course: CSC461 Course Project

Title:

Assemble Picar Mars Rover

Description:

We bought the Picar from Amazon, and before we install the software and build the system we must assemble the Picar completely and test it to make sure everything is assembled correctly.

Process:

Package List:
1. 1 Set Acrylic Plates
2. 1x Adeept Motor HAT V2.0
3. 1x Raspberry Pi Camera(with Cable)
4. 1x USB Microphone
5. 1x Ultrasonic Sensor Module
6. 2x Adeept RGB LED Module
7. 4x Adeept WS2812 RGB LED Module
8. 1x Adeept 3CH Line Tracking Module
9. 3x Servo
10. 1x Gear Motor
11. 4x Wheels
12. 1x Battery Holder
13. 1x Cross Socket Wrench
14. 2x Cross Screwdriver(Small and Large)
15. 1x Winding Pipe
16. 10x Bearing(6*F624ZZ + 4*F687ZZ)
17. 2x Umbrella Gear Set
18. Other necessary accessories(Wires, Nuts, Screws, Copper Standoffs, Couplings)

Also, we need to provide a Raspberry Pi single-board computer.
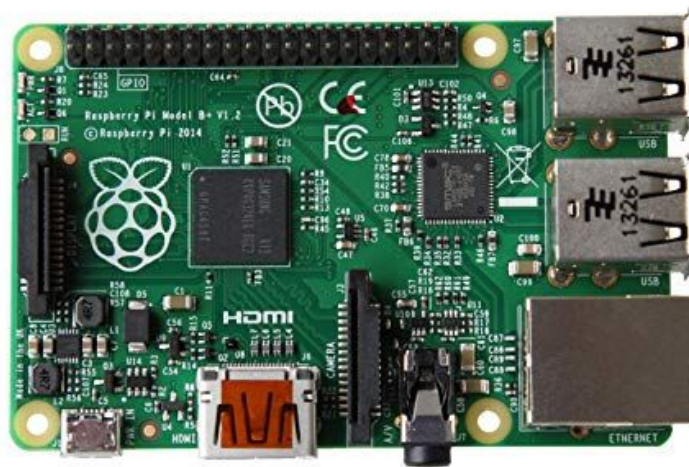
During this week we spend time to assemble the Picar, and finally, we finished it. The following picture is the completed Picar Mar Rover.
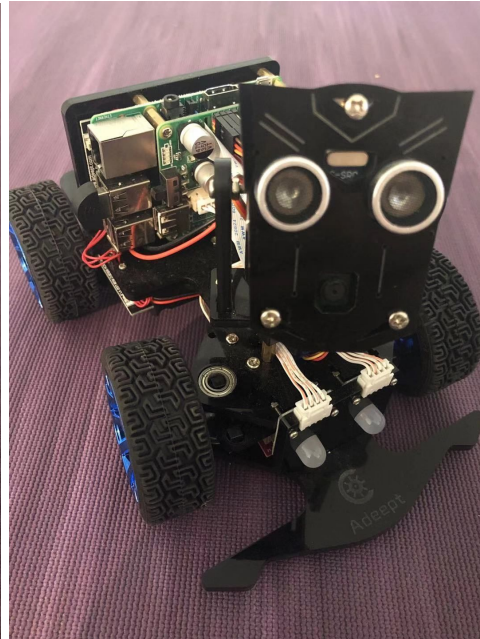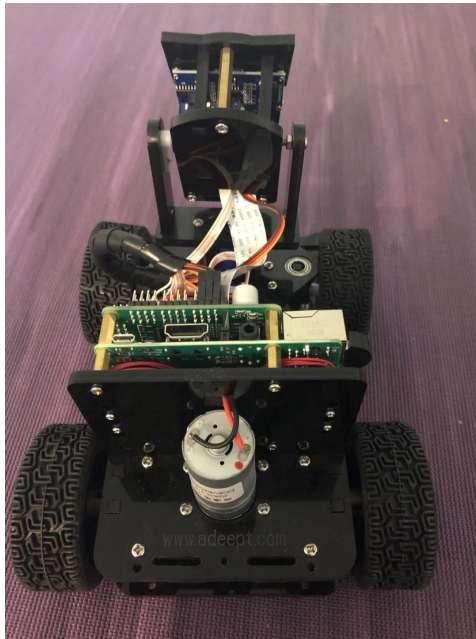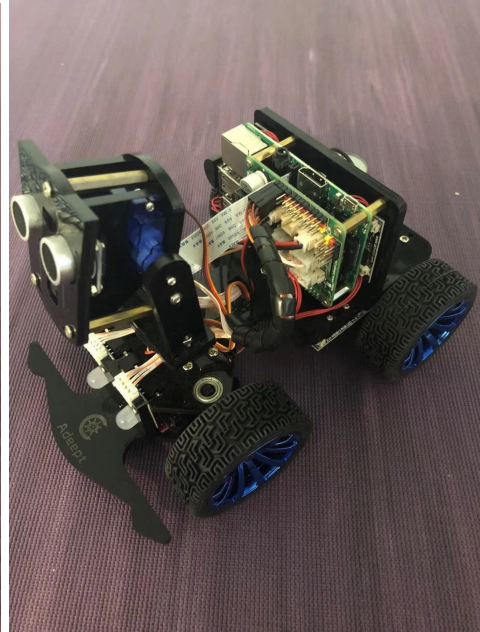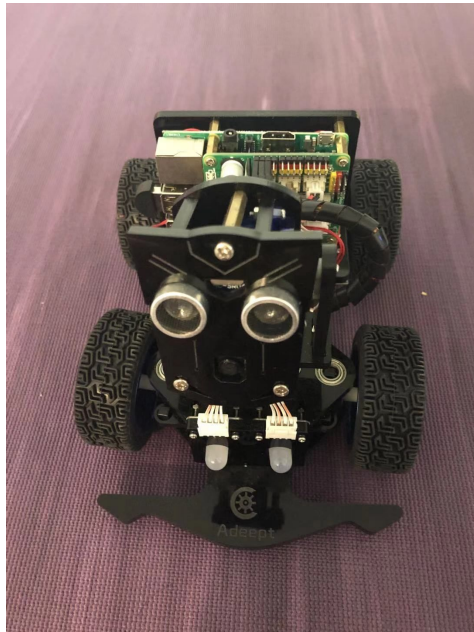
Before to run the Picar we must install a PuTTY application on my desktop use to make a connection between my desktop and Picar. The PuTTY is a kind of mobile application that allows the Windows user can use the ssh to connect to the server remotely.
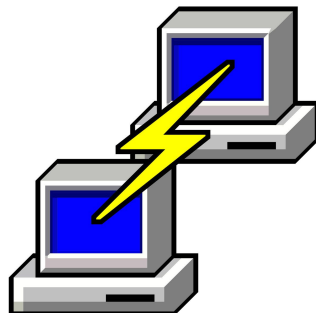
If we need to connect to the server and we need to know what is IP address of the server(Picar). So, we need to let the Picar connect to our home wireless service first.
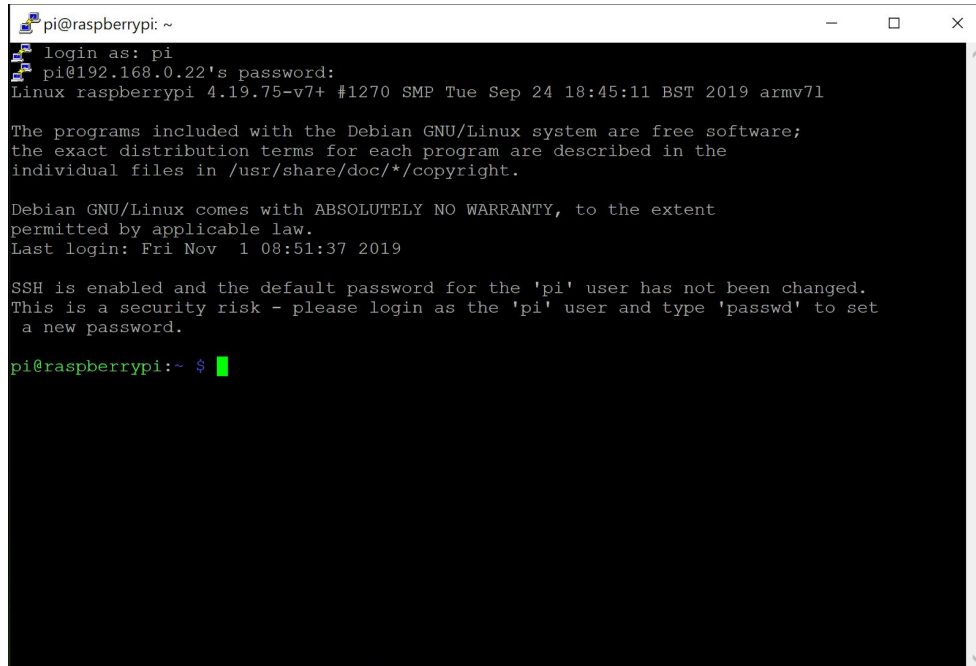
First, we need to use the sd card reader to install the Raspbian system into the Raspberry pi computer. Then, we need to enable SSH and setup WiFi on the computer, so we need to write the wpa_supplicant file under the root directory. After that, we install the sd card into the Raspberry pi computer.

```
country=US
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1
network={
        ssid="WIFI"
        psk="PASSWORD"
        key_mgmt=WPA-PSK
        priority=1
}
```

Now, we turn on the computer and log in to our network services profile and find out the IP address assigned by our internet router. Once, we found the IP address of the Picar then we can use the PuTTY application to login to the computer remotely.
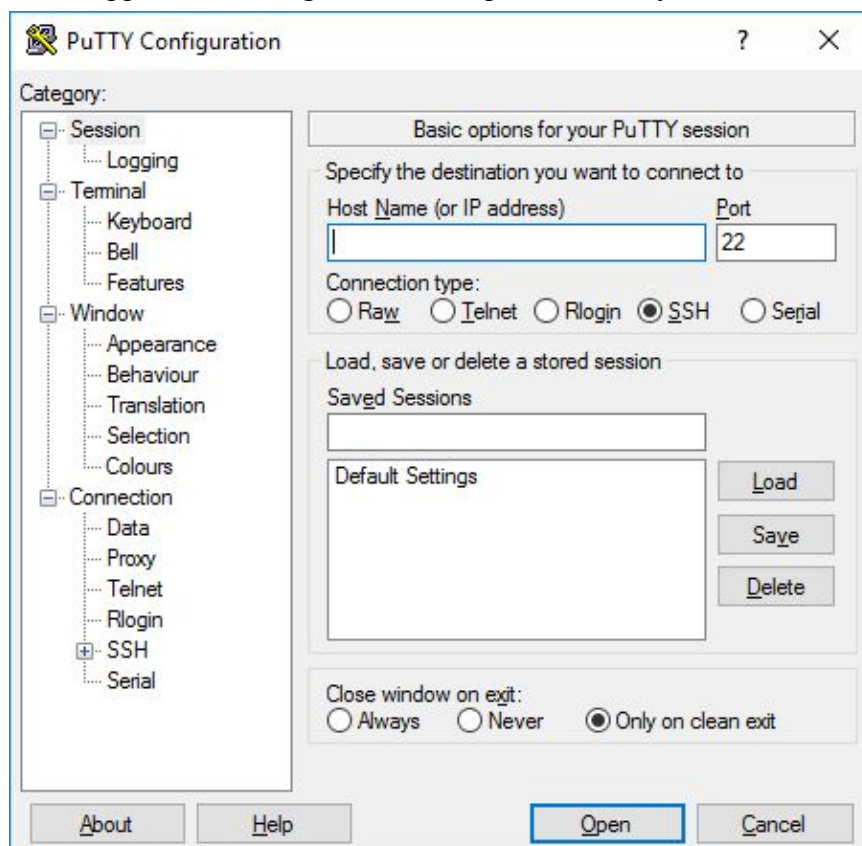
Finally, we able to login to the computer by using the PuTTY application, and now we finish the assembly part of the Picar, and the next step is to install the application and python library on my desktop and Raspberry pi computer. That will make us allow to transfer data between two computers.

Technical challenges met:

After installing application, we want to use ssh to connect to the server remotely. But the ssh shows we can not connect correctly.

solved and remaining :

We tried this to check all the data settings and found that it still couldn't be run. In the end we found the problem, we can not connect to the server correctly due to WIFI settings. After changing the WiFi settings, we successfully connected to the server remotely by using ssh.

Conclusion:

This week we finish the assemble part, next week we will install all the applications we need to use in both computers and try to study and understand each application and python library. Currently, we understand the Picar is a kind of small portable computer, we install a system into the Raspberry pi computer, and we able to use ssh to connect to the server remotely. So, we able to type command on my desktop and it will transfer the data between my desktop the Raspberry pi server.