GoPiGo Getting Started

Contents

Raspberry Pi OS

NOTE: The default username and password for a Raspberry Pi:
Username: **pi** Password: **raspberry**

Raspbian is Linux: All commands in **Raspbian** are **case sensitive**

NOTE: Remove all USB drives from computer except the MicroSD adapter.

1. Insert the Transcend adapter with minimum 8 GB MicroSD card into a USB port on your computer.
2. Download and install **Raspberry Pi Imager**
   https://www.raspberrypi.org/blog/raspberry-pi-imager-imaging-utility
   a. **Operating System → Choose OS →**
      Raspberry Pi OS (other) → Raspberry Pi OS Full (32-bit)
   b. **Storage:** Choose **TS-RDFS SD Transcend**
   c. **Write:** Write the image

d. Remove the Transcend adapter, and put it back in your computer USB Drive.

3. On your computer, use Notepad to create a file named **wpa_supplicant.conf** (Make sure it does not have a .txt extension.)

The following is an example of adding your home network and WNCC-Internet to your wireless network.

```
country=US
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1


network={
    ssid="network_one_here"
    psk="wpa_password"
    id_str="home"
}


network={
    ssid="WNCC-Internet"
    key_mgmt=NONE
    id_str="work"
}
```

4. Copy this file to the boot drive of the MicroSD card.
5. Create a blank file named **ssh** in the boot drive of the MicroSD card.
6. Make sure the GoPiGo is powered off.
7. Insert the MicroSD card in the Raspberry Pi.
8. Power up the GoPiGo. This will take a little longer the first time you boot the robot.
9. Use ZenMap to scan your network for the Raspberry Pi, or Connect a keyboard, mouse and monitor to it. You need to find the IP address.
10. Go to https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html
11. Download the **putty** client.
12. Start the putty client. Type in the IP address of the GiPiGo. Click Open.
13. Accept the **Putty Security Alert**.
14. Login as: **pi**
15. Password: **raspberry**
16. Type: **sudo raspi-config**

17. Select **Interface Options → VNC** → Select **Yes.**
18. Go to https://www.realvnc.com/en/connect/download/viewer/
19. Download and install the VNC Viewer for your OS.
20. Use the VNC Viewer to connect to the IP address of your GoPiGo.
21. Click **OK** on the security warning.
22. Click **Next** on the Welcome to Raspberry Pi welcome screen.
23. Set **Country**. Click **Next**.
24. **Change Password**: **robots1234** Click Next.
25. **Set Up Screen**. Click Next.
26. **Setup Wifi Network**. Click **Skip**.
27. Click Next to Update Software. This will take a while.
28. To change the display resolution, open a terminal: **sudo raspi-config**
29. **Display Options → Resolution →** Select the resolution of the GoPiGo screen that works for you.
30. Press the Tab key to select Ok. Tab to Finish. Yes to reboot.

Setup GoPiG3 Software

1. At the terminal. This will take some time.

```
curl -kL dexterindustries.com/update_gopigo3 | bash
curl -kL dexterindustries.com/update_sensors | bash
```

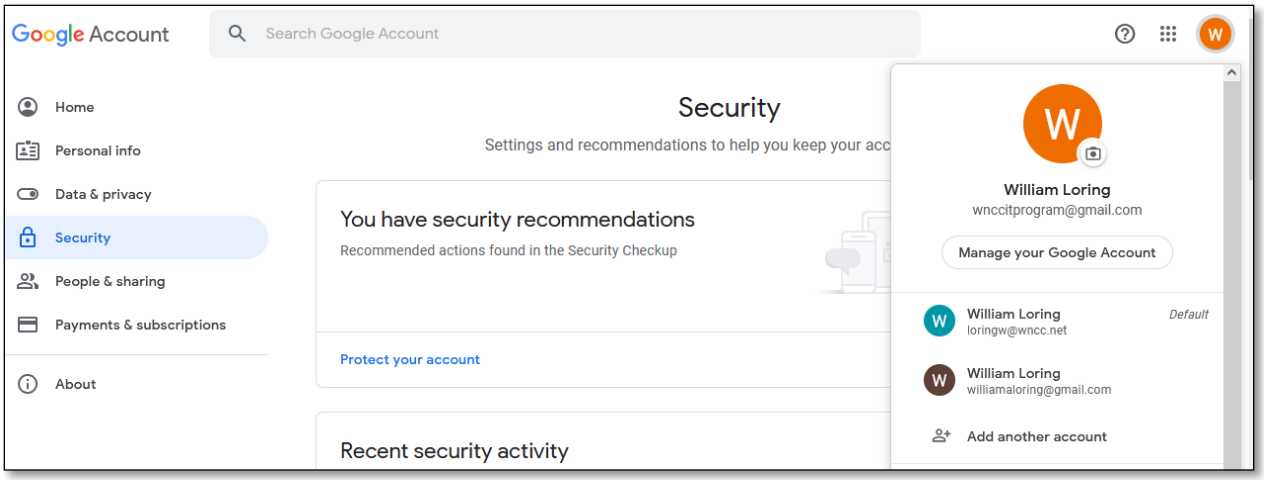
2. Reboot the Raspberry Pi to make the settings take effect: **sudo reboot**

Email IP Address on Startup

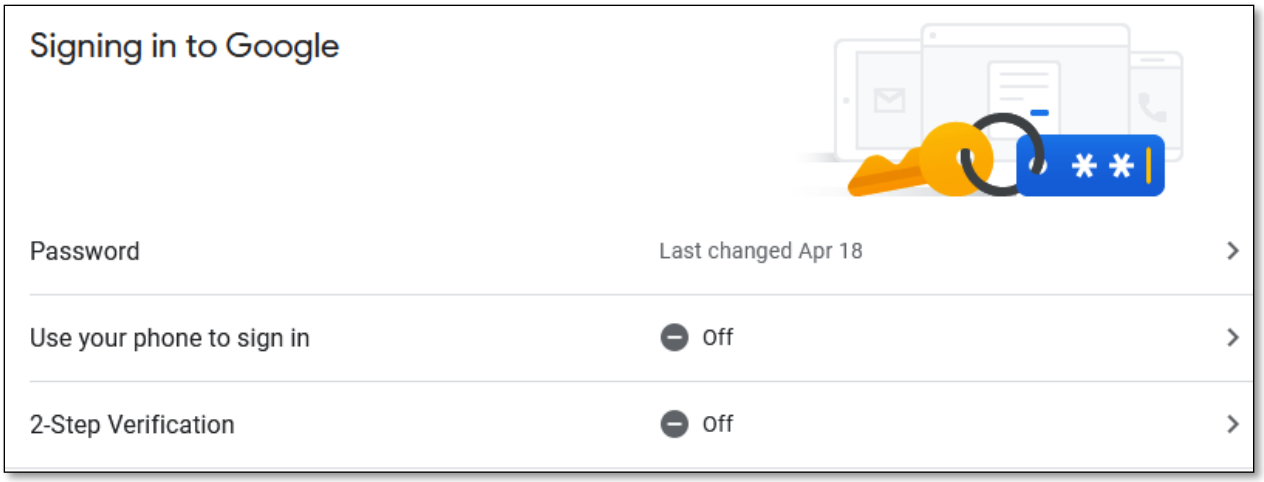
We want our GoPiGo to email us the IP address whenever it starts up.

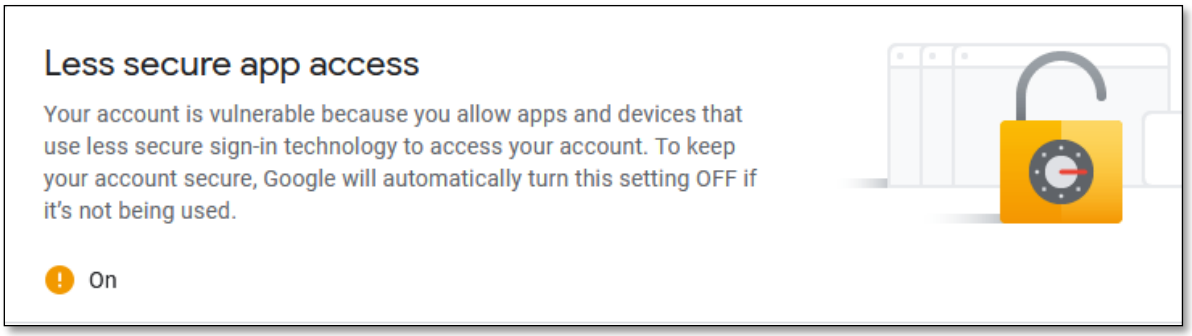
You will need to use or create your own Gmail account.

1. Logon to your Gmail account on a web browser.
2. Go to **Manage your Google Account → Security**.



3. Scroll down and turn these settings off as shown.





Complete the following steps on the GoPiGo desktop.

1. Use the Web Browser on the upper right side to go to https://github.com/itinstructor/WNCCNASA
2. Logon with your GitHub account.

3. Go to **Code** → **Download ZIP**.
4. The file will download quickly. On the lower left side of the browser → Right Click on the file → **Open in Folder**.
5. Right Click the Zip file → **Extract Here**.
6. Right Click **startup_mailer.py → Copy.**
7. Create a folder named **Code** → Paste the file into that folder.
8. Right Click on **startup_mailer.py** → **Geany**
9. Change the **EMAIL_DESTINATION** email address to your own email address.
10. Change **EMAIL_SOURCE** and **EMAIL_PASSWORD** to your gmail account information.
11. Save the file.
12. Open a terminal.
13. Type in the following to make the script executable.

```
sudo chmod +x /home/pi/Code/startup_mailer.py
```

14. There should not be any errors if the command was successful.
15. Test the script with the following command.

```
python3 /home/pi/Code/startup_mailer.py
```

16. In a few moments, you should receive an email with your GoPiGo IP address.

Run startup_mailer.py Script on Startup

1. At the terminal, type in the following command to access the Raspbian scheduler.

```
crontab -e
```

2. Press Enter to edit the file with nano
3. Cursor to the bottom of the file. (The mouse will not work.)
4. Type in the following information. (Sleep 10 waits 10 seconds after startup to run the script.)

```
@reboot sleep 15 && python3 /home/pi/Code/startup_mailer.py
```

5. Type **CTRL+O** to Write Out the file.

6. Press **Enter** to Write the file.
7. Press **CTRL+X** to Exit nano.
8. Type **poweroff**
9. Wait until the GoPiGo has a chance to shut down.
10. Turn on your robot and you should receive an email with your IP address.

Power the GoPiGo

*Notice the power switch on the battery. The battery will need to be *on* before starting the robot. **However,** the robot should be turned off **before** turning off the battery.

Update Raspbian

Once in a while, you will want to update the Raspberry Pi OS. This may take some time.

```
sudo apt-get update
sudo apt-get dist-upgrade
```

Update GoPiGo Software

Once ins a while

```
sudo bash /home/pi/Dexter/GoPiGo3/Install/update_gopigo3.sh
sudo bash /home/pi/Dexter/DI_Sensors/Install/update_sensors.sh
```

Multiple Wireless SSID's

If you are using the GoPiGo on multiple networks, edit the following file as shown. This command uses nano, a simple text editor built into the operating system.

```
sudo nano /etc/wpa_supplicant/wpa_supplicant.conf
```

The following is an example of adding the WNCC-Internet to your wireless networks.

```
country=US
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1


network={
    ssid="network_one_here"
    psk="wpa_password"
    id_str="home"
}


network={
    ssid="WNCC-Internet"
    key_mgmt=NONE
    id_str="work"
}
```

1. **CTRL+O** (Writes the file)
2. **Enter** to finish saving the file.
3. **CTRL+X** (Exit nano)

The pi will automatically connect to whichever wireless network is closer and has better signal. You can add as many wireless networks to this file as you wish.

Set Interfaces

1. Go to the Raspberry icon on the left side of the toolbar.
2. **Preferences** → **Configuration** → **Raspberry Pi Configuration** → **Localisation**.
3. Click **Interfaces**
    a. Enable Camera, SSH, SPI, I2C
4. Click OK.

Set 12-Hour Clock

To change the clock from military time to 12 hour time:

1. Right Click on the clock on the right hand side of the toolbar → **Digital Clock Settings.**
2. Change Clock Format to: **`%I:%M %p %x`**
    a. **%I:%M** = Hours Minutes

b. **%p** = AM PM

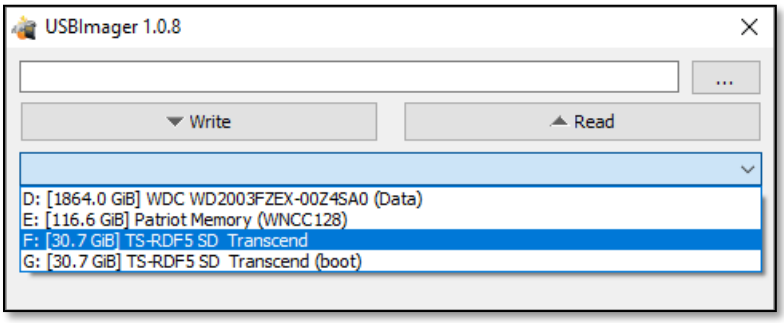
c. **%x** = current date

3. Click OK.

Backup GoPiGo to a File Image

Things go wrong. It is a good idea to back up your MicroSD card to a file image at this point and any point prior to making big changes.

1. Go to https://gitlab.com/bztsrc/usbimager
2. Download the windows GDI version.
3. This is a portable program, there is not an installation, the program runs from wherever you put it.
4. Click the downward pointing triangle as shown to select your MicroSD card. The card will show 2 partitions, it doesn't matter which one you choose, the entire card will be backup up to a file image.



5. Click **Compress**.
6. Click **Read**. The program will automatically create a compressed backup file of approximately 3GB on your Desktop.