aws

AWS DeepRacer

Getting started guide

Getting started guide

Contents

In the box

1. Vehicle chassis

2. Vehicle body shell

3. Micro-USB to USB-A cable

4. Compute battery

5. Compute battery connector cable

6a. Compute battery charge adapter

6b. Computer battery charge cable

7a. Vehicle power cable

7b. Vehicle power adapter

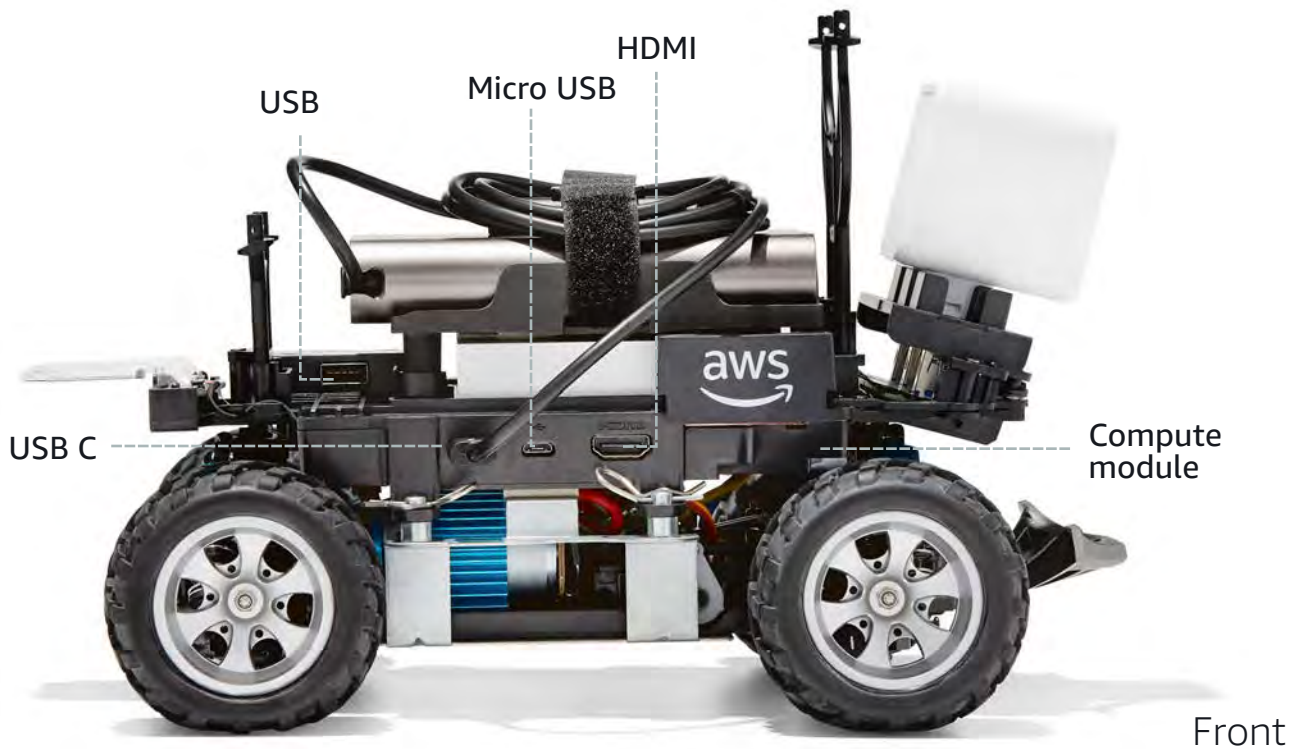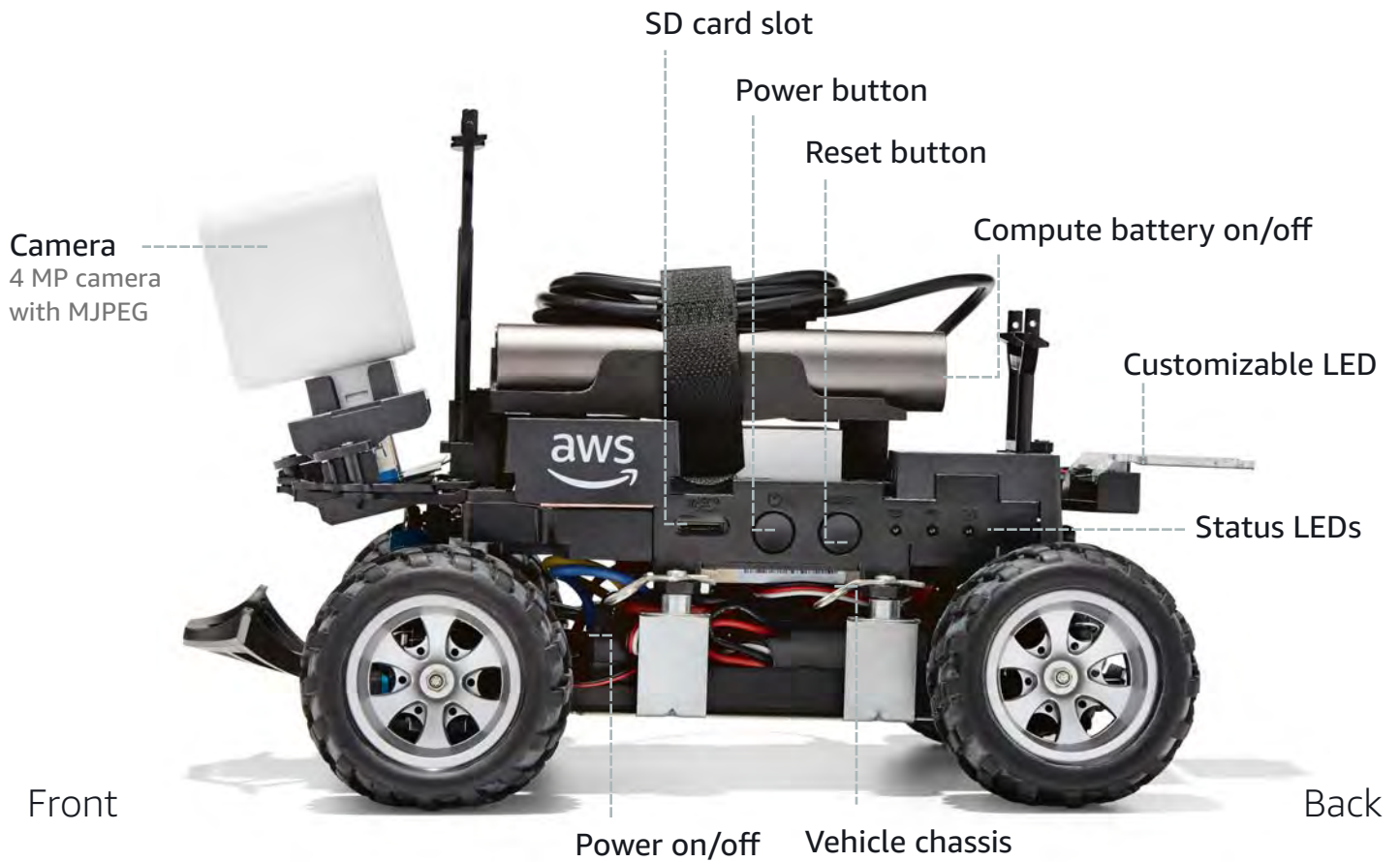8. Pins (spare parts)

9. Vehicle battery

10a. Vehicle battery charge adapter

10b. Vehicle battery charge cable

11. Silicon cable holder (not shown)

12. White marking tape (not shown)

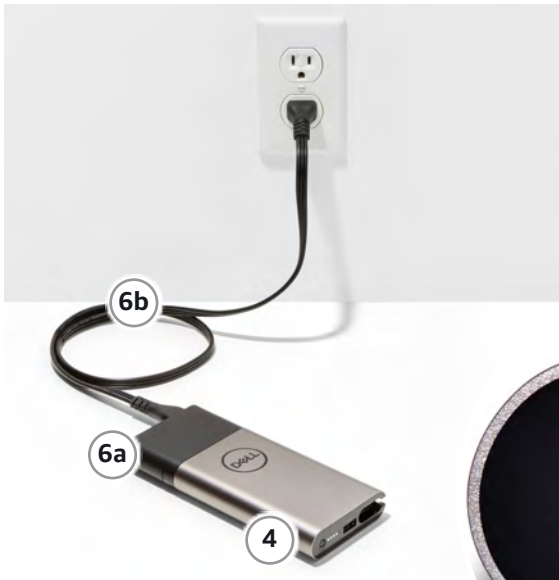# Vehicle at a glance

SD card slot

Power button

Reset button

Compute battery on/off

Camera
4 MP camera
with MJPEG

Customizable LED

Status LEDs

Front

Back

Power on/off   Vehicle chassis

HDMI

Micro USB

USB

USB C

Compute
module

Back

Front

Preparation

Charge batteries

Approx. time: 2hrs.

1. Charge compute battery

Connect the compute charge adapter, the compute battery charge cable and the compute battery. Plug into an power outlet to charge.
Note: Press button to power on. Battery indicator LEDs glow when battery is charged or at capacity.

2. Charge vehicle battery

Connect the vehicle battery charge adapter, the vehicle battery charge cable and the vehicle battery. Plug into an power outlet.
Note: Green LED – full charge and ready

Red and green LED indicates vehicle battery is charging

Preparation

Gather these items

DeepRacer vehicle

Vehicle battery

Compute battery connector cable

Compute battery

Setup your vehicle
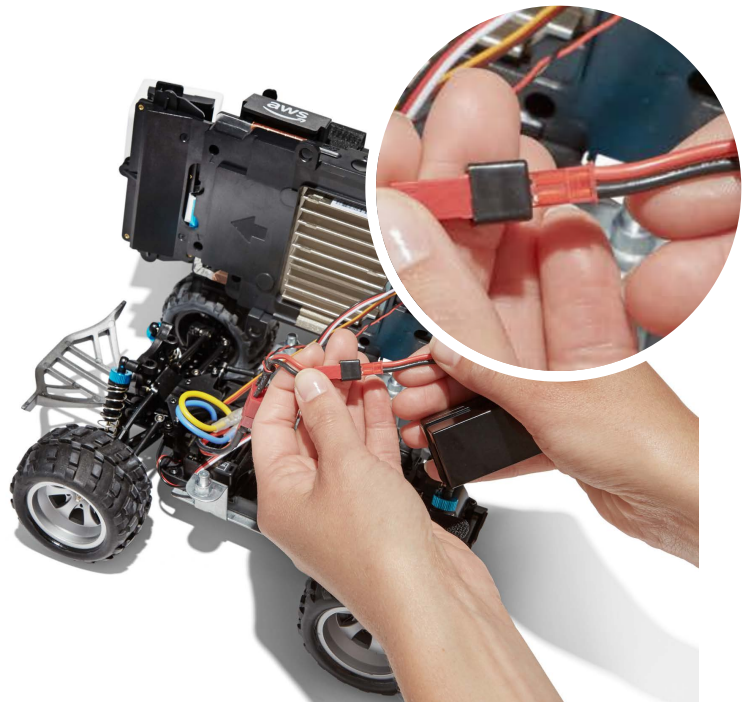
Approx. time: 5-10min.

1. Unpin and remove vehicle shell

2. Unpin chassis by removing four pins
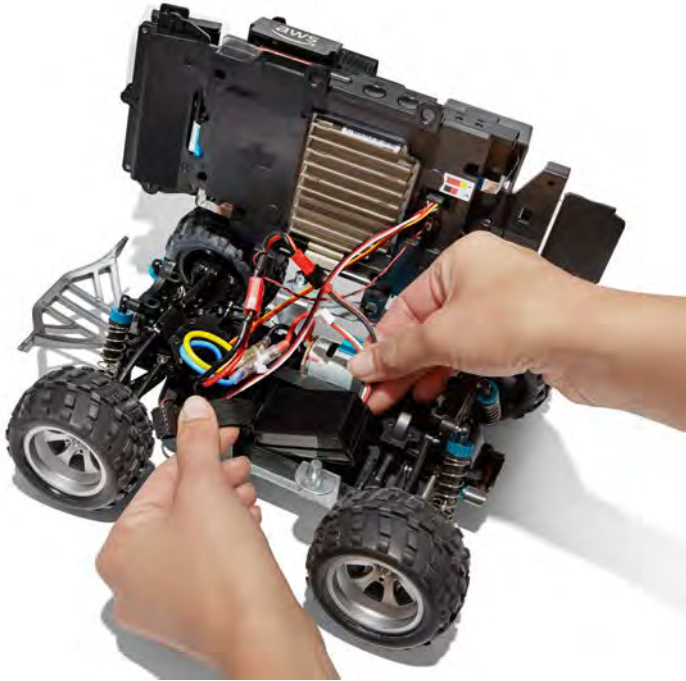

3. Lift compute module
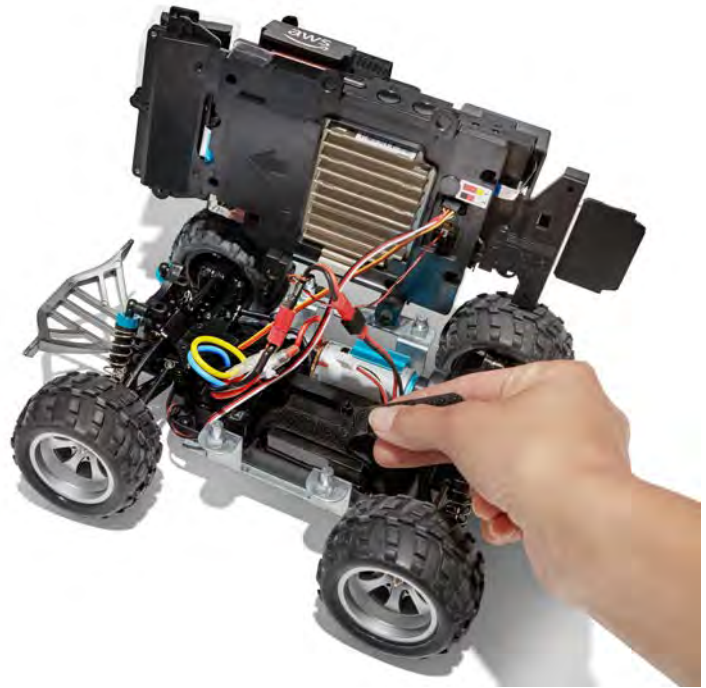
 Note: wires attached

4. Connect vehicle battery

Use the red connector cable, the white connector is for charging
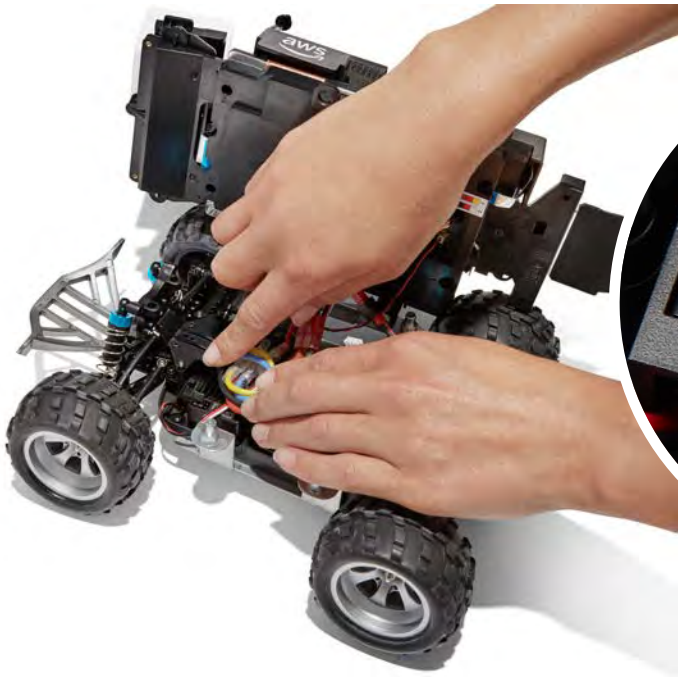
Setup your vehicle

5. Insert vehicle battery in the cradle

6. Secure vehicle battery with velcro strap

7. Turn switch on, then off

Listen for an indicator sound, then **switch off**
Note: Sound indicates the vehicle battery has charge and everything is working

Setup your vehicle

8. Secure vehicle with four pins

9. Connect compute battery to vehicle
Connect one side of the cable to the battery and the other side to the USB-C port of the vehicle

10. Insert compute battery in cradle and coil cable
Use the same orientation of the battery as shown

11. Secure compute battery and cable velcro strap

Setup your vehicle

12. Press the power button to turn on

13. Turn on vehicle compute and wait for blue LED

Connection time: Approx. 2 minute
See LED Tips for additional information

Next: Connect to Wi-Fi

Connect to Wi-Fi

Let's get your vehicle connected to a Wi-Fi network and use the **vehicle's IP address** to drive your vehicle manually and autonomously.
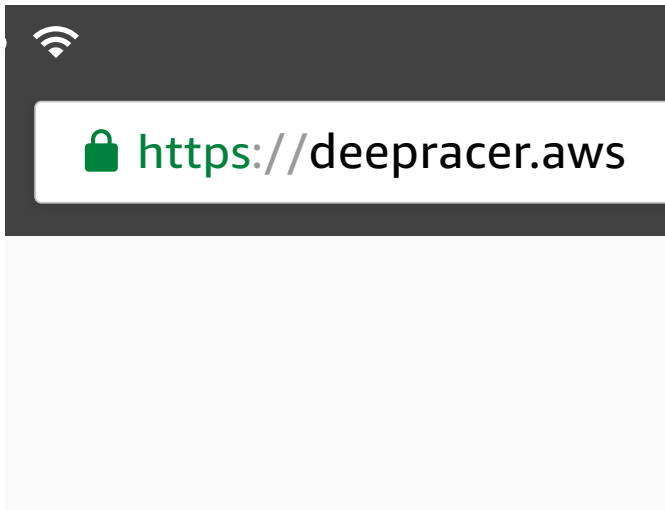
Approx. time: 10-15min.

**1. Connect vehicle to computer with micro-USB/USB-A cable**

Connect to Wi-Fi

🔒 **https**://**deepracer.aws**

⚠️

Your connection is not private

Attackers might be trying to steal your information from **deepracer.aw**
passwords, messages, or credit cards). Learn more

NET::ERR_CERT_AUTHORITY_INVALID

☑ Help improve Safe Browsing by sending some system information and page
Privacy policy

Advanced

2. Open browser, enter deepracer.aws

Note: **Disable Wi-Fi on your computer** and disconnect ethernet cable
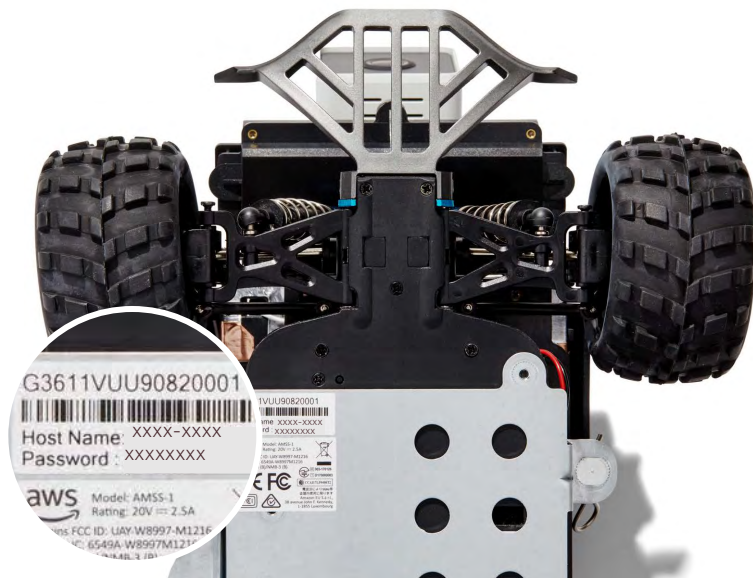ⓘ Trouble connecting, see **Wi-Fi Tips**
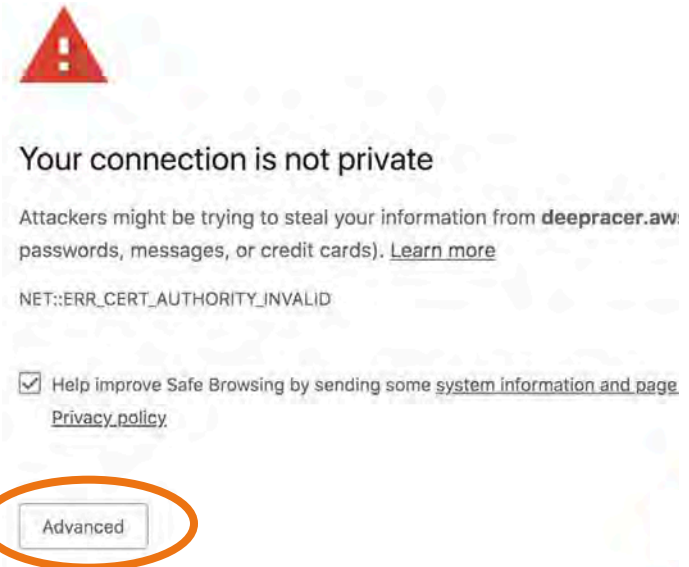
3. Proceed with a non-private connection

Select advanced and 'Proceed to deepracer.aws'
to get to unlock your AWS DeepRacer
Note: Firefox requires a trust certificate

G3611VUU90820001
Host Name: XXXX-XXXX
Password: XXXXXXXX
Model: AMSS-1
Rating: 20V ⎓ 2.5A

Unlock your AWS DeepRacer vehicle

The default AWS DeepRacer password can be found printed on the bottom of your vehicle.

Password

Access vehicle

Forgot password ☑

4. Password printed on the bottom of the vehicle
ⓘ Note: Write down the password, you will need to use it later.
Some letters in the password might be hard to recognize.
Try '**l/I, o/O/0 and i/l**' if your password doesnt work

Connect to Wi-Fi

DeepRacer Wi-Fi network connection

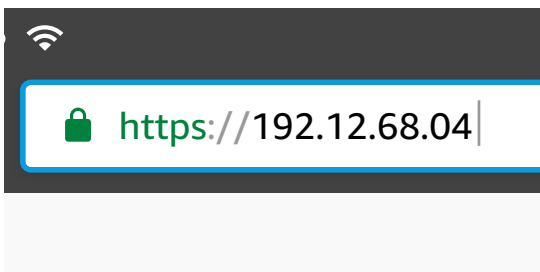Connect your DeepRacer vehicle to Wi-Fi to access and control your vehicle by using the Vehicle IP address.

Network settings

Wi-Fi network SSID	Vehicle IP address
No network	--

▶ Update Wi-Fi network

5. Update Wi-Fi network to establish vehicle IP address

🔒 https://192.12.68.04

ⓘ **6. Write down vehicle IP address** to access your vehicle on any browser

Note: This is an example, not a your vehicle IP address

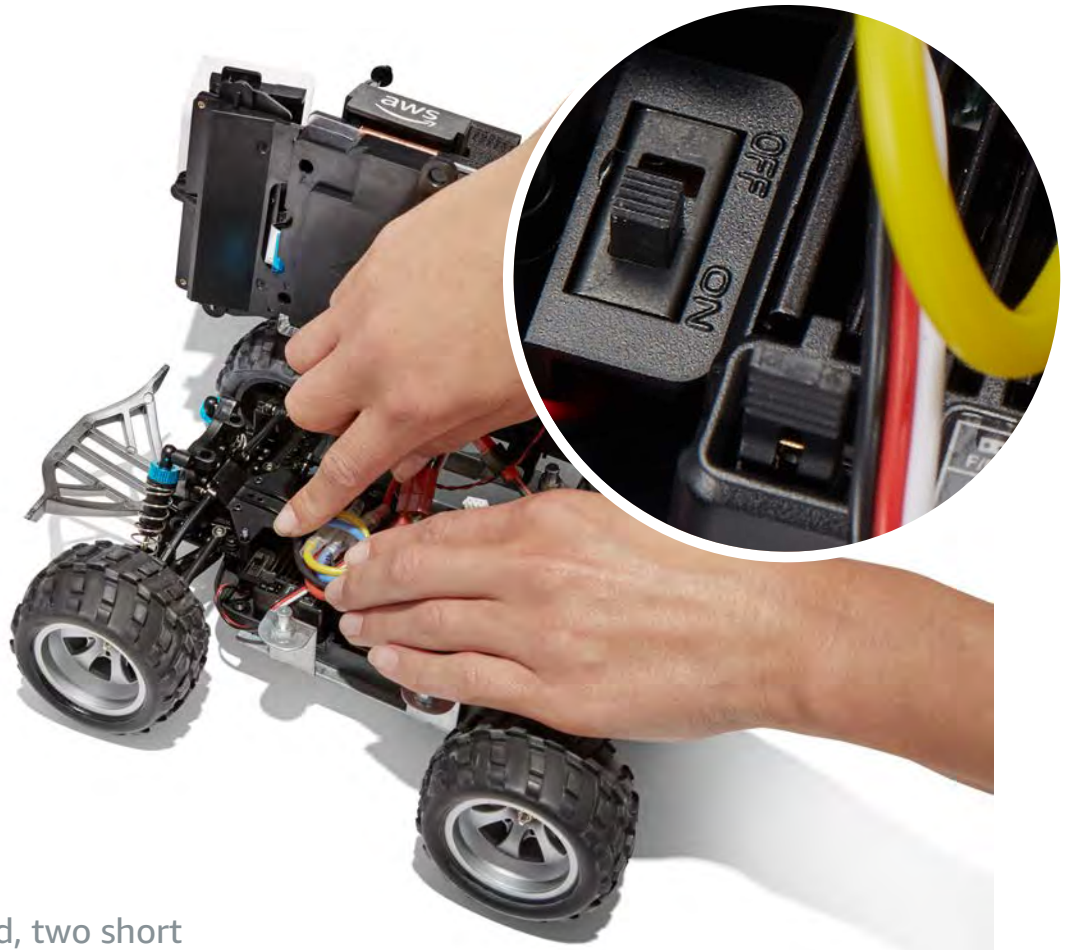**6. Unplug micro-USB/USB-A cable connecting vehicle to computer**
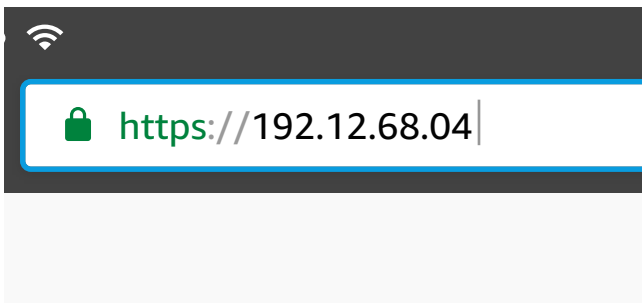
Next: Drive

11

Drive

Use any device with a browser to drive your DeepRacer

Connect your device to the same Wi-Fi network as your AWS DeepRacer

1. Switch on vehicle
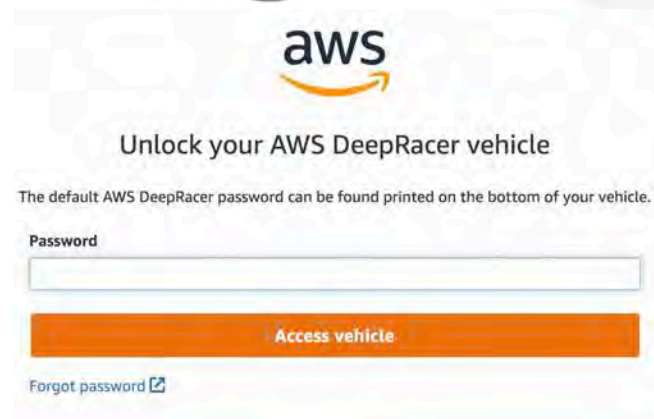Listen for an indicator sound, two short beeps and one long beep

🔒 https://192.12.68.04

aws

Unlock your AWS DeepRacer vehicle
The default AWS DeepRacer password can be found printed on the bottom of your vehicle.

Password

[Access vehicle]

Forgot password 🔗

2. Enter vehicle IP address to access your vehicle on any browser

Note: This is an example, not a your vehicle IP address

3. Enter password to drive

Note: Found printed on the bottom of your vehicle

4. Update software
Refresh browser if the software update takes more than 10min.

Next: Drive and experiment

Drive and experiment
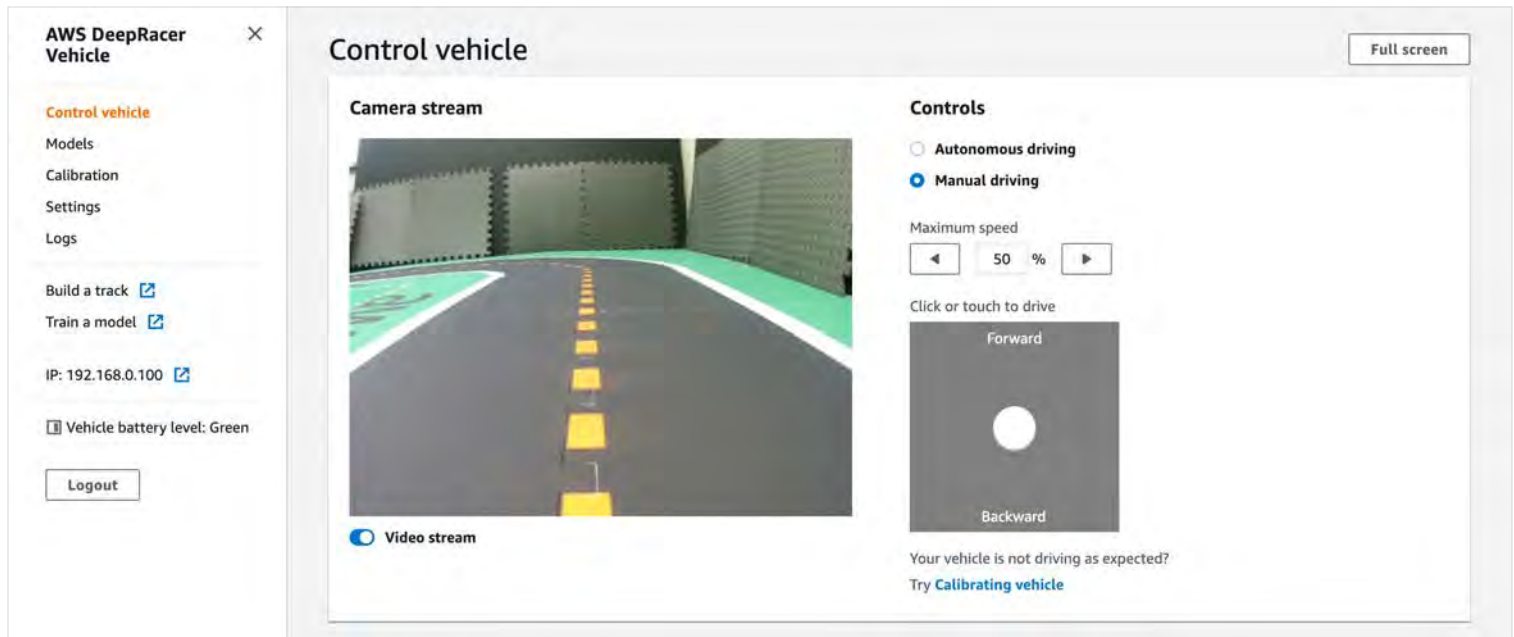
1. Manually drive

Manually drive your vehicle with the touch joystick.

    ⓘ   A. Turn on the vehicle, **see Drive** for details

        B. Gradually increase throttle limit

Note: If the vehicle moves backwards, see Calibration in navigation menu

2. Build a straight track

Build a straight track segment to experiment with pre-loaded reinforcement learning (RL) sample_model. The model has been optimized to stay within boundaries.

Approx. time: 5min.

A. Lay down tape on one border of the straight line. Length varies on available space.

Drive and experiment

B. Measure a width of approx. 24", excluding tape borders.

C. Lay down a parrallel line and match the length.

D. Place the vehicle at one edge of the track.

3. Autonomous driving mode

A. Select the **Autonomous driving** mode, load the **Sample_Model** using the drop down.
B. Press **Start vehicle** button
C. Gradually increase the **Maximum speed %** until model begins to move
Note: Check if the vehicle switch is on.

In general, optimizing a trained model for transfer to a physical AWS DeepRacer vehicle is a challenging learning process. It often requires iterations through trials and errors.
For more tips, see **Optimize Training AWS DeepRacer Models for Real Environments**

Drive and experiment
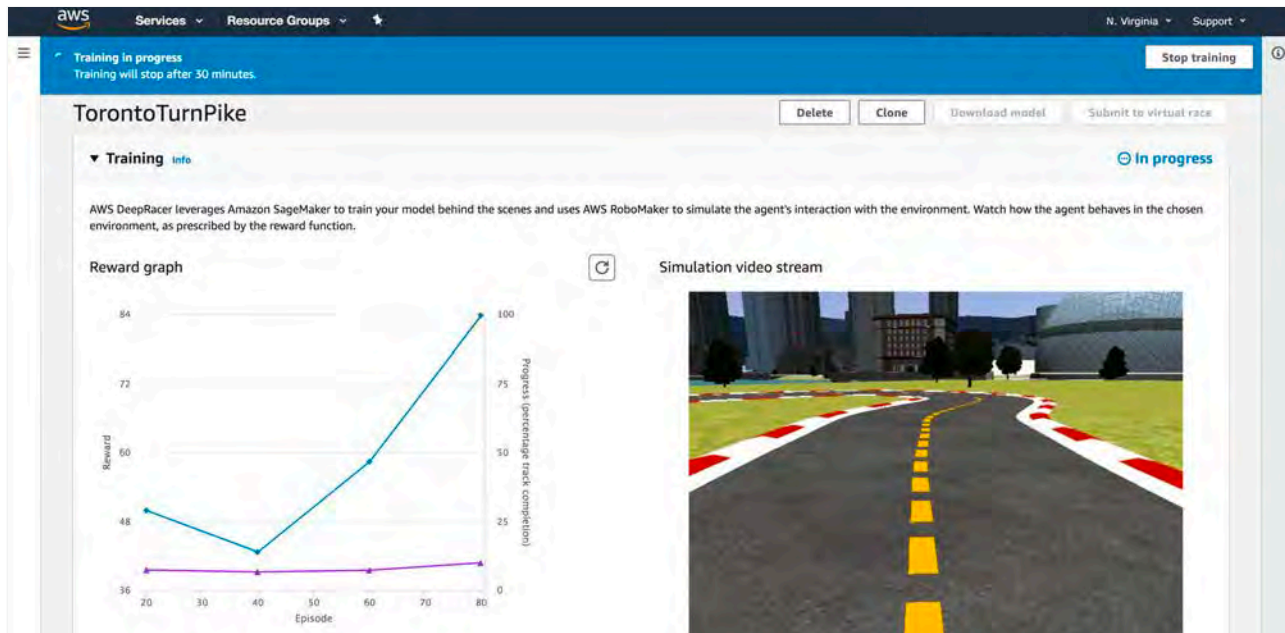
4. Train your own reinforcement learning (RL) models

Train your own RL models and watch training in simulation. Evaluate models and download models to your AWS DeepRacer to test on tracks.

Go to **https://www.aws.amazon.com/deepracer**

5. Join the DeepRacer League

Welcome to the world's first global autonomous racing league, open to anyone.

Summit Circuit: Find a Race

6. Join the community

DeepRacer forum

DeepRacer Slack channel

DeepRacer Github issues

DeepRacer documentation

Tips

Battery level and recharging

Compute battery charge

Press and hold the power button to turn on/off.
Note: LED represents battery level

Charge compute battery

Connect charger and charger cable to an outlet.

Tips

Battery level and recharging

Vehicle battery

Use the white cable and insert in vehicle battery charger.

Green: fully charged battery
Red: battery needs recharging

Green/Red LEDs - charge required

Tips

Understanding LED behavior

Battery LED Guide

Solid blue: Batery charged, application running

Blinking blue: updating software

Yellow: Device booted to OS

Blinking Yellow: Loading BIOS and OS

Red: Error in system when rebooting or starting application

Tips

Understanding LED behavior

Wi-Fi LED Guide

Solid blue: Wi-Fi connected

Blinking blue: Connecting to Wi-Fi

Solid red then Off: Failed to connect to Wi-Fi

Troubleshooting

- Check your Wi-Fi network password
- Public Wi-Fi that requires CAPTCHA-enabled sign-in
  commonly found in hotels, gyms and cafes is not supported

Tips

Wi-Fi connection troubleshooting

Having trouble connecting, try these tips

Step 1. Wait, the application may take up to 2min. to be ready

If waiting doesn't work, then try step 2

Step 2. Turn off/disable computer's Wi-Fi and unplug ethernet connections

If disabling the Wi-Fi doesn't work, then try step 3

3. Push the reset button and wait for blue battery LED

Refresh the deepracer.aws, once the LED turns solid blue. If it doesn't work, then try step 4.

4. Visit advanced troubleshooting

https://docs.aws.amazon.com/deepracer/latest/developerguide/
deepracer-troubleshooting.html