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Intro Hacklab rules Design Space Rules Laptop Requirements Meet Rover

Instructions to obtain the EF230 Sphero RVR toolbox § RVR basics Practice

RVR Toolbox Tips and Example Integrated Code

Robot Project Description and Deliverables Robot Project Phase 2

Toolbox Troubleshooting Sphero commands

Name: Due: Q:



The software downloads below enable you to control your robot, read its sensors, and drive its wheels. Please follow all installation instructions before class.

It is critical you follow every step of this process, or you won't be able to use the robots and complete your assignments.

Step 1: Ensure You Have MATLAB and Extra Packages

If you haven't already, install the EF230 custom install of MATLAB 2022b on your LAPTOP (see menu item Access MATLAB 'Install it Now' for instructions). Verify your installation:

- Open MATLAB, click on the "Home" tab. (Click "Environment" if an option) Click on the 3 stacked cubes icon "Add-Ons" and "Manage"
- Use the Search bar to search for the support packages below. If the package has a green banner showing "Installed" they are installed, you are good. If not, click the

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part - just install it)

- o ROS Toolbox

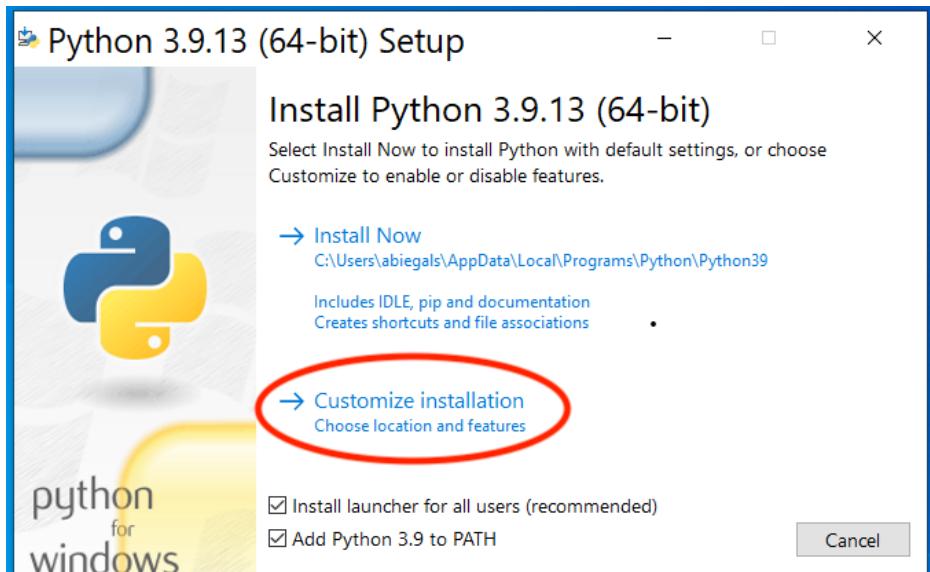
Step 2: Install Python 3.9

For Windows Laptops

If you have a windows laptop, download the following file:



In the Python 3.9 Setup window (shown below), select the checkbox "install for all users" and select checkbox "Add Python 3.9 to Path". Select customize installation.



When asked to select destination directory, delete the path shown and copy and paste in this custom path location **C:\Python\Python39**

Continue through the prompts until you reach the Install button and select "Install". You may see a window pop up and ask you if you "want to allow this app to make changes to your device?" select "Yes" and installation should start.

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For Mac Laptops

If you have a MacOS laptop, download the following file:



Double click on the downloaded file and follow the installation instructions.

Open the Terminal app and paste and run the command : **which python3.9**

Copy the path shown (highlight, CMD-C)

In the MATLAB command window run the command (replace python_path with the path you copied): **pyenv('Version','python_path')**

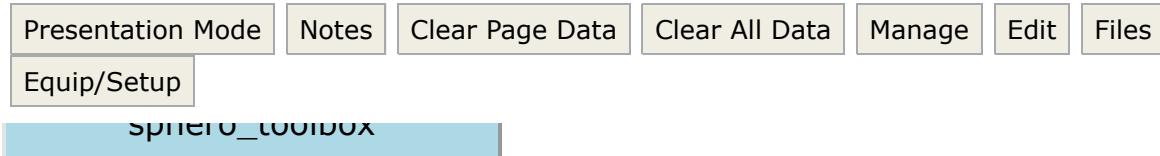
Step 3: Install Sphero Toolbox

- Obtain from github The Sphero Toolbox for MATLAB by Dr. Fagan: Download the zip folder below using a left click and **save link as** to the following location:

"/Users/<user>/Documents/MATLAB" (where <user> is your user name on the computer)

Windows users, this is very important! do not put it in your onedrive! after you select "save link as", first select your local drive **C:** in the left panel and navigate one level at a time, e.g. **C:** then **users** then **yourusername** then **Documents** then **MATLAB**

Mac users, this is very important! do not put it in your icloud drive! after you select "save link as", navigate to your home drive (**⌘-shift-H**) then **Documents** then **MATLAB**



Location is critical! It won't work if it is in your Documents folder on your onedrive or icloud drive. We highly recommend it goes in this specific location. You can download it there directly, or if you accidentally saved it to your downloads, cut and paste it to the proper location.

When finished the path should be "/Users/<user>/Documents/MATLAB/sphero_toolbox-master.zip"

- Open MATLAB (if it is already open, close it, then reopen it).
- Extract: In your current folder pane in MATLAB, locate the zipped folder, sphero_toolbox-master.zip, with a zipper on it. Right click on it and unzip it - select **Extract** (If you don't see your current folder pane, choose the "Home" menu, then "layout" then "Default" and it will be the lower left pane.) This will create a new folder with the extracted files - sphero_toolbox-master with light text.
- Next, in MATLAB, navigate into the unzipped **sphero_toolbox-master** folders until you see a folder called "@sphero" in your current folder window. Open and run the file called **configure_installation.m**
 - It may ask you if you "want to allow this app to make changes to your device?" select "Yes".
 - If you see an error, notify an instructor or check the "Toolbox Troubleshooting" topic.
 - Once you run configure_installation, navigate out of the sphero_toolbox folder (use the folder up icon, or click the word "MATLAB" to navigate up to the MATLAB folder in the address bar.) If you'd like you can create a new folder here called "Projects" or "EF230". Do not create or modify any files in the sphero_toolbox folder.



MATLAB

address bar

- Type **doc sphero** on the command line and use the link to view the "Documentation for Sphero"



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Roomba Toolbox commands

Presentation Mode

Current time: Sun Jul 30, 17:00:10

Next due date: **NO CREDIT - PAST DUE** [All due date\(s\)](#)

2.
2212 Be sure to read the pre-lab for instructions on obtaining the Toolbox so you can complete this assignment. Now that you have MATLAB and the toolbox, do the following.

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Part	Description	Answer		
A.	Type doc sphero on the command line for a link to a quick listing of all the "methods" or functions available in the Toolbox. You can also view the documentation for a particular command using doc (opens in a new window) or help (displays in command window) On the command line Type help sphero.setDriveSpeed . What input(s) do you specify when calling setDriveSpeed? <ol style="list-style-type: none">1. speed, distance2. left wheel speed and then right wheel speed3. right wheel speed and then left wheel speed	<input type="text"/>		
B.	In the setDriveSpeed command, if you specify a speed of 10 , what will the robot do? <ol style="list-style-type: none">1. produce an error because you only supplied one wheel speed2. Move at 10 m/s3. Move forward 10 m at 1 m/s and stop	<input type="text"/>		

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References License information downloaded inside toolbox.

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