**GEECC Camp Activity Instructions**Computer Science

# Sphero Bolt (round robots with charging cradle, morning activity)

1. Form groups of two.
2. Navigate to <https://github.com/GSU-CS-Dept/EEA-Robot-Code/> in a web browser.
3. Open the GEECC CS Instructions.pdf file.
4. Retrieve a Sphero Bolt, a charging cradle, and the connected cable.
5. Plug the cable into a computer.
6. Place the cradle and the robot on top of the computer.
7. **If you are told that you have Bluetooth, skip to the Sphero Bolt with Bluetooth instructions.** If you do not, continue to the next step.
8. Download the Sphero EDU app on either Android or iPhone and open the app after installation is complete.

# Sphero Bolt with Bluetooth

1. Navigate to <https://edu.sphero.com/code> in the Chrome web browser.
2. Click on Connect.

A blue and black screen

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1. Make sure to choose the Sphero Bolt, not the Bolt+.A screenshot of a computer

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2. Move to next page.
3. Click Connect

A screenshot of a computer

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1. Connect to your Sphero Bolt (it is probably the one at the top of the list).

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1. Move to next page.
2. Click on Create Program

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1. Give your program a name and make sure the chosen options match the following screenshot (see next page), then click Create.

A screenshot of a program

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1. Along the bottom of the page are various actions you can do on the bot. For each section, if you click on the left/right arrows, you can see all available actions. Either use the tilt function of the mouse’s scroll wheel to scroll through all available options or hold down the Shift key and scroll the mouse wheel up or down.

A screenshot of a chat

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1. Move to next page.
2. You can drag those items onto the “on start program” section like a puzzle piece, then choose options by clicking on each available section (see next page). This can be done visually by clicking on the image, or by keyboard by clicking on the number first which will bring up a number pad (see next page).

A screenshot of a phone

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1. If you need to delete any blocks, grab them and drag them to the bottom of the screen then click the trash can.

A screenshot of a computer

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1. When you are ready to run the program, place the Sphero Bolt on the ground, then click the Start button on the Sphero Edu website.

# Smart Car Assembly (after lunch)

1. Form groups of three.
2. Navigate to <https://github.com/GSU-CS-Dept/EEA-Robot-Code/> in a web browser.
3. Open the Smart Car Box, remove parts from the internal boxes, but do not start opening packages until the instructions instruct you to.
4. Click on the [Assembly Video](https://www.youtube.com/watch?v=GQi99xmohdw) link and use that along with the paper instructions to assemble the car. The paper instructions are also included in the GitHub repository linked in Step 2 in PDF format (Filename: ELEGOO Smart Robot Car Kit V3.0 Assembly Tutorial--20190314.pdf).
5. Pay attention to orientation of parts, screws used (see the paper instructions for details), and make sure to tighten any parts using the provided needle nose pliers to hold the nuts.
6. If you get done assembling before the allotted time, download the ElegooKit app to your phone. If the allotted time has elapsed, move to the Smart Car Code and Testing section.
7. Connect to your robot using WiFi. It will usually be the first in the list and should show up as ELEGOO-XXXXXXXXXX with numbers and letters in place of the Xs.
8. Experiment with the different modes (line tracking, obstacle avoidance, follow, FPV).

# Smart Car Code and Testing

1. Stay with your assembly group.
2. Navigate to <https://github.com/GSU-CS-Dept/EEA-Robot-Code/> in a web browser.
3. Click on the green Code button near the top of the screen.

A screenshot of a computer

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1. Choose Download .zip. This file will contain all of the original tutorials provided by Elegoo and custom code that we will use in our robot demo today. Feel free to look through all the files. The 02 Main Program folder contains the original code that was used in the Elegoo Kit app.

A screenshot of a computer

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1. When the file is done downloading, double-click the file to open the zip archive. The location of file may vary according to browser, use the Downloads section inside the browser to locate it.

A screenshot of a computer

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1. Drag the EEA-Robot-Code-main folder to the Desktop.

INSERT SCREENSHOT HERE

1. Open the EEADemoSimple.zip file and drag the EEADemoSimple folder to the Desktop.

INSERT SCREENSHOT HERE

1. Double click the EEADemoSimple folder on the Desktop, then double click the EEADemoSimple.ino file to open the Arduino IDE.

A screenshot of a computer

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1. Examine the Arduino code in the file and note how the robot is controlled by C++ code in the setup() function. Always tell the robot to STOP at the end of the function to prevent it from moving after executing its code.

A screenshot of a computer

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1. Check that the Board setting is set to Arduino Uno by checking Tools -> Board.

A screenshot of a computer

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1. Set the COM Port to the highest COM listed on your computer at Tools -> Port:.

A screenshot of a computer program

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1. Plug the non-charging USB cable into the silver USB port on the mainboard of the Smart Car.

A close up of a circuit board

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1. Locate the switch next to the USB port and make sure it is moved to the Upload side and NOT the Cam Position.

A close up of a device

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1. First click the Verify button in the Arduino IDE. If there are no errors, this will complete successfully. If there are no errors, move to the next step. If there are errors, ask for help.

A screenshot of a computer program

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1. Pick the car up off the ground, then click the Execute button. This will load the code onto your robot. This may involve the wheels moving. Once the car quits moving, unplug the USB cable.
2. Place the car on the ground, then turn the battery on. Whatever program was last loaded on the robot will now execute.
3. Try experimenting with the code directions and delay times (measured in milliseconds) and re-verify and re-upload the code.