How to setup new laptops or robots for EV3 Soccerbots

# Setting up a new laptop

## To be used for outreach events

1. Install latest version of Python from <https://www.python.org/>
   1. During install, check the box for “Set PATH to include Python”
2. Install Visual Studio from <https://visualstudio.microsoft.com/>
   1. Select “Visual Studio Community”
   2. During install
      1. On the Workloads tab, select: “Python Development”
      2. On the Individual components tab, also select:
         1. C++ CMake tools for Windows
         2. Windows Communication Foundation
         3. Windows 10 SDK - Pick the latest version of Win 10 SDK. It’s way at the bottom
      3. Click Install
      4. While waiting, it’s ok to uncheck “Launch when done”
      5. When it’s done, close the installer
3. Download the Soccerbot package from GitHub
   1. <https://github.com/terbos90803/ev3-soccerbots>
   2. Click “Clone or Download” green button
   3. Download ZIP
   4. Extract the ev3-soccerbots-master folder from the zip and put it on the desktop
   5. Copy the SoccerbotHost shortcut from that folder onto the desktop and edit its Start In folder to point to the folder on the desktop (e.g. %DESKTOP%\ev3-soccerbots-master\soccerbot-host)
4. Open a cmd window
   1. pip install pygame
   2. pip install pybluez-win10
5. Pair robots with laptop
   1. Open Settings for Bluetooth
   2. On each robot:
      1. Top menu > Wireless and Networks > Bluetooth
      2. Powered = On
      3. Start Scan
      4. Scroll down and look for laptop to appear
      5. Select laptop
      6. Pair
      7. Accept confirmation on both robot and laptop
      8. Back out to top menu

## To be used for development

1. Install Python and Visual Studio as above
2. Install PyCharm Community Edition: <https://www.jetbrains.com/pycharm/>
3. Install Visual Studio Code: <https://code.visualstudio.com/>
4. For the host app: in PyCharm, open /soccerbot-host
5. For the robot code: in VS Code, open /soccerbot-ev3
   1. When opening, accept suggestions to add Python and ev3dev plugins

# Setting up a new Robot

1. Build EV3 Soccerbot using LDD plans
   1. Most of the parts are from the EV3 Education kit
   2. You will need additional
      1. 4 2x4 angle pieces in the color matching the robot
      2. 4 5-beam pieces in the color matching the robot
      3. 1 3x5 angle piece, any color
2. Flash MicroSD card with ev3dev image
   1. <https://www.ev3dev.org/docs/getting-started/>
3. Insert MicroSD card in EV3 and boot it
4. Connect EV3 to laptop with USB cable and enable internet
   1. <https://www.ev3dev.org/docs/tutorials/connecting-to-the-internet-via-usb/>
5. Use putty to SSH to ev3dev
   1. Username: robot
   2. Password: maker
6. Rename EV3
   1. sudo ev3dev-config
   2. Select Advanced Options
   3. Change Hostname based on robot color
      1. e.g. ev3dev-BLUE or ev3dev-YELLOW
   4. Finish
7. Reboot
   1. sudo reboot
8. On EV3, enable networking
   1. Select Wireless and Networks
   2. Select All Network Connections
   3. Select Wired
   4. Set Connect Automatically to make it selected
   5. Select Connect
      1. Watch status on screen. If it quickly connects and says Online, you're good
      2. If it takes a long time to connect and gets a 169.254.x.x address then you need to disable and re-enable internet connection sharing on Windows and try again.
9. Reconnect with putty
10. Update
    1. sudo ev3dev-config
    2. Select Update
    3. Finish
    4. sudo reboot
11. Install PyBluez
    1. In putty: sudo easy\_install3 pybluez
    2. Wait for the install, it takes a couple minutes.
12. On EV3, enable Bluetooth
    1. Go to main menu
    2. Select Wireless and Networks
    3. Select Bluetooth
    4. Set Powered to be selected
    5. Pair Bluetooth with host laptop, but do not connect.
13. Use Visual Studio Code to download soccerbot-ev3 project to robot
14. Using putty
    1. Create file "RunSoccerbot.sh" in the home directory
    2. Contents of file:
       1. #!/bin/bash  
          cd /home/robot/soccerbot-ev3  
          ./robot.py