

RWTH Toolbox Installation (Windows)

- A. MATLAB
- B. libusb
- C. RWTH Toolbox

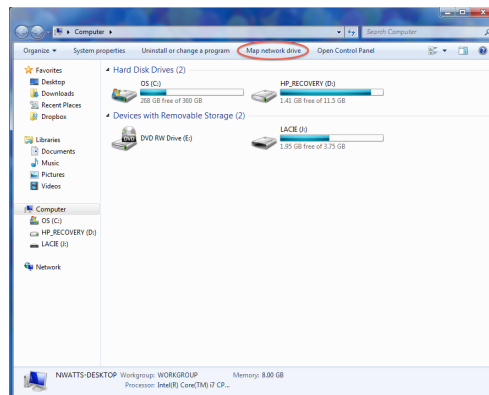
Required equipment

- 1) Lego Mindstorms NXT 2.0 kit
- 2) MATLAB
- 3) RWTH NXT Toolbox for MATLAB (v4.07 or higher)

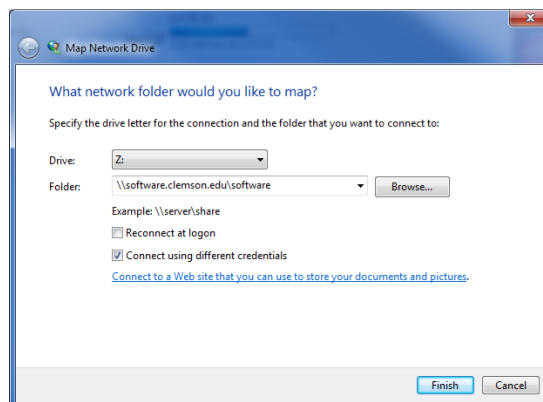
MATLAB

To install MATLAB yourself, follow the instructions below. Alternatively, you can ask CCIT to install it for you.

- 1) Connect to the software server.
 - a. Open “My Computer.”
 - b. Click “Map Network Drive.”



- c. At the prompt, select a drive letter and enter \\software.clemson.edu/software for the folder. Check the box for “Connect using different credentials.”

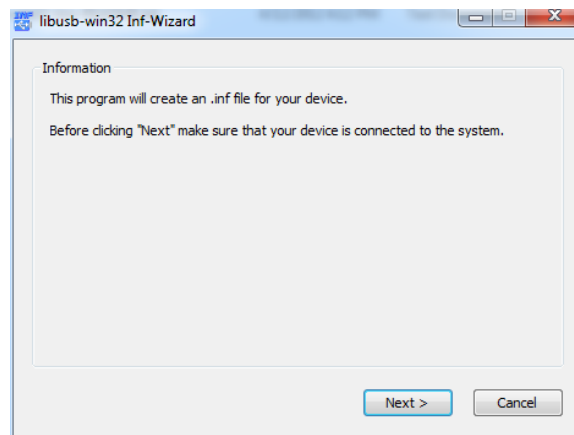


- d. A window will open asking for a username and password. Click "Use another account" and enter your Clemson University username and password. A window will open showing the contents of the software server.
- 2) Go to the Software\Matlab folder.
 - 3) Go to the Documentation folder and copy "file installation keys.txt" and "license.dat" to your desktop.
 - 4) Go back up one folder and go to the Software\Matlab\Win\2011a folder.
 - 5) Create a new folder on your desktop and copy all the files from the 2011a folder to it.
 - 6) Run "setup.exe"
 - a. Choose "Install manually without using the Internet."
 - b. Accept the terms of the license agreement.
 - c. When asked for a file installation key, use the key for R2011a found in "file installation keys.txt."
 - d. When asked for the installation type, select "Typical."
 - e. Use the default installation folder.
 - f. When asked for a license file, click the "Browse" button and select the license.dat file you downloaded in Step 3.
 - g. Click "Install" and wait for the installation to finish. It should take 10-20 minutes.

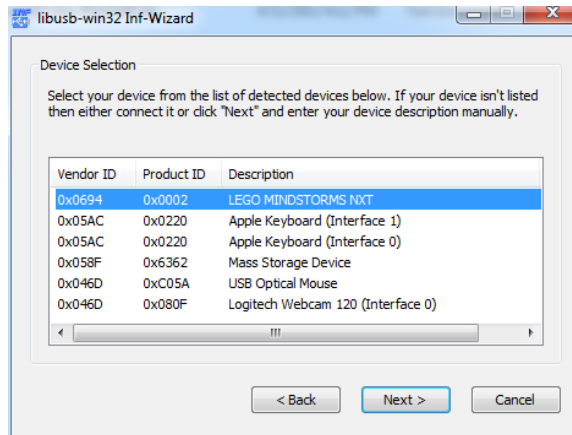
Install libusb

In order for your computer to communicate with the NXT, you will need to install the libusb-win32 library.

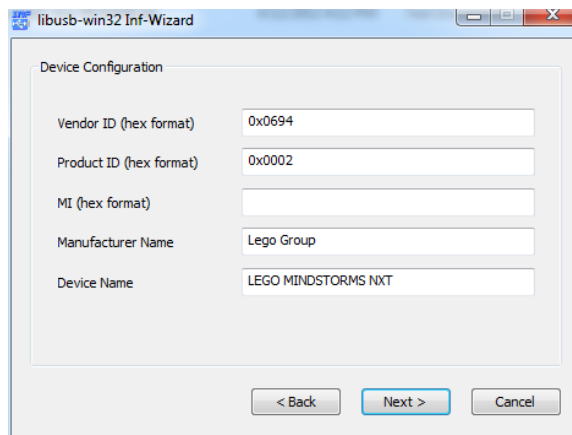
1. Download libusb-win32 from <http://sourceforge.net/projects/libusb-win32/files/>
2. Extract the zip file.
3. Connect the NXT to your computer and turn it on.
4. Open the "bin" folder and run "inf-wizard.exe."
5. The following screen should appear. Click the "Next" button.



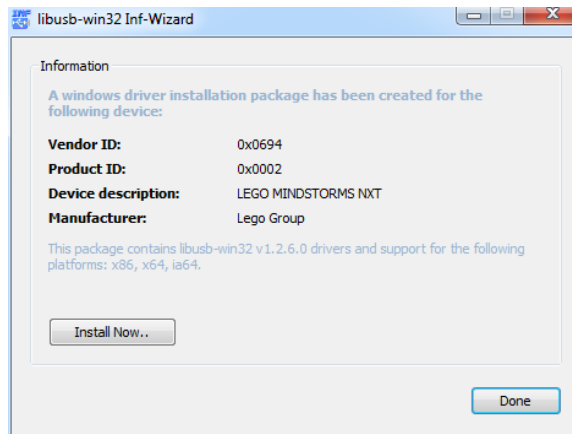
6. Select the NXT from the list of attached USB devices.



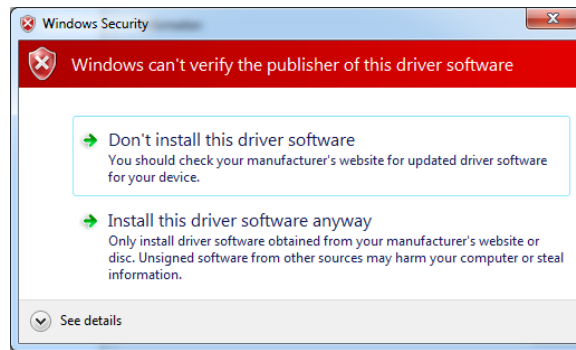
7. A confirmation screen with the device configuration will appear. Click "Next" to proceed.



8. Save the created .inf file anywhere. Click "Install Now" to configure a libusb driver for the NXT.



9. If a security warning appears, click "Install this driver software anyway."



Install RWTH Toolbox

The RWTH toolbox contains the MATLAB functions that handle communication between your computer and the NXT brick.

1. Download the toolbox from RWTH's website:
(<http://www.mindstorms.rwth-aachen.de/trac/wiki/Download>)
 - a. Select the most recent stable version.
2. Extract the ZIP file.
3. Move the RWTHMindstormsNXT folder to whatever directory you want.
4. Add the RWTHMindstormsNXT folder to your MATLAB path.
 - a. In MATLAB, select "Set Path" from the "File" menu.
 - b. Click "Add with Subfolders".
 - c. Select the RWTHMindstormsNXT folder in the dialog box.
 - d. Click "Save" and close the window.
5. To verify installation has succeeded, run the "ver" command at the MATLAB prompt. This shows a list of installed toolboxes. You should see "RWTH – Mindstorms NXT Toolbox" somewhere in the list.

RWTH Toolbox Installation (Mac)

- A. MATLAB
- B. Lego Phantom Driver
- C. RWTH Toolbox

Required equipment

- 1) Lego Mindstorms NXT 2.0 kit
- 2) MATLAB (R2010a or earlier) **32-bit version**
- 3) RWTH NXT Toolbox for MATLAB (v4.07 or higher)

MATLAB

To use the RWTH toolbox for this class, you will need a 32-bit version of MATLAB. The most recent 32-bit release is 2010a. To install it yourself, follow the instructions below. Alternatively, you can ask CCIT to install it for you. If you do go to CCIT, make sure they understand you want a 32-bit version.

- 1) Connect to the software server.
 - a. From Finder, click Go->Connect to Server... in the menu bar.
 - b. In the server address, enter smb://user@software.clemson.edu/software, where user is your Clemson University username.



- c. In the box that pops up, make sure the “Registered User” button is selected and enter your Clemson University password. Click “Connect.”
 - d. From the Finder, click Go->Computer or Go->Network in the menu bar.
 - e. In Computer, you should see a disk icon labeled “software.” Or in Network, you should see a computer icon labeled “software.clemson.edu.” Depending on your Finder settings, the “software” disc icon may also show up on your desktop. Click on the icon to access the software server.
- 2) Go to the Software/Matlab/Mac/2010a folder. All versions newer than 2010a are 64 bit only and thus are incompatible with the RWTH toolbox.
- 3) Copy “Matlab2010a_for_Mac.dmg” to your desktop and open it.
- 4) Run “InstallForMacOSX.app.”
 - a. Choose “Install manually without using the Internet.”
 - b. Accept the terms of the license agreement.
 - c. Check the box for “Intel” and uncheck “Intel 64.”
 - d. The file installation key is located in another file on the software server. Go back up to the Matlab folder and then open the Documentation folder. Open “file_installation_keys.txt” and copy the key for 2010a into the dialog box.

- e. At the product selection window, check which toolboxes you want to install. The only one you need for this class is "MATLAB."
- f. From the Documentation folder, copy the file "license.dat" to your desktop. Then in the dialog box, click the "Browse" button and select license.dat.
- g. Wait for the installation to finish. It will probably take 10-20 minutes.

Install Lego USB Driver

The "Fantom" driver from Lego allows your computer to recognize the NXT when it is connected via USB.

1. Download the driver from Lego's website:
(<http://mindstorms.lego.com/en-us/support/files/default.aspx#Driver>)
 - a. Click on the "Fantom Driver" button.
 - b. Click the "Downloads" tab.
 - c. Click the "Mac" button in the window that appears.
2. Extract the zip file.
3. Run legodriver.pkg.
4. Follow the instructions in the installer.
5. You may need to restart your computer when the installation finishes.

Install RWTH Toolbox

The RWTH toolbox contains the MATLAB functions that handle communication between your computer and the NXT brick.

1. Download the toolbox from RWTH's website:
(<http://www.mindstorms.rwth-aachen.de/trac/wiki/Download>)
 - a. Select the most recent stable version.
2. Extract the ZIP file.
3. Move the RWTHMindstormsNXT folder to whatever directory you want.
4. Add the RWTHMindstormsNXT folder to your MATLAB path.
 - a. In MATLAB, select "Set Path" from the "File" menu.
 - b. Click "Add with Subfolders".
 - c. Select the RWTHMindstormsNXT folder in the dialog box.
 - d. Click "Save" and close the window.
5. Find the file "COM_OpenNXTEx.m" inside the RWTHMindstormsNXT folder and change the 'Fantom' on line 620 to
'/Library/Frameworks/Fantom.framework/Fantom'.
6. To verify installation has succeeded, run the "ver" command at the MATLAB prompt. This shows a list of installed toolboxes. You should see "RWTH – Mindstorms NXT Toolbox" somewhere in the list.