NAO Documentation

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# **Requirements**

## Hardware

* NAO Robot
* Wifi router
* Armband sensors
* Bluegiga Bluetooth USB dongle
* Computer

## Software

* Windows
* NAO Python libraries
* Python 2.7 32-bit

# **Installation**

## Python

The method that was used to install Python for the project was by installing a Python package known as “Anaconda”. Anaconda contains all of the general Python packages that are needed to run the project. Anaconda can be downloaded and installed from:

<https://www.continuum.io/downloads>

NOTE: You MUST select Python version 2.7, 32-bit (even if you have a 64 bit system). The NAO libraries are only compatible with this version of Python.

You may need additional libraries installed. If when running a file you encounter an error “TypeError: No module named \_\_\_\_” then you are missing the named library. You can install the library by running the command:

pip install \_\_\_\_

On a windows command prompt (notes on using command prompt in “Running The System”). You will likely need the serial library, so run the following command:

Pip install pyserial

You will also need cocos2d

pip install cocos2d

## NAO Library

Instructions for installing the NAO library can be found at:

<http://doc.aldebaran.com/2-1/dev/python/install_guide.html>

However, these may not work for you. A workaround is to simply copy the contents of the naoqi library into your site-packages folder, which may be located at

C:\Users\UserNameHere\Anaconda2\_32\Lib\site-packages

if you used Anaconda to install.

## Project Files

All files and documentation are stored on Github at the following URL:

<https://github.com/Bendouglasweb/NAO-affectionate>

Press the “Clone or download” button and select “Download ZIP”

# **Running the system**

## NAO

Setup steps

* Turn on separate WiFi network
* Turn on NAO (connect to WiFi if needed)
* Update IP address in Python file
* Connect computer to WiFi network

Quick notes:

* NAO communicates to the computer over WiFi,
* Your computer must be on the same network as NAO,
* UofL Secure does not function correctly so a separate network must be used,
* You need to know NAO’s IP address,
* If you press the button on NAO’s torso, it will tell you its IP address vocally.

Instructions for initially connecting NAO to a wifi network can be found at:

<http://doc.aldebaran.com/2-1/nao/nao-connecting.html>

**Updating IP Address in Python File**

NAO’s IP address needs to be set inside of Python so that it can find it on the network. The Python file can be edited with any text editor. To update the IP address, open the Grapher.py file and look for the line near the top:

nao\_ip = "192.168.1.136" # NAO Robot IP Address

Type the new IP address in between the quotation marks and save the file.

## Bluegiga

Near the top of the Bluegiga-Com.py file, change the following line

bluegiga\_com\_port = "com6"

## Python

There are three Python files that must be run in the following order:

1. Grapher.py
2. Bluegiga-com.py
3. Pong.py

There are two ways to run a Python file:

* With a Python IDE
* Through the Windows command prompt

Running through command prompt

1. Open command prompt, either by
   1. Opening through start menu
   2. Using shortcut Win Key + R, then type “cmd”, then hit enter
2. Navigate to where Python files are stored
   1. Type command “cd” + space + location of file.
   2. Example: cd C:\Users\UserName\Documents\NAO-affectionate\Python
3. Run Python file
   1. Type command “python” + space + name of file
   2. Example: python Grapher.py

NOTE: Each python file will need a separate command prompt.

# **System Design**

A high level view of the system can be understood by the following how information moves between components:



The arrows denote a direction of information flow and connection within the system. Text files are stored locally on the computer running the script.