Installation Guide

It is glad to know that you want to set up the toolkit on your local workbench. Yet, it is currently not available in a simple executable package since the toolkit has not walked out from its alpha period. But do stay tuned, since I have created some automatic scripts to make your installation process easier. Also, we plan to have our first beta release soon! So make sure too smash the `Watch` and `Star` icons on the top right of the page!

0. Prerequisites

In this section, we will talk about the hardware, system, and software requirements

0.1 Hardware

Component Name	Recommended Set-up	Minimum Requirement
CPU	Intel i-series/AMD Ryzen 4+ Cores	Intel i-series/AMD Ryzen 2 Cores
RAM	2 GB or more	256 MB
GPU	`NVidia` with `CUDA`	As long as you see stuff on screen
Pre-install Free Disk	5 GB or more	582 MB

If your system does have NVidia graphic card, and would like to utilize the GPU hardware acceleration. Please visit CUDA Zone to obtain the latest package for yourself prior to the installation process.

0.2 System Environment

System Type	Recommended	Minimum Requirement
Windows	Windows 10/Server 2016 R2 (64-bit)	Windows 7 (32-bit)/Server 2008 R2 (32-bit)
MacOS	10.14+	10.8.3
Debian/Ubuntu/Libux	4.10 Generic Kernel+/18.04 LTS (64-bit)	2.6.10 Generic/12.04 LTS (32-bit)

Please try to update your system beyond anything released in 2010 to prevent dependency related issue. Plus, CUDA and OpenCV hit hard performance roadblock in elder system build.

More specifically, if you are on Server Edition system, particularly if you are on Server 2008, you should make sure you have the system administrator permission to add extra DLL files into system folders.

0.3 Software

In order to run our toolkit, you need to install the following softwares:

- Python 3.3+

- Java 8+ (Java 7 works but not recommended!)
- NOAA Weather and Climate Toolkit
- CUDA Optional
- C Library Dependency `System-oriented` See in later section
- MATLAB R2015+ `If you wish to run on older system build`

> For `Java 7`, since it is out of its support period, Oracle has issued mandatory update and **migration guide** to most users. All machines which are able to install `Java 7` are guaranteed to support the version 8. Hilariously, `Java 8` has a higher performance rate than `Java 7`, almost in every single way. A sample benchmark can be found **here**. If you still insist from updating your Java SE, please re-consider your career choice.
>
> For folks running on the edge of the world, if you are on `Java 11`, since API calls are being drastically changed, please submit tickets if anything does not work for you.

If you are on older version of system, we do suggest you to update your system. As the dependency libraries either won't compile or execute for your old system build. But we did not forget about you old school folks. There is also a MATLAB build available with the similar functionality available. Yet, the maintenance and feature update would be 2 to 4 weeks delayed since this is a one-man army work. Please have mercy on me!

If you are on edition prior to `MATLAB R2015a`, please make sure to comment out the spectrum related codes.

0.3.1 Windows

0.3.1.1 C/C++ Compiler Environment

The C/C++ compiler environment is needed for `OpenCV` feature to work properly. You do NOT need to download and install directly from `OpenCV` website, since large portion of the features won't be needed unless you plan to use `CUDA` acceleration. `OpenCV` is used in the frame extraction process and parallel processing.

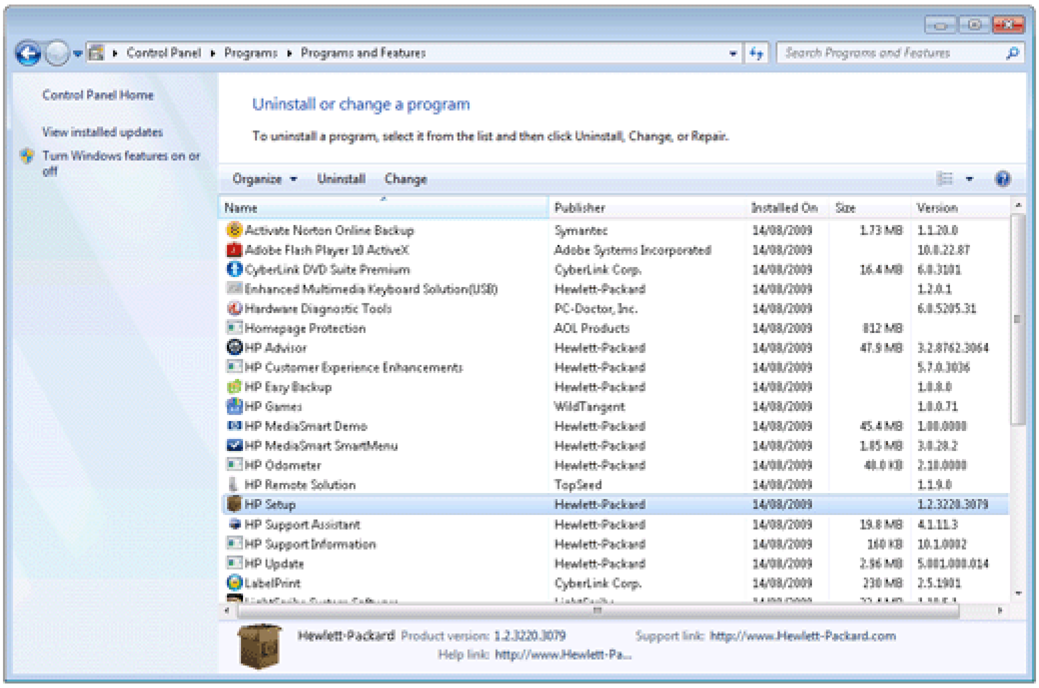
For folks running on Windows, please make sure to follow the following checklist to redirect to the specific links in order to obtain all the required system packages.

- □ Visual C++ Redistributable for Visual Studio 2012 Update 4
- □ Visual C++ Redistributable Packages for Visual Studio 2013
- □ Visual C++ Redistributable for Visual Studio 2015
- □ Visual C++ Redistributable for Visual Studio 2017

Before installing or downloading any of those, please navigate to the `Programs and Features` to find out which C++ Redistributable you have already installed.

For users on system prior to Windows 8 and Windows Server 2012 :

1. Click **Start**, and then click **Control Panel**.
2. Under **Programs**, click **Uninstall a program**. The **Uninstall or change a program** window opens. You should be able to find all the software you installed. You may find all the installed Visual C++ Redistributable packages.


Control Panel ▸ Programs ▸ Programs and Features
Search Programs and Features
Control Panel Home
View installed updates
Turn Windows features on or off
Organize ▾
Uninstall
Change

Uninstall or change a program

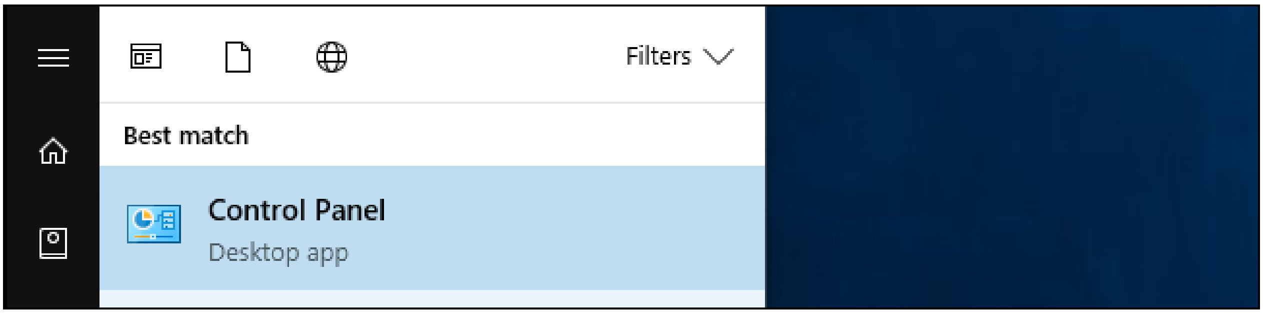
To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.

Name	Publisher	Installed On	Size	Version
Activate Norton Online Backup	Symantec	14/08/2009	1.73 MB	1.1.20.0
Adobe Flash Player 10 ActiveX	Adobe Systems Incorporated	14/08/2009		10.0.22.87
CyberLink DVD Suite Premium	CyberLink Corp.	14/08/2009	16.4 MB	6.0.3101
Enhanced Multimedia Keyboard Solution(USB)	Hewlett-Packard	14/08/2009		1.2.0.1
Hardware Diagnostic Tools	PC-Doctor, Inc.	14/08/2009		6.0.5205.31
Homepage Protection	AOL Products	14/08/2009	812 MB	
HP Advisor	Hewlett-Packard	14/08/2009	47.9 MB	3.2.8762.3064
HP Customer Experience Enhancements	Hewlett-Packard	14/08/2009		5.7.0.3036
HP Easy Backup	Hewlett-Packard	14/08/2009		1.0.8.0
HP Games	WildTangent	14/08/2009		1.0.0.71
HP MediaSmart Demo	Hewlett-Packard	14/08/2009	45.4 MB	1.00.0000
HP MediaSmart SmartMenu	Hewlett-Packard	14/08/2009	1.85 MB	3.0.28.2
HP Odometer	Hewlett-Packard	14/08/2009	40.0 KB	2.10.0000
HP Remote Solution	TopSeed	14/08/2009		1.1.9.0
HP Setup	Hewlett-Packard	14/08/2009		1.2.3220.3079
HP Support Assistant	Hewlett-Packard	14/08/2009	19.8 MB	4.1.11.3
HP Support Information	Hewlett-Packard	14/08/2009	160 KB	10.1.0002
HP Update	Hewlett-Packard	14/08/2009	2.96 MB	5.001.000.014
LabelPrint	CyberLink Corp.	14/08/2009	230 MB	2.5.1901

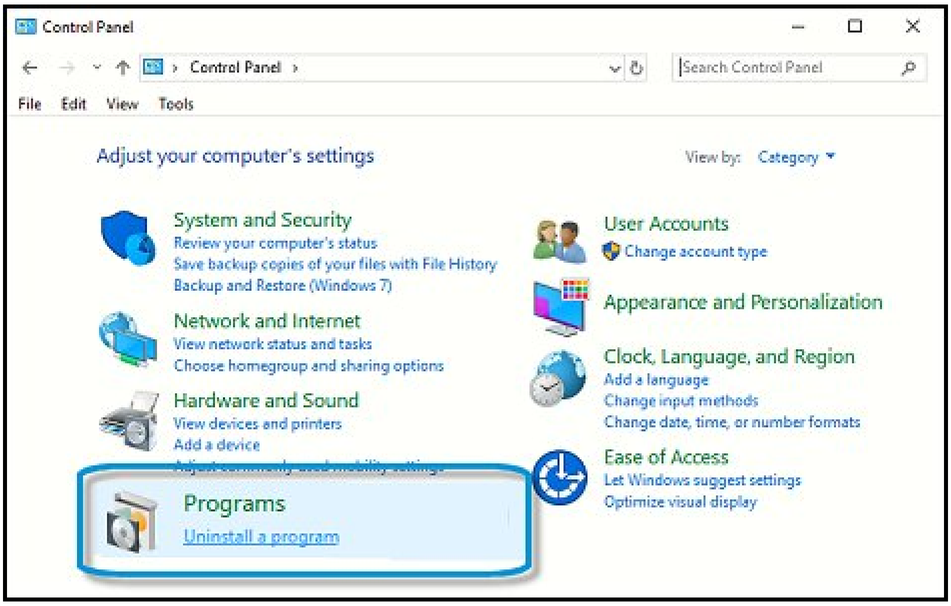
Hewlett-Packard Product version: 1.2.3220.3079 Support link: http://www.Hewlett-Packard.com
Help link: http://www.Hewlett-Pa...

For users on system same or newer than Windows 8 and Windows Server 2012 :

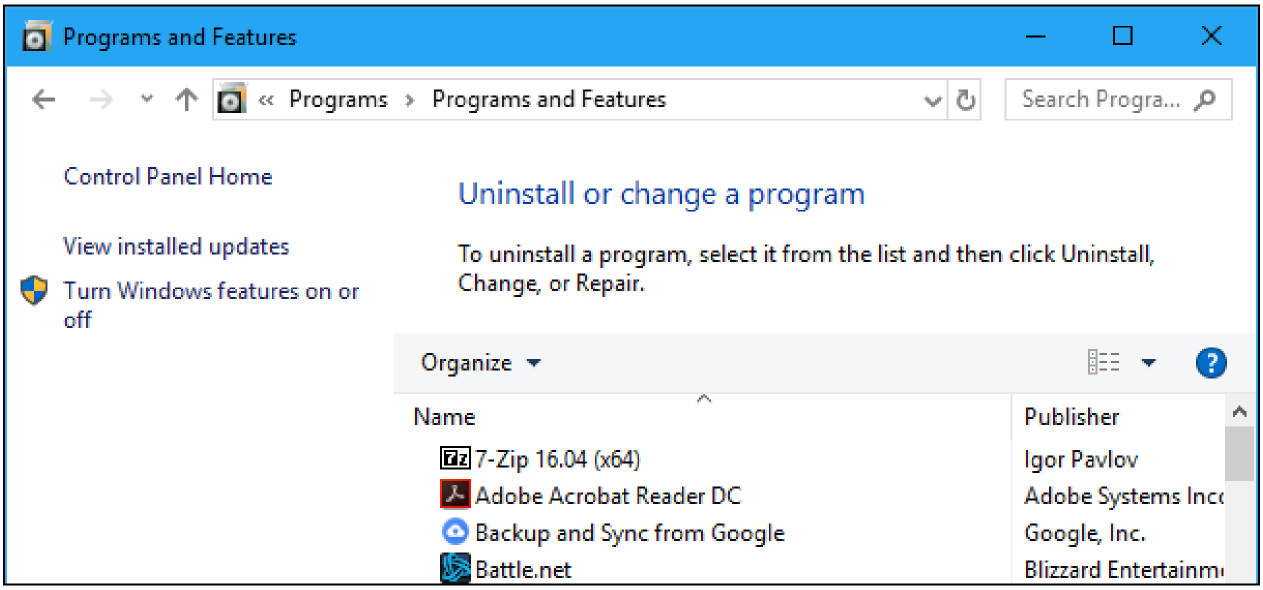
1. In Windows, search for and open **Control Panel**.



2. In Control Panel, locate **Programs**, then click **Uninstall a program**.


Control Panel
Control Panel ›
Search Control Panel
File
Edit
View
Tools
Adjust your computer's settings
View by: Category ▾
System and Security
Review your computer's status
Save backup copies of your files with File History
Backup and Restore (Windows 7)
Network and Internet
View network status and tasks
Choose homegroup and sharing options
Hardware and Sound
View devices and printers
Add a device
Adjust commonly used mobility settings
Programs
Uninstall a program
User Accounts
Change account type
Appearance and Personalization
Clock, Language, and Region
Add a language
Change input methods
Change date, time, or number formats
Ease of Access
Let Windows suggest settings
Optimize visual display

3. In the **Uninstall or change a program** window, you should be able to find all the software you installed. You may find all the installed Visual C++ Redistributable packages.



Programs and Features

« Programs › Programs and Features

Control Panel Home

View installed updates

Turn Windows features on or off

Uninstall or change a program

To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.

Name	Publisher
7-Zip 16.04 (x64)	Igor Pavlov
Adobe Acrobat Reader DC	Adobe Systems Inco
Backup and Sync from Google	Google, Inc.
Battle.net	Blizzard Entertainm

0.3.1.1 Server Edition Extra

As mentioned before, the Server Edition suffers from missing dependency libraries. Please make sure you follow the steps to perform troubleshooting.

> может быть, это немного запоздало, но у нас была такая же проблема, и мы не нашли ответа через Интернет, так что это может помочь кому-то в будущем.
>
> Проблема связана с отсутствующей dll в Window 2008 Server, мы решаем ее копирование этой DLL "msvcp100.dll" в нашей папке% JAVA%/jre7/bin
>
> Надеюсь, что эта помощь
>
> ———————————— QA.RU

When you have missing `msvcp100.dll` , please make sure to install **Visual C++ 2008 Redistributable Package** .

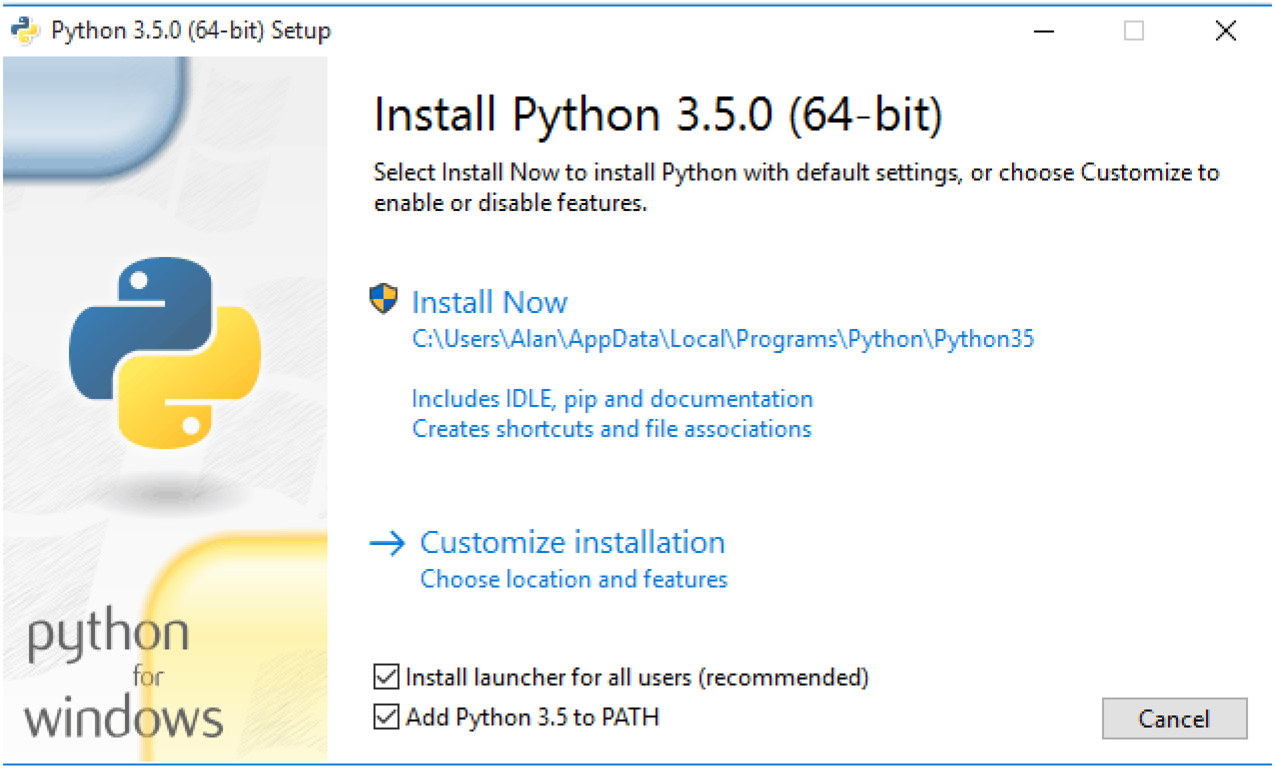
When it comes to the `missing jniopencv_core.dll` , please make sure the `Java` installation was done properly.

0.3.1.2 Python 3

NVIDIATo install Python 3.3 or later, go to the **Python home page** or follow the list in previous section, and download the latest version of Python 3 for your operating system.

`If you have Python 2.7 installed, you do not need to remove it.`

During the installation process, if there is a check-box to add Python 3.X to your path, make sure it is checked before proceeding with the installation.



Python 3.5.0 (64-bit) Setup

Install Python 3.5.0 (64-bit)

Select Install Now to install Python with default settings, or choose Customize to enable or disable features.

Install Now
C:\Users\Alan\AppData\Local\Programs\Python\Python35

Includes IDLE, pip and documentation
Creates shortcuts and file associations

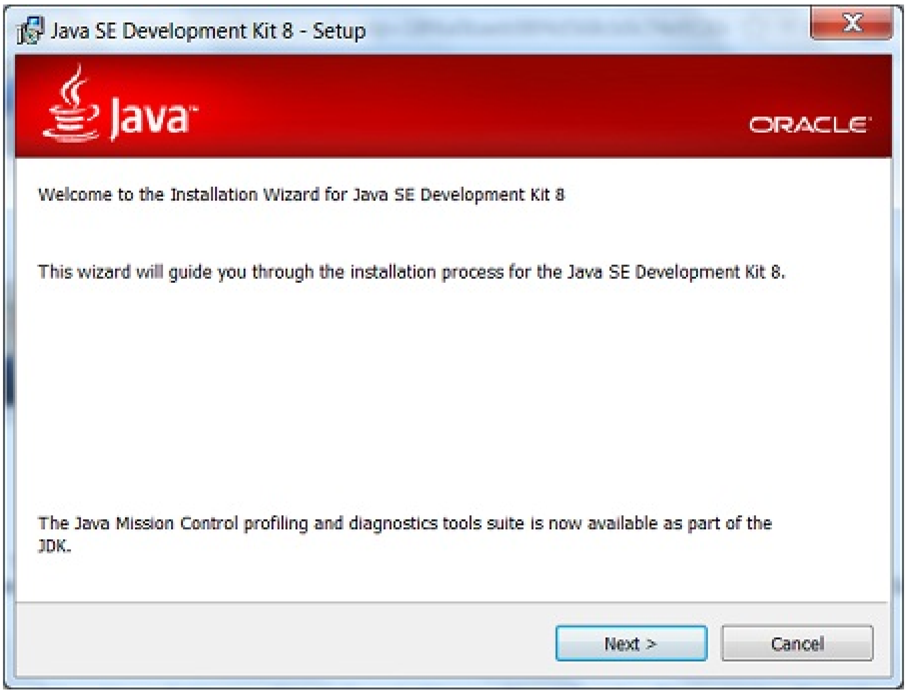
→ Customize installation
Choose location and features

☑ Install launcher for all users (recommended)
☑ Add Python 3.5 to PATH

0.3.1.3 Java

Java is a dependency for OpenCV , NOAA's Weather Toolkit and MATLAB builds.

- Go and obtain the desired Java SE
- Under **Java SE Downloads**, click on DOWNLOAD ⬇ next to the edition you desired
- Click to accept the license agreement
- Download the windows .exe for your operating system (32 bit or 64 bit)
- Use the .exe to install



Java SE Development Kit 8 - Setup

Welcome to the Installation Wizard for Java SE Development Kit 8

This wizard will guide you through the installation process for the Java SE Development Kit 8.

The Java Mission Control profiling and diagnostics tools suite is now available as part of the JDK.

0.3.1.4 NOAA's Weather and Climate Toolkit

You may find the latest edition via NOAA website . Also, please make sure `Java` is properly installed. You may find more information about it via its requirements page .

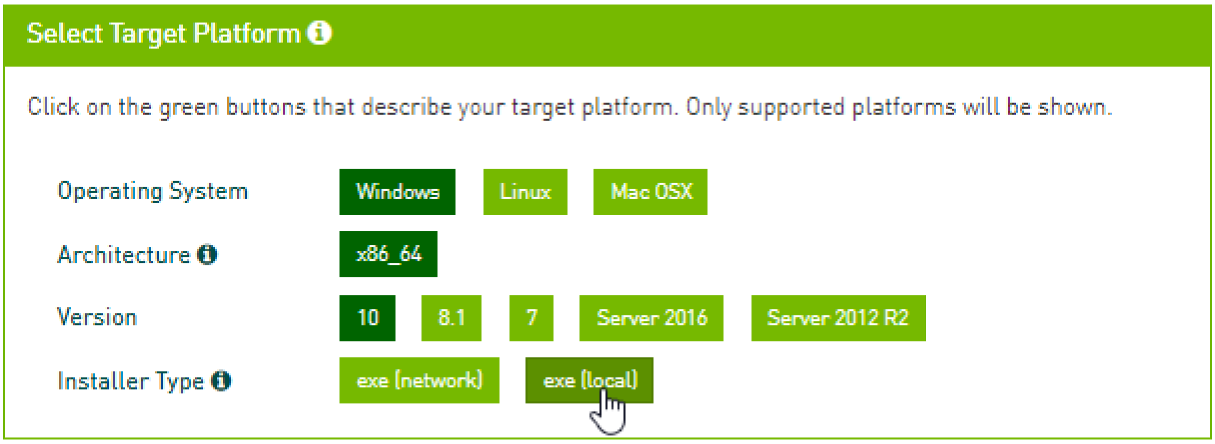
0.3.1.5 CUDA `Optional`

THIS IS OPTIONAL, YOU DO NOT NEED THIS IF YOU DO NOT HAVE A DEDICATED NVIDIA GRAPHIC CARD UNIT, OR YOU DO NOT NEED PARALLEL PROCESSING WORK.

IF YOU ARE ONLY INTERESTED IN THE IMAGE SUPER-RESOLUTION, DO NOT HAVE THE HARDWARE OR YOU DO NOT WANT TO GO THROUGH THE HELL OF INSTALLATION, PLEASE CHECK OUT THE OTHER REPO I HAVE FOR A PRE-COMPILED RELEASE VERSION OF IMAGE SUPER-RESOLUTION.

First, download `CUDA` from the NVidia website

Select the proper target platform:



Select Target Platform

Click on the green buttons that describe your target platform. Only supported platforms will be shown.

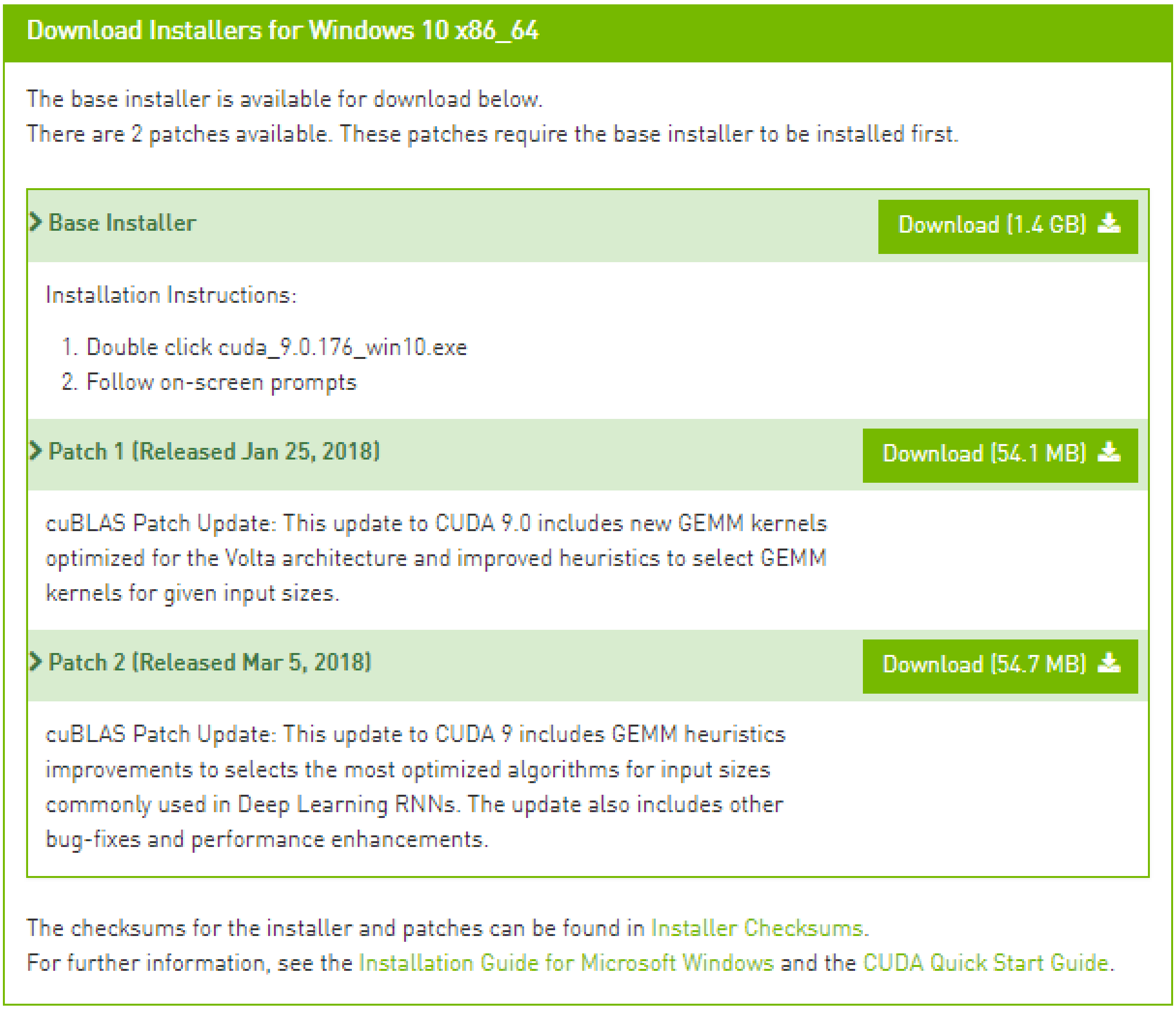
Operating System: [✓ Windows] Linux Mac OSX

Architecture: [✓ x86_64]

Version: [✓ 10] 8.1 7 Server 2016 Server 2012 R2

Installer Type: exe (network) [✓ exe (local)]

Download all the installers:



Download Installers for Windows 10 x86_64

The base installer is available for download below.
There are 2 patches available. These patches require the base installer to be installed first.

Base Installer

Installation Instructions:

1. Double click cuda_9.0.176_win10.exe
2. Follow on-screen prompts

Patch 1 (Released Jan 25, 2018)

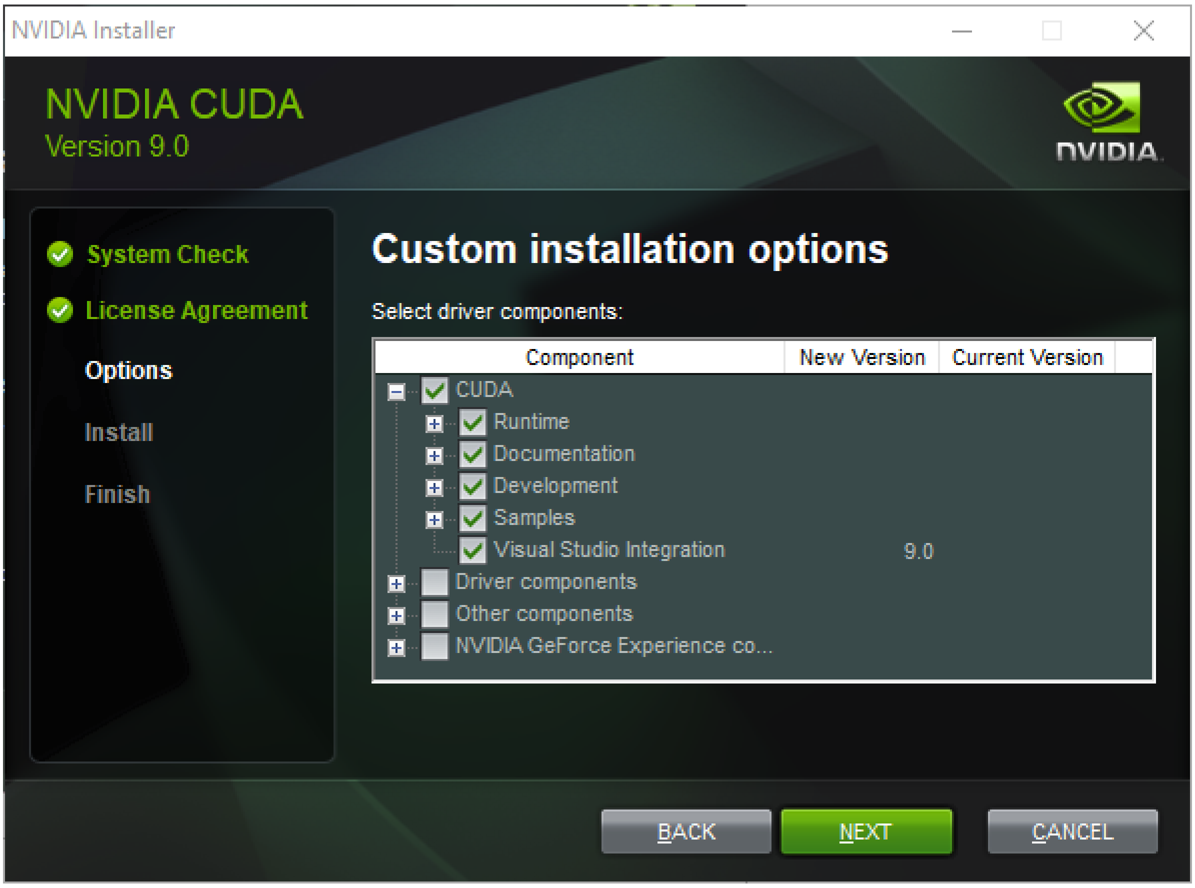
cuBLAS Patch Update: This update to CUDA 9.0 includes new GEMM kernels optimized for the Volta architecture and improved heuristics to select GEMM kernels for given input sizes.

Patch 2 (Released Mar 5, 2018)

cuBLAS Patch Update: This update to CUDA 9 includes GEMM heuristics improvements to selects the most optimized algorithms for input sizes commonly used in Deep Learning RNNs. The update also includes other bug-fixes and performance enhancements.

The checksums for the installer and patches can be found in Installer Checksums.
For further information, see the Installation Guide for Microsoft Windows and the CUDA Quick Start Guide.

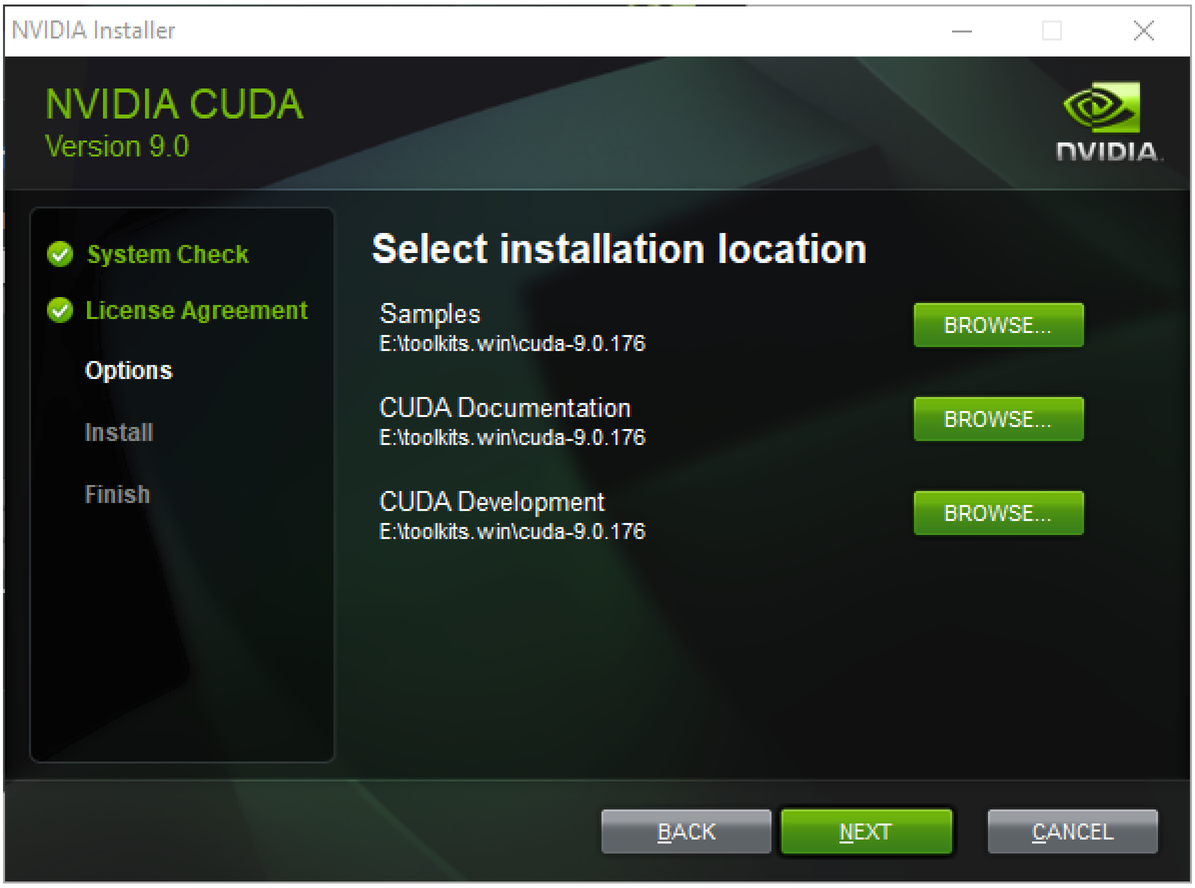
Run the downloaded installers one after the other. Install the files in `A:\whatever\cuda-x.x.xxx` :



Custom installation options

Select driver components:

Component	New Version	Current Version
☑ CUDA		
☑ Runtime		
☑ Documentation		
☑ Development		
☑ Samples		
☑ Visual Studio Integration	9.0	
□ Driver components		
□ Other components		
□ NVIDIA GeForce Experience co...		

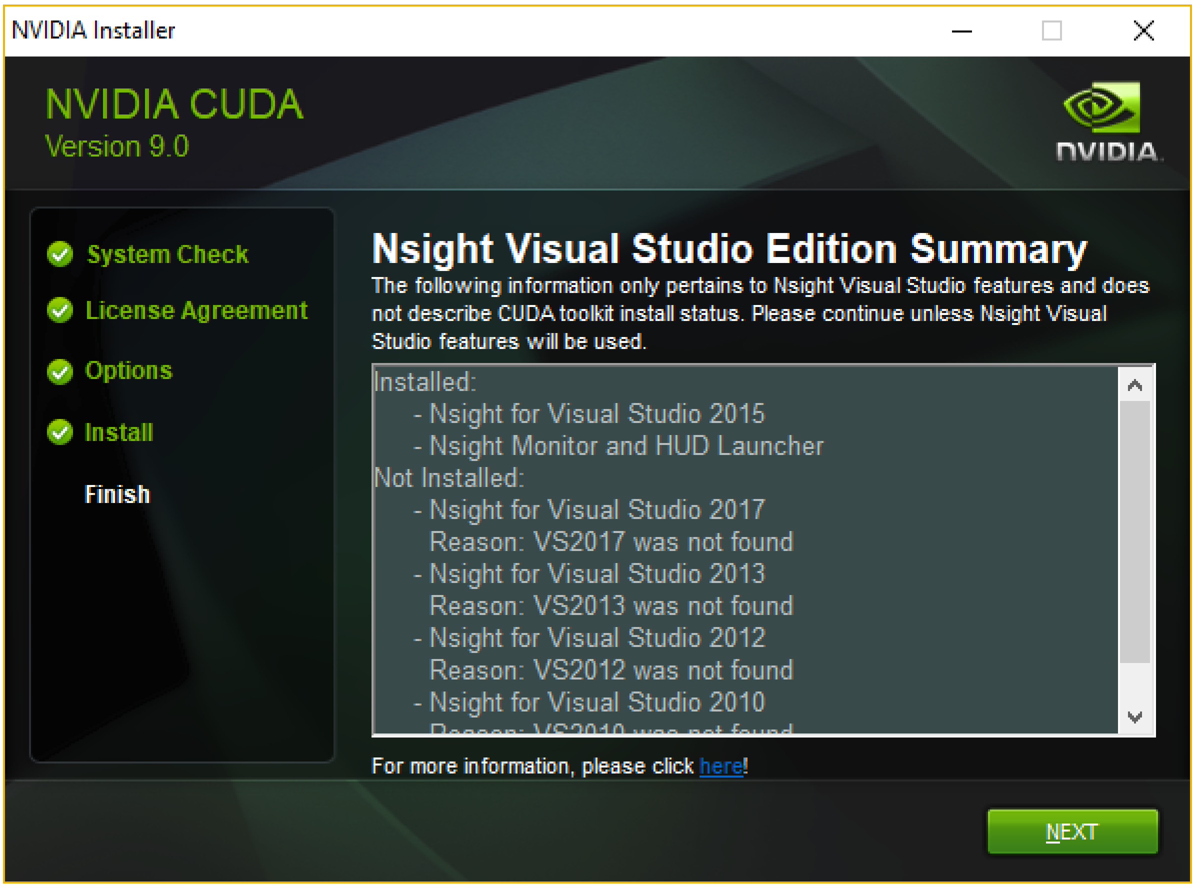


Select installation location

Samples
E:\toolkits.win\cuda-9.0.176

CUDA Documentation
E:\toolkits.win\cuda-9.0.176

CUDA Development
E:\toolkits.win\cuda-9.0.176

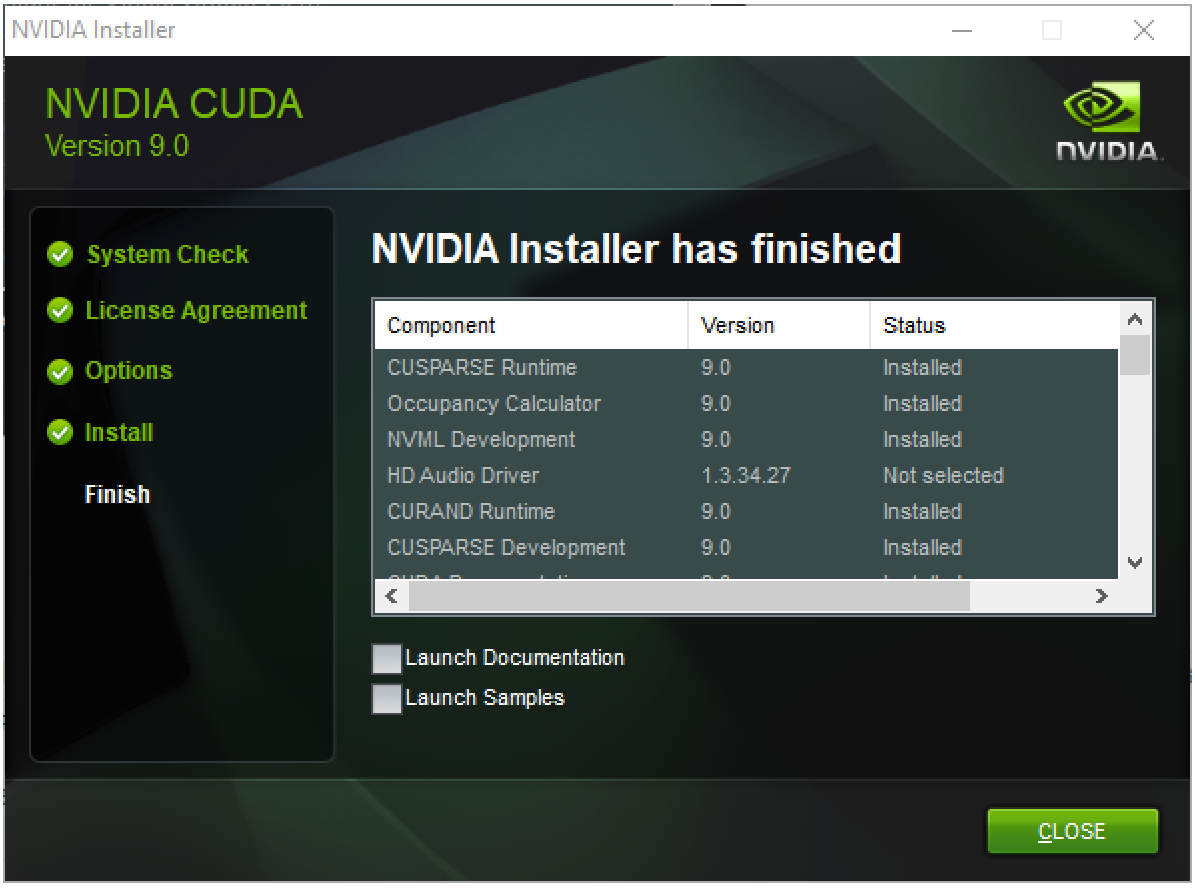


Nsight Visual Studio Edition Summary

The following information only pertains to Nsight Visual Studio features and does not describe CUDA toolkit install status. Please continue unless Nsight Visual Studio features will be used.

```
Installed:
  - Nsight for Visual Studio 2015
  - Nsight Monitor and HUD Launcher
Not Installed:
  - Nsight for Visual Studio 2017
    Reason: VS2017 was not found
  - Nsight for Visual Studio 2013
    Reason: VS2013 was not found
  - Nsight for Visual Studio 2012
    Reason: VS2012 was not found
  - Nsight for Visual Studio 2010
    Reason: VS2010 was not found
```

For more information, please click here!



NVIDIA Installer has finished

Component	Version	Status
CUSPARSE Runtime	9.0	Installed
Occupancy Calculator	9.0	Installed
NVML Development	9.0	Installed
HD Audio Driver	1.3.34.27	Not selected
CURAND Runtime	9.0	Installed
CUSPARSE Development	9.0	Installed

□ Launch Documentation

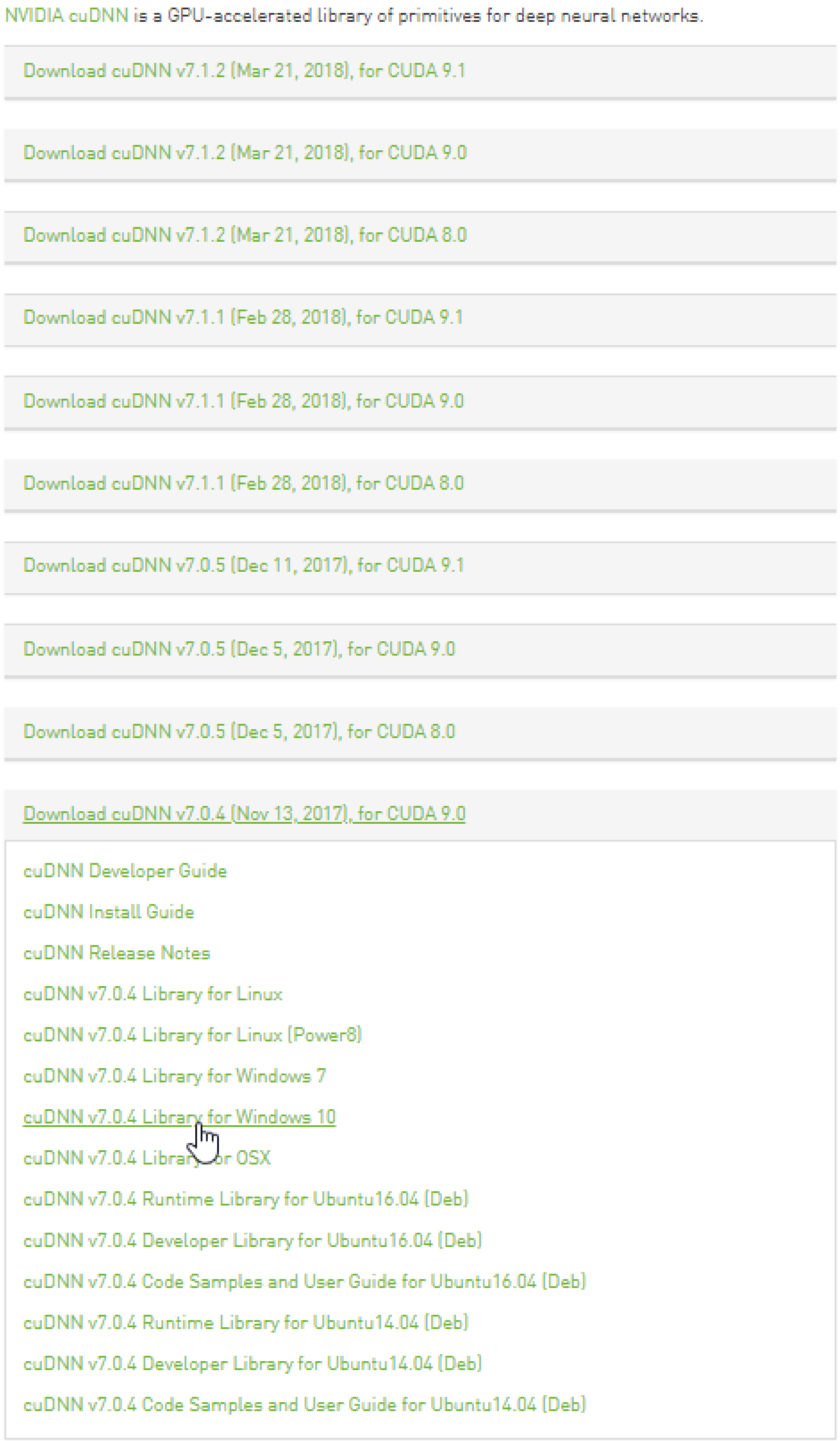
□ Launch Samples

After completion, the installer should have created a system environment (sysenv) variable named `CUDA_PATH` and added `%CUDA_PATH%\bin` as well as `%CUDA_PATH%\libnvvp` to `PATH`. Check that it is indeed the case. If, for some reason, the CUDA env vars are missing, then:

1. Define a system environment (sysenv) variable named `CUDA_PATH` with the value `A:\whatever\cuda-x.x.xxx`
2. Add `%CUDA_PATH%\bin` and `%CUDA_PATH%\libnvvp` to `PATH`

When it comes to cuDNN, per NVidia's **website**, "cuDNN provides highly tuned implementations for standard routines such as forward and backward convolution, pooling, normalization, and activation layers," hallmarks of convolution network architectures. Download cuDNN from **here**. Choose the cuDNN Library for Windows that matches the `CUDA` version:

NVIDIA has recently removed the option for the 7.0.4 Windows download. If your system can not support the latest edition, or you are on the NVIDIA 300 to 400 series, you can download it **here**.



NVIDIA cuDNN is a GPU-accelerated library of primitives for deep neural networks.

Download cuDNN v7.1.2 (Mar 21, 2018), for CUDA 9.1

Download cuDNN v7.1.2 (Mar 21, 2018), for CUDA 9.0

Download cuDNN v7.1.2 (Mar 21, 2018), for CUDA 8.0

Download cuDNN v7.1.1 (Feb 28, 2018), for CUDA 9.1

Download cuDNN v7.1.1 (Feb 28, 2018), for CUDA 9.0

Download cuDNN v7.1.1 (Feb 28, 2018), for CUDA 8.0

Download cuDNN v7.0.5 (Dec 11, 2017), for CUDA 9.1

Download cuDNN v7.0.5 (Dec 5, 2017), for CUDA 9.0

Download cuDNN v7.0.5 (Dec 5, 2017), for CUDA 8.0

Download cuDNN v7.0.4 (Nov 13, 2017), for CUDA 9.0

cuDNN Developer Guide

cuDNN Install Guide

cuDNN Release Notes

cuDNN v7.0.4 Library for Linux

cuDNN v7.0.4 Library for Linux (Power8)

cuDNN v7.0.4 Library for Windows 7

cuDNN v7.0.4 Library for Windows 10

cuDNN v7.0.4 Library for OSX

cuDNN v7.0.4 Runtime Library for Ubuntu16.04 (Deb)

cuDNN v7.0.4 Developer Library for Ubuntu16.04 (Deb)

cuDNN v7.0.4 Code Samples and User Guide for Ubuntu16.04 (Deb)

cuDNN v7.0.4 Runtime Library for Ubuntu14.04 (Deb)

cuDNN v7.0.4 Developer Library for Ubuntu14.04 (Deb)

cuDNN v7.0.4 Code Samples and User Guide for Ubuntu14.04 (Deb)

The downloaded ZIP file contains three directories (`bin` , `include` , `lib`). Extract and copy their content to the identically-named `bin` , `include` and `lib` directories in `%CUDA_PATH%` .

0.3.2 MacOS

0.3.2.1 C/C++ Environment

Please directly install Xcode Command Line Tools. This is released by Apple, so do make sure you have logged into an Apple ID. If you previously installed the full Xcode package, you will need to update Xcode to the newest version (Xcode 8 or newer). After updating Xcode, launch and run the Xcode application and accept the Apple license terms.

You don't need the full Xcode package to get the Xcode Command Line Tools. You only need the full Xcode package if you are doing development of applications for the Apple operating systems. However, you may have previously installed the full Xcode package.

Check if the full Xcode package is already installed:

```
xcode-select -p
```

If you see:

```
/Applications/Xcode.app/Contents/Developer
```

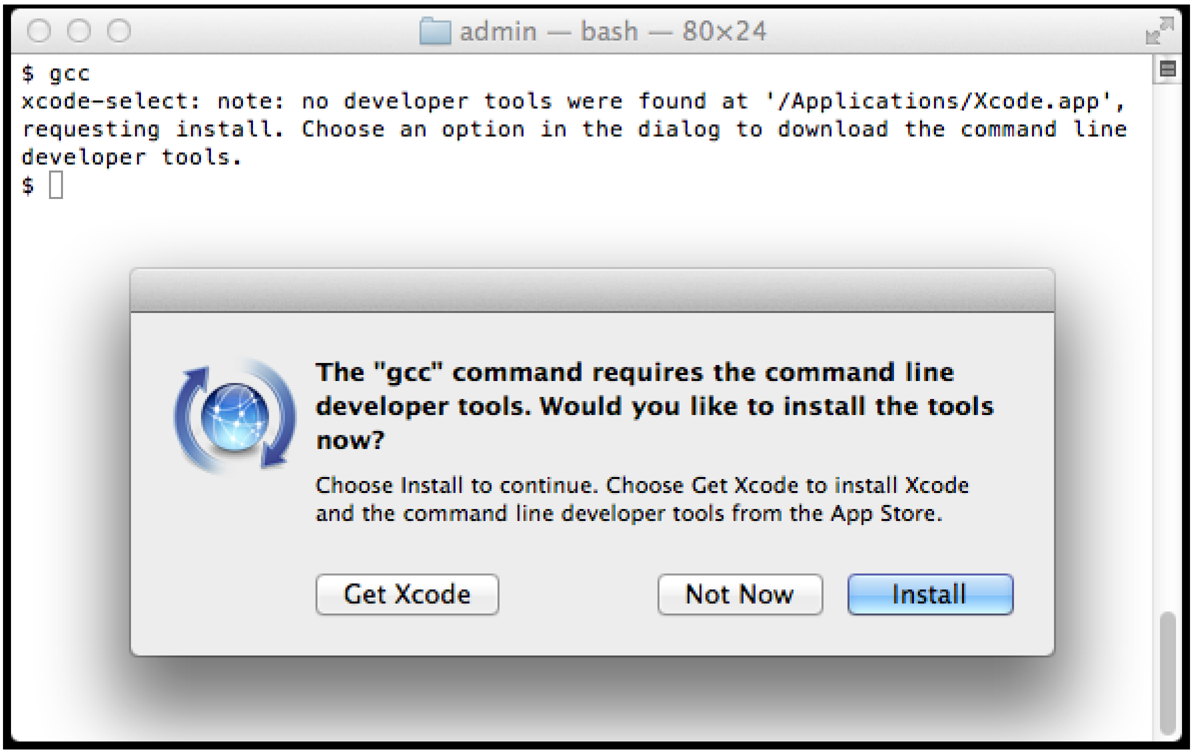
the full Xcode package is already installed.

You will need to update Xcode to the newest version (Xcode 8 or newer). Go to the App Store application and check "Updates." After updating Xcode, be sure to launch the Xcode application and accept the Apple license terms.

If not, you may install it by running:

```
gcc
```

You'll see an alert box:



```
$ gcc
xcode-select: note: no developer tools were found at '/Applications/Xcode.app',
requesting install. Choose an option in the dialog to download the command line
developer tools.
$ 
```

The "gcc" command requires the command line developer tools. Would you like to install the tools now?

Choose Install to continue. Choose Get Xcode to install Xcode and the command line developer tools from the App Store.

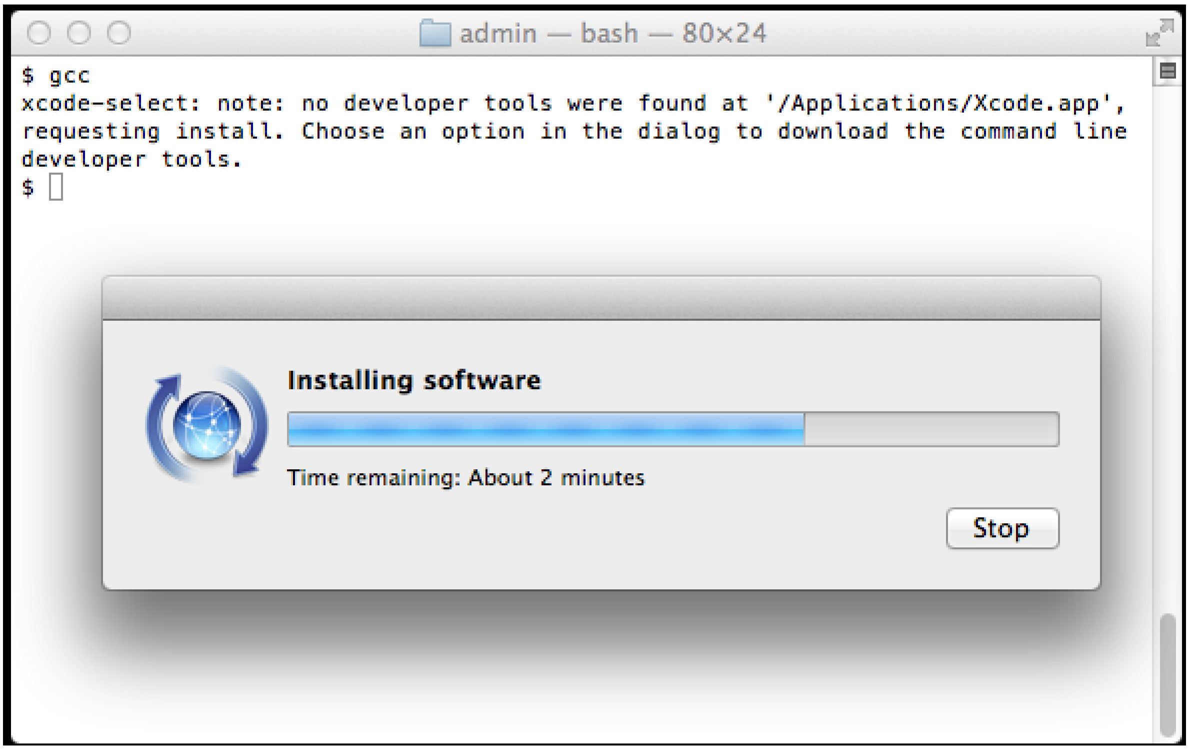
Alternatively, you can use a command to install Xcode Command Line Tools. It will produce a similar alert box. Note the double hyphen:

```
xcode-select --install
```

Click "Install" to download and install Xcode Command Line Tools.

The instructions in the alert box are confusing. You don't need to "Get Xcode" from the App Store. Just click "Install" for the Xcode Command Line Tools. If you have a slow Internet connection, it may take many minutes.

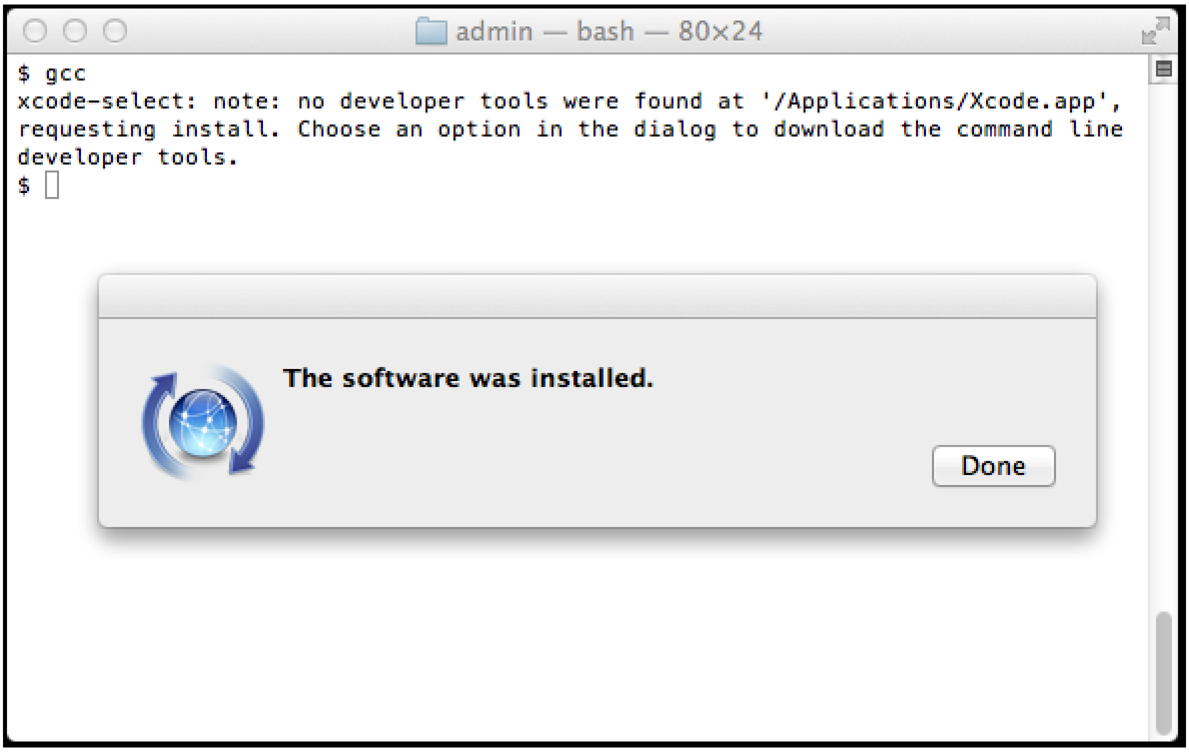
If the download takes a very long time (over an hour) or fails, you can try an alternative. Go to here and enter your Apple ID and password. You'll be asked to agree to the terms of the Apple Developer Program. You'll see a list of software packages you can download. Look for the latest version of *Command Line Tools* and click to download the *.dmg* file. Downloading the *.dmg* file is much faster than waiting for the command-line-based download. Install the *.dmg* file by clicking on the package icon.



```
$ gcc
xcode-select: note: no developer tools were found at '/Applications/Xcode.app',
requesting install. Choose an option in the dialog to download the command line
developer tools.
$ 
```

Installing software

Time remaining: About 2 minutes



```
$ gcc
xcode-select: note: no developer tools were found at '/Applications/Xcode.app',
requesting install. Choose an option in the dialog to download the command line
developer tools.
$ 
```

The software was installed.

Verify that you've successfully installed Xcode Command Line Tools:

```
xcode-select -p
/Library/Developer/CommandLineTools
```

Just to be certain, verify that `gcc` is installed:

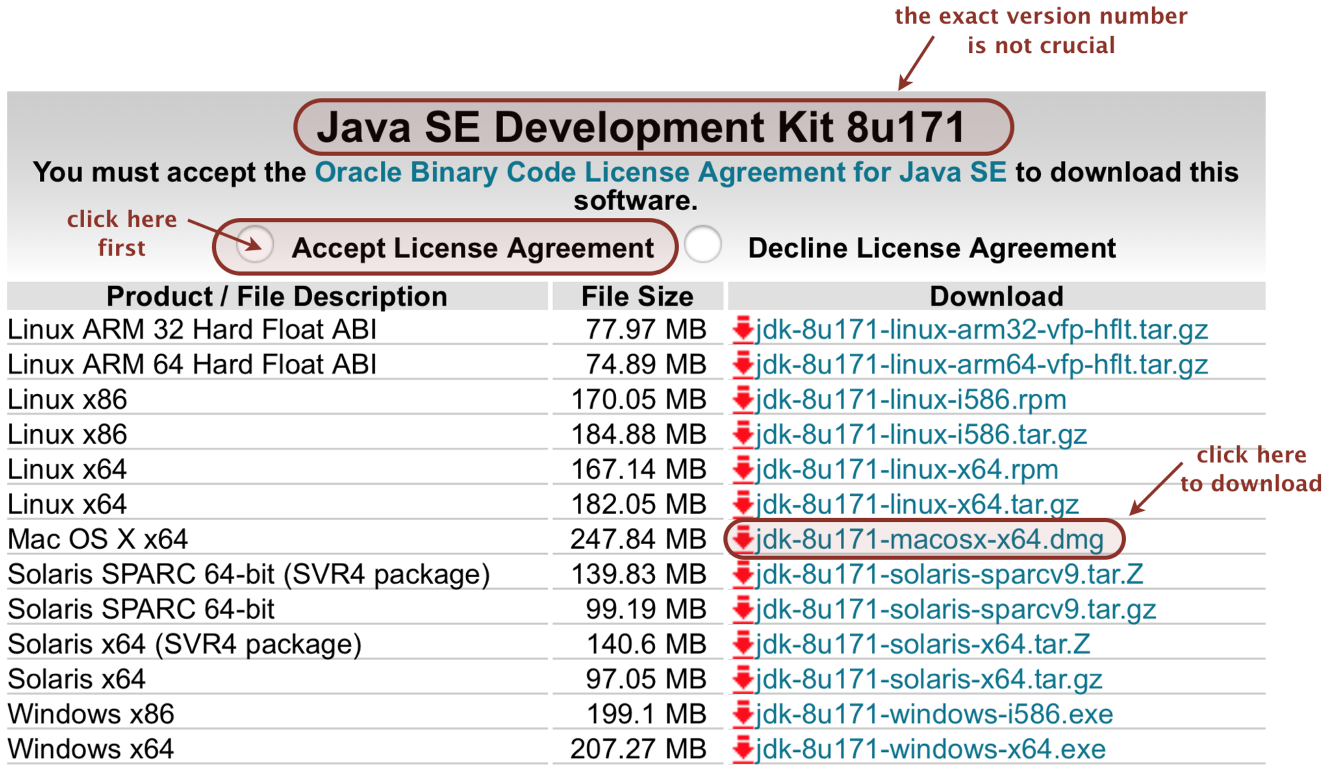
```
gcc --version

Configured with: --prefix=/Library/Developer/CommandLineTools/usr --with-gxx-include-
dir=/usr/include/c++/4.2.1
Apple LLVM version 6.0 (clang-600.0.54) (based on LLVM 3.5svn)
Target: x86_64-apple-darwin14.0.0
Thread model: posix
```

On earlier versions of MacOS, it was more difficult to install Xcode Command Line Tools. It required a huge download of the full Xcode package from the Mac App Store or registration as an Apple developer for a smaller Command Line Tools package. Mac OS X Mavericks made installation of Xcode Command Line Tools much simpler.

0.3.2.2 Java

- Java is a dependency for `OpenCV` , `NOAA's Weather Toolkit` and `MATLAB` builds.
- Go and obtain the **desired Java SE**
- Under **Java SE Downloads**, click on DOWNLOAD next to the edition you desired
- Click to accept the license agreement
- Download the mac `.dmg`
- Use the `.dmg` to install



the exact version number is not crucial

Java SE Development Kit 8u171

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.

click here first

○ Accept License Agreement ○ Decline License Agreement

Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	77.97 MB	jdk-8u171-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	74.89 MB	jdk-8u171-linux-arm64-vfp-hflt.tar.gz
Linux x86	170.05 MB	jdk-8u171-linux-i586.rpm
Linux x86	184.88 MB	jdk-8u171-linux-i586.tar.gz
Linux x64	167.14 MB	jdk-8u171-linux-x64.rpm
Linux x64	182.05 MB	jdk-8u171-linux-x64.tar.gz
Mac OS X x64	247.84 MB	jdk-8u171-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	139.83 MB	jdk-8u171-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	99.19 MB	jdk-8u171-solaris-sparcv9.tar.gz
Solaris x64 (SVR4 package)	140.6 MB	jdk-8u171-solaris-x64.tar.Z
Solaris x64	97.05 MB	jdk-8u171-solaris-x64.tar.gz
Windows x86	199.1 MB	jdk-8u171-windows-i586.exe
Windows x64	207.27 MB	jdk-8u171-windows-x64.exe

click here to download

0.3.2.3 Python 3

The following instructions will guide you through the process of:

- Installing Python 3 using **Homebrew**
- Running multiple Python versions as sand-boxed environments

Open Terminal.app (~/Applications/Utilities) and type

```
python --version
```

If you execute this command in MacOS 10.12 for example, the returned output will read:

> Python 2.7.10

If you execute

```
which python
```

via the command line, it will return the location of the program file, in this case:

> /usr/bin/python

Now we should add Python 3.x via `Homebrew` .

Assuming you have `Homebrew` installed, in `Terminal.app` execute the following command to install Python 3 :

```
brew install python3
```

After installation, run the

```
python3 --version
```

command to verify the exact version:

> Python 3.6.4

Now run

```
which python3
```

to determine the path where `Homebrew` installed the program file:

> /usr/local/bin/python3

At this stage we have two different version of Python available, yet both version are invoked differently :

- to run a script with **Python 2**, eg. `python test.py`
- to run a script with **Python 3**, eg. `python3 test.py`

0.3.2.4 NOAA's Weather and Climate Toolkit

You may find the latest edition via **NOAA website** . Also, please make sure `Java` is properly installed. You may find more information about it via its **requirements page** .

0.3.2.5 CUDA `Optional`

1. Apple has not release any official product with NVidia components for over half a decade. The best bet for you even if you have an old 650M chip is to NOT use it since it has no meaningful acceleration effect. Nor, it has enough streaming processors and shared memory for data bridge. Hence, no.

2. If you are on Hackintosh, and managed to boot in with NVidia GPU. The chance is where when you install the CUDA driver, your Web driver will be replaced and your bootflag can't be fixed. Hence, it will result in black screen as kernel panic after boot into Unibeast/Clover EFI partition loader. So, no.
3. If you are using a external GPU, you may download the latest package via CUDA Zone .

Use the following procedure to successfully install the CUDA driver and the CUDA toolkit. The CUDA driver and the CUDA toolkit must be installed for CUDA to function. If you have not installed a stand-alone driver, install the driver provided with the CUDA Toolkit.

Choose which packages you wish to install. The packages are:

- **CUDA Driver**: This will install /Library/Frameworks/CUDA.framework and the UNIX-compatibility stub `/usr/local/cuda/lib/libcuda.dylib that refers to it.
- **CUDA Toolkit**: The CUDA Toolkit supplements the CUDA Driver with compilers and additional libraries and header files that are installed into /Developer/NVIDIA/CUDA-10.0 by default. Symlinks are created in /usr/local/cuda/ pointing to their respective files in /Developer/NVIDIA/CUDA-10.0/. Previous installations of the toolkit will be moved to /Developer/NVIDIA/CUDA-#.# to better support side-by-side installations.
- **CUDA Samples (read-only)**: A read-only copy of the CUDA Samples is installed in /Developer/NVIDIA/CUDA-10.0/samples. Previous installations of the samples will be moved to /Developer/NVIDIA/CUDA-#.#/samples to better support side-by-side installations.

A command-line interface is also available:

- **--accept-eula**: Signals that the user accepts the terms and conditions of the CUDA-10.0 EULA.
- **--silent**: No user-input will be required during the installation. Requires **--accept-eula** to be used.
- **--no-window**: No windows will be created during the installation. Useful for installing in environments without a display, such as via ssh. Implies **--silent**. Requires **--accept-eula** to be used.
- **--install-package=**: Specifies a package to install. Can be used multiple times. Options are "cuda-toolkit", "cuda-samples", and "cuda-driver".
- **--log-file=**: Specify a file to log the installation to. Default is /var/log/cuda_installer.log.

Set up the required environment variables:

```
export PATH=/Developer/NVIDIA/CUDA-10.0/bin${PATH:+:${PATH}}
export DYLD_LIBRARY_PATH=/Developer/NVIDIA/CUDA-10.0/lib\
                         ${DYLD_LIBRARY_PATH:+:${DYLD_LIBRARY_PATH}}
```

In order to modify, compile, and run the samples, the samples must also be installed with write permissions. A convenience installation script is provided: cuda-install-samples-10.0.sh. This script is installed with the cuda-samples-10-0 package.

To install Nsight Eclipse plugins, an installation script is provided:

```
/Developer/NVIDIA/CUDA-10.0/bin/nsight_ee_plugins_manage.sh install <eclipse-dir>
```

Refer to Nsight Eclipse Plugins Installation Guide for more details.

Note:

To run CUDA applications in console mode on MacBook Pro with both an integrated GPU and a discrete GPU, use the following settings before dropping to console mode:

1. Uncheck **System Preferences** > **Energy Saver** > **Automatic Graphic Switch**
2. Drag the Computer sleep bar to Never in **System Preferences** > **Energy Saver**

0.3.3 Debian/Ubuntu/Linux

0.3.3.1 C/C++ Environment

In order to do so, enable *main repository* in Software & Updates.

Then run these commands in a terminal:

```
sudo apt-get update
sudo apt-get install build-essential
```

This will install the following packages:

- **dpkg-dev** (>= 1.13.5): Debian package development tools
- **g++** (>= 4:4.4.3): GNU C++ compiler
- **gcc** (>= 4:4.4.3): GNU C compiler
- **libc6-dev**: Embedded GNU C Library: Development Libraries and Header Files

  or **libc-dev**: virtual package provided by **libc6-dev**
- **make**: An utility for Directing compilation.

0.3.3.2 Java

The default Java version in Ubuntu 18.04 is OpenJDK 10. Once next LTS version OpenJDK 11 is released, it will become the default Java version in Ubuntu 18.04.

Follow the steps below to install Java OpenJDK on an Ubuntu machine:

1. First, update the `apt` package index with:

   ```
   sudo apt update
   ```

2. Once the package index is updated install the default Java OpenJDK package with:

   ```
   sudo apt install default-jdk
   ```

3. Verify the installation, by running the following command which will print the Java version:

   ```
   java -version
   ```

   Then you may see something as:

   ```
   openjdk version "10.0.1" 2018-04-17
   OpenJDK Runtime Environment (build 10.0.1+10-Ubuntu-3ubuntu1)
   OpenJDK 64-Bit Server VM (build 10.0.1+10-Ubuntu-3ubuntu1, mixed mode)
   ```

0.3.3.3 Python 3

The newer system starting from 14.04+ should ship with Python 3. If you are on old system or trying to update the newer version, please perform the following lines of commands:

```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get dist-upgrade
sudo apt-get install python-dev python-setuptools python-pip python-smbus
```

After all, you may update the `pip` package manager to the latest nightly edition by running:

```
python3 -m pip install --user --upgrade pip
```

0.3.3.4 NOAA's Weather and Climate Toolkit

You may find the latest edition via NOAA website. Also, please make sure Java is properly installed. You may find more information about it via its requirements page.

0.3.3.5 CUDA Optional

1. Download CUDA: I used the 16.04 version and "runfile (local)". That is 1.1 GB.
2. Check the md5 sum:

   ```
   md5sum cuda_7.5.18_linux.run
   ```

   Only continue if it is correct.
3. Remove any other installation

   ```
   sudo apt-get purge nvidia-cuda*
   ```

   - if you want to install the drivers too, then

   ```
   sudo apt-get purge nvidia-*
   ```

   1. If you want to install the display drivers(*), logout from your GUI. Go to a terminal session (ctrl+alt+F2)
   2. Stop lightdm: `sudo service lightdm stop`
   3. Create a file at `/etc/modprobe.d/blacklist-nouveau.conf` with the following contents: `blacklist nouveau options nouveau modeset=0`
   4. Then do:

      ```
      sudo update-initramfs -u
      ```

   ```
   sudo sh cuda_7.5.18_linux.run --override
   ```

   Make sure that you say `y` for the symbolic link.

   Then, start `lightdm` again:

   ```
   sudo service lightdm start
   ```

5. Follow the command-line prompts

See also: NVIDIA CUDA with Ubuntu 16.04 beta on a laptop (if you just cannot wait)

Notes: Yes, there is the possibility to install it via `apt-get install cuda`. I strongly suggest not to use it, as it changes the paths and makes the installation of other tools more difficult.

You might also be interested in How can I install CuDNN on Ubuntu 16.04?.

Don't install the display drivers with this script. They are old. Download the latest ones from Here.

Also, make sure to verify CUDA installation.

The following command shows the current CUDA version (last line):

```
$ nvcc --version
nvcc: NVIDIA (R) Cuda compiler driver
Copyright (c) 2005-2016 NVIDIA Corporation
Built on Sun_Sep__4_22:14:01_CDT_2016
Cuda compilation tools, release 8.0, V8.0.44
```

The following command shows your driver version and how much GPU memory you have:

```
$ nvidia-smi
Fri Jan 20 12:19:04 2017
+-----------------------------------------------------------------------------+
| NVIDIA-SMI 367.57                  Driver Version: 367.57                    |
|-------------------------------+----------------------+----------------------+
| GPU  Name        Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf  Pwr:Usage/Cap|         Memory-Usage | GPU-Util  Compute M. |
|===============================+======================+======================|
|   0  GeForce 940MX       Off  | 0000:02:00.0     Off |                  N/A |
| N/A   75C    P0    N/A /  N/A |   1981MiB /  2002MiB |     98%      Default |
+-------------------------------+----------------------+----------------------+


+-----------------------------------------------------------------------------+
| Processes:                                                       GPU Memory |
|  GPU       PID  Type  Process name                               Usage      |
|=============================================================================|
|    0      1156    G   /usr/lib/xorg/Xorg                             246MiB |
|    0      3198    G   ...m,SecurityWarningIconUpdate<SecurityWarni   222MiB |
|    0      6645    C   python                                        1510MiB |
+-----------------------------------------------------------------------------+
```

See also: **Verify CuDNN installation**

Help! The new driver does not work!

Don't panic. Even if you can't see anything on your computer, the following steps should get you back to the state before:

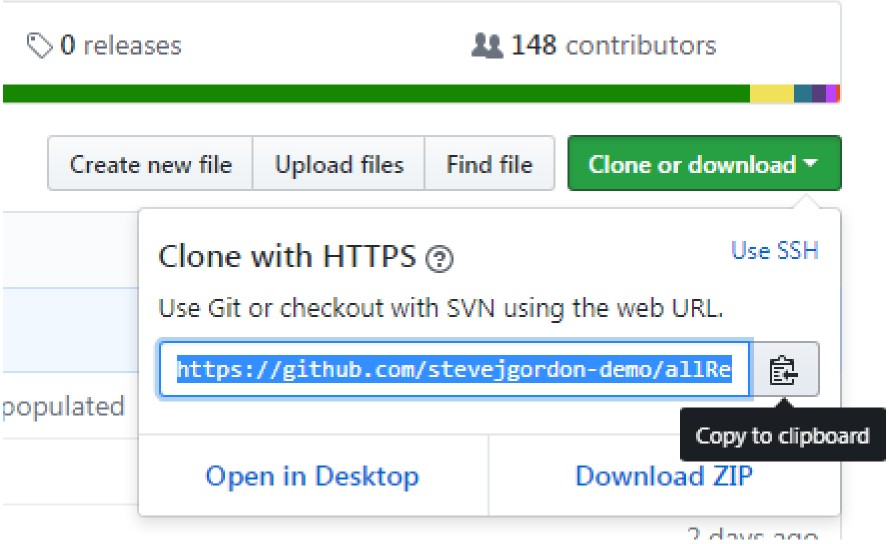
1. Press shift while startup
2. Go into a root shell
3. Make it writable by `mount -o remount,rw /` (`-` is `?` and `/` is `-` in the american layout)
4. `sh cuda_7.5.18_linux.run --uninstall`
5. `sudo apt-get install nvidia-361 nvidia-common nvidia-prime nvidia-settings`

1. Obtain the Toolkits

There are 3 ways to obtain the toolkits.

1.1 Direct Download

Fire up a browser, and visit this awesome page and find the `Clone or download` icon on the right top of the page.



Then, click on `Download ZIP` to obtain all the files in the repo.

By doing so, you will download everything having been comitted to the repo, including all the testing data and RAW samples. Be prepared since right now, the repo is `over 2 GB`. Post download process, you may upzip the folder with your favorite utility tool.

1.2 GitHub SVN

Please visit GitHub Desktop Tool page to obtain the SVN tool. Then, go back to the this awesome page and find the the `Clone or download` icon on the right top of the page.

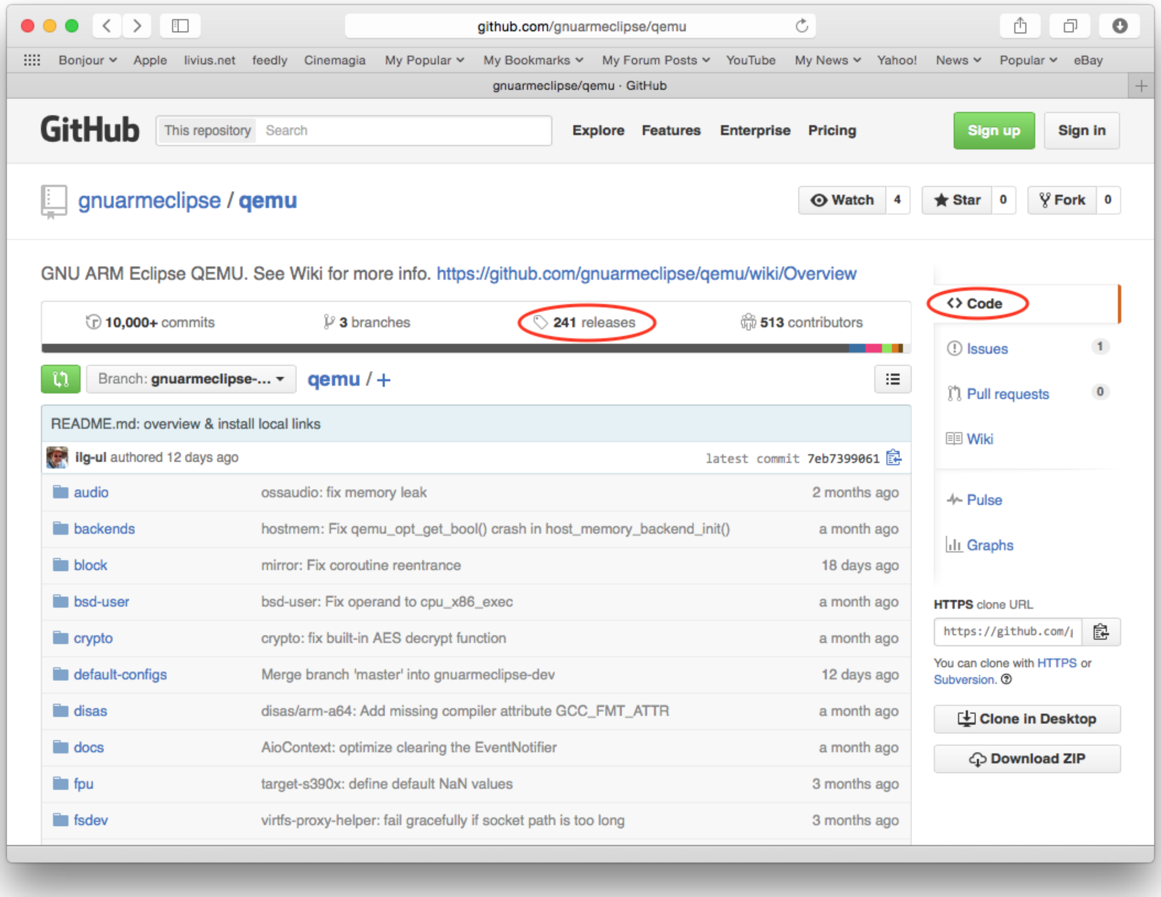
As shown in the previous image, just click on `Open in Desktop`, you will be able to prompt to make a clone version of the toolkits.

1.3 Release Edition

This will happen in the near future.

- Be sure you are in the **Code** view; if not, select the right side `<>` code icon

- Identify the **releases** link in the upper line:



GNU ARM Eclipse QEMU. See Wiki for more info. https://github.com/gnuarmeclipse/qemu/wiki/Overview

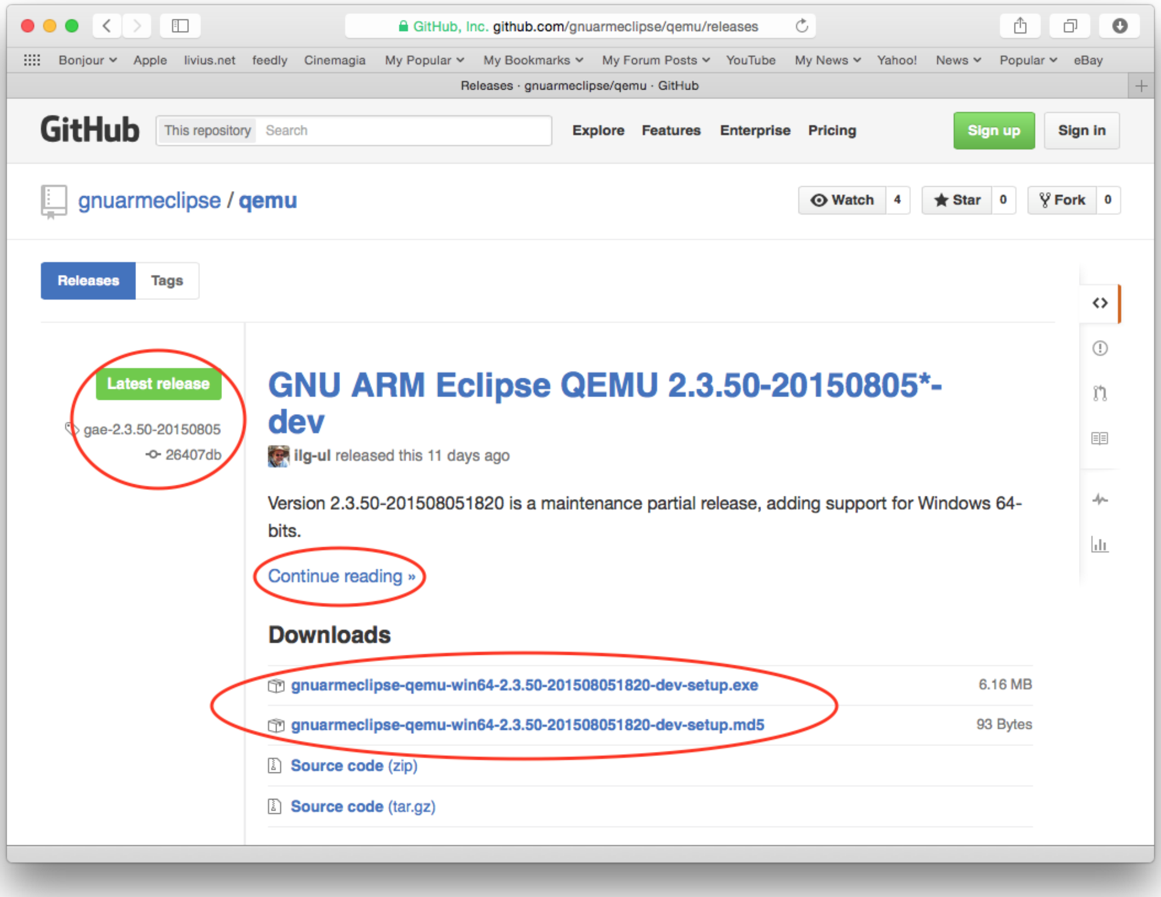
You can clone with HTTPS or Subversion.

README.md: overview & install local links

ilg-ul authored 12 days ago latest commit 7eb7399061

audio	ossaudio: fix memory leak	2 months ago
backends	hostmem: Fix qemu_opt_get_bool() crash in host_memory_backend_init()	a month ago
block	mirror: Fix coroutine reentrance	18 days ago
bsd-user	bsd-user: Fix operand to cpu_x86_exec	a month ago
crypto	crypto: fix built-in AES decrypt function	a month ago
default-configs	Merge branch 'master' into gnuarmeclipse-dev	12 days ago
disas	disas/arm-a64: Add missing compiler attribute GCC_FMT_ATTR	a month ago
docs	AioContext: optimize clearing the EventNotifier	a month ago
fpu	target-s390x: define default NaN values	3 months ago
fsdev	virtfs-proxy-helper: fail gracefully if socket path is too long	3 months ago

- Click the releases link; this will show the Releases view, with the **Latest release** at the top of the page:



gnuarmeclipse / qemu

Latest release

gae-2.3.50-20150805

26407db

GNU ARM Eclipse QEMU 2.3.50-20150805*-dev

ilg-ul released this 11 days ago

Version 2.3.50-201508051820 is a maintenance partial release, adding support for Windows 64-bits.

Continue reading »

Downloads

gnuarmeclipse-qemu-win64-2.3.50-201508051820-dev-setup.exe 6.16 MB

gnuarmeclipse-qemu-win64-2.3.50-201508051820-dev-setup.md5 93 Bytes

Source code (zip)

Source code (tar.gz)

2. Operate the Toolkits

2.0 MATLAB Tools

#

If you are on the elder edition, identify the `run.m` file under the archive. Then, simply click on it to trigger the MATLAB GUI. If you would like to run via command line, please run as:

```
matlab -nojvm -nodisplay -nosplash
```

Then, navigate to the archive to run `run.m` .

2.1 Python Tools

#

First, please make sure to have the dependency libraries properly installed. You should not worry about much. Simply run in the terminal as:

```
python3 -m pip install -U -r requirements.txt
```

This would simply download all the required libraries from the official sources, compile them, and install to your local machine.

Then, depending on if you would like the GUI or non-GUI edition depending on your work environment, simply execute the `run_GUI.py` or `run.py` .

3. Misc

Should you have any questions, please let us know!