深度学习GPU加速环境的搭建

贝贝组 黄涛

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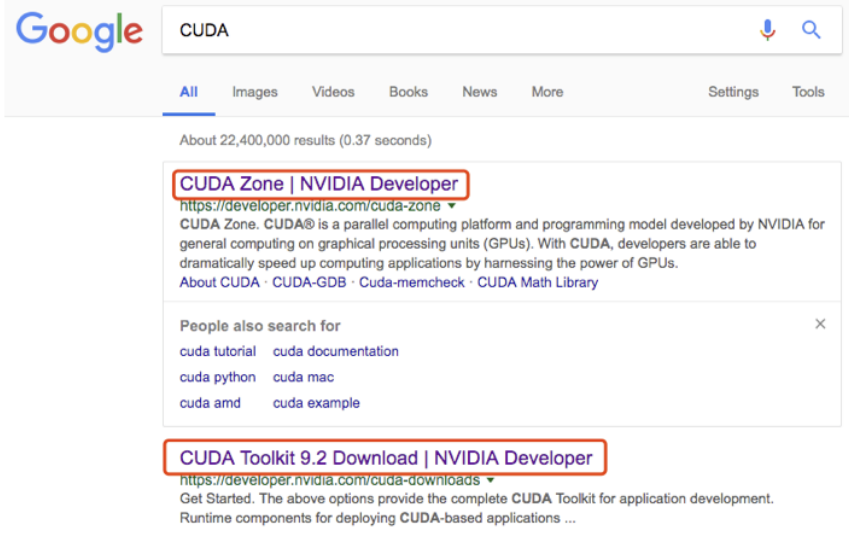
Install a software

Learn to find tutorial from official website

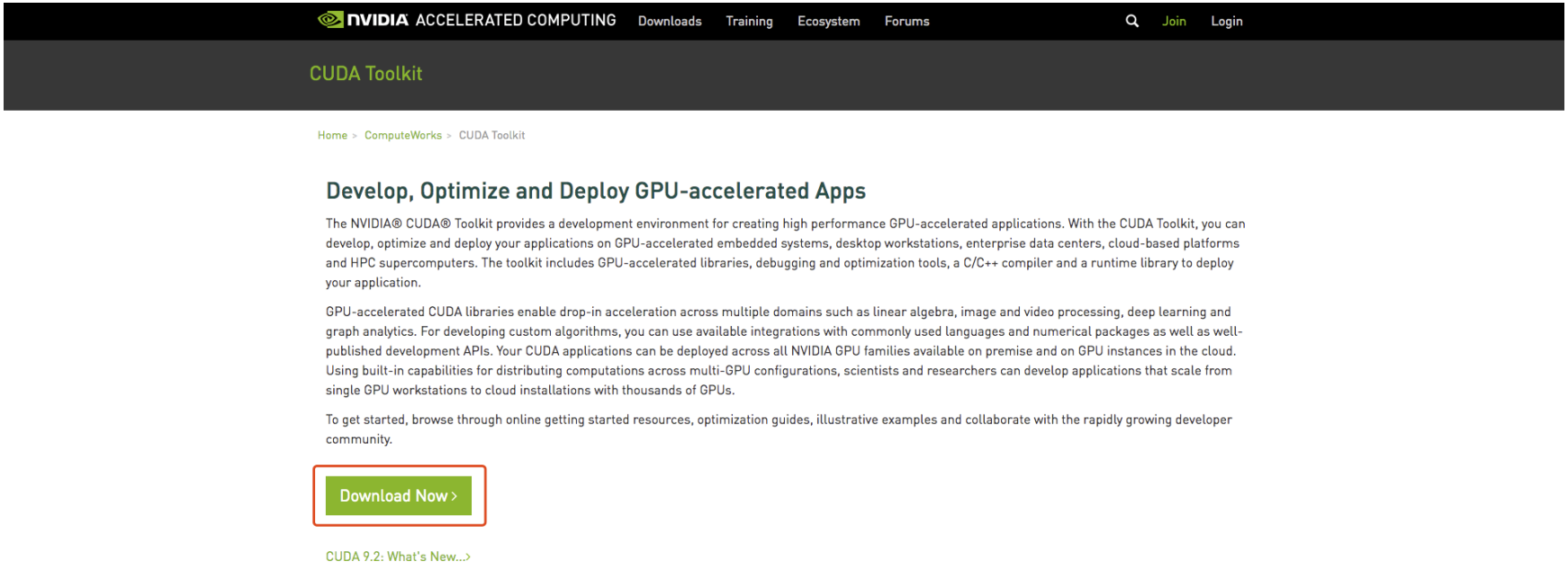
Install CUDA Toolkit

First, search



Install CUDA Toolkit

CUDA Toolkit: https://developer.nvidia.com/cuda-toolkit

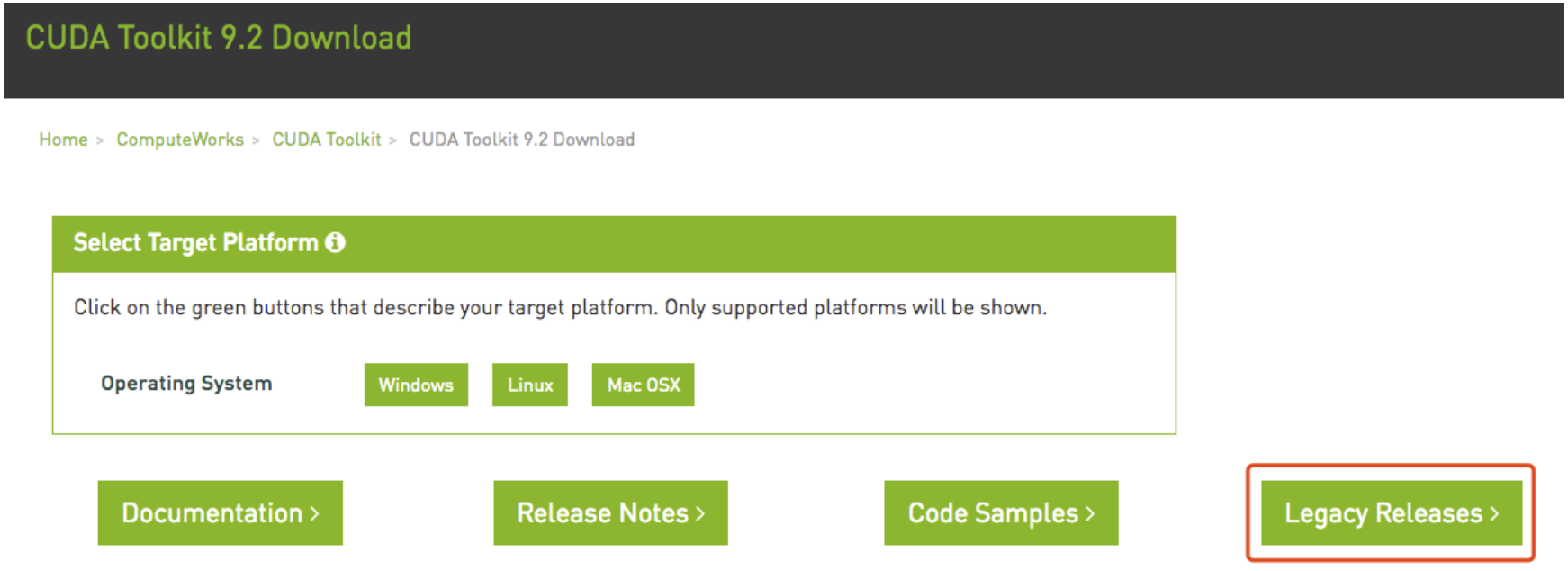


Install CUDA Toolkit

NOTE:

The latest CUDA toolkit version TensorFlow support officially is `9.0`

DO NOT DOWNLOAD CUDA TOOLKIT `9.2` !



Install CUDA Toolkit

Previous releases of the CUDA Toolkit, GPU Computing SDK, documentation and developer drivers can be found using the links below. Please select the release you want from the list below, and be sure to check www.nvidia.com/drivers for more recent production drivers appropriate for your hardware configuration.

Download CUDA Toolkit 9.2 Learn More about CUDA Toolkit 9

Latest Release

CUDA Toolkit 9.2 (March 2018)

Archived Releases

CUDA Toolkit 9.1 (Dec 2017), Online Documentation
CUDA Toolkit 9.0 (Sept 2017), Online Documentation
CUDA Toolkit 8.0 GA2 (Feb 2017), Online Documentation
CUDA Toolkit 8.0 GA1 (Sept 2016), Online Documentation

Choose platform (exp. `Ubuntu 18.04`)

CUDA Toolkit 9.0 Downloads

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**, ppc64le
Distribution	Fedora, OpenSUSE, RHEL, CentOS, SLES, **Ubuntu**
Version	**17.04**, 16.04
Installer Type	runfile (local), deb (local), **deb (network)**

Download Installer for Linux Ubuntu 17.04 x86_64

The base installer is available for download below.

Base Installer — Download (2.8 KB)

Installation Instructions:

1. `sudo dpkg -i cuda-repo-ubuntu1704_9.0.176-1_amd64.deb`
2. `sudo apt-key adv --fetch-keys https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1704/x86_64/7fa2af80.pub`
3. `sudo apt-get update`
4. `sudo apt-get install cuda`

Other installation options are available in the form of meta-packages. For example, to install all the library packages, replace "cuda" with the "cuda-libraries-9-0" meta package. For more information on all the available meta packages click here.

Follow official guide

1. Download deb (network) file.
2. Install deb package

   ```
   sudo dpkg -i cuda-repo-ubuntu1704_9.0.176-1_amd64.deb
   ```

3. Add keys

   ```
   sudo apt-key adv --fetch-keys
   https://developer.download.nvidia.com/compute/cuda/repos/ub
   untu1704/x86_64/7fa2af80.pub
   ```

4. Update software sources

   ```
   sudo apt-get update
   ```

5. Install cuda

   ```
   sudo apt-get install cuda
   ```

Note

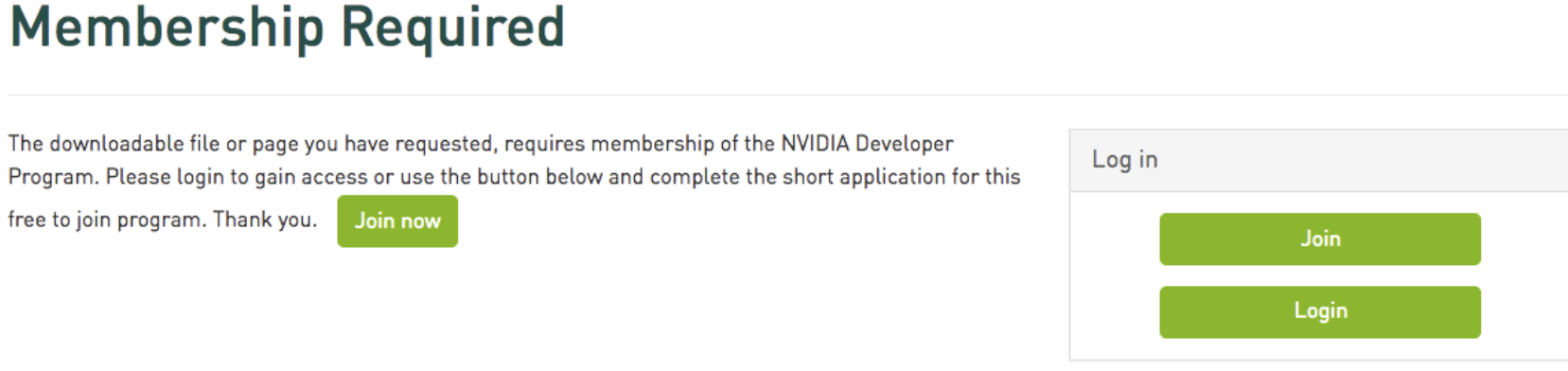
Ubuntu默认使用的Nvidia显卡驱动为开源驱动，安装CUDA会将驱动切换为Nvidia官方驱动

Install cuDNN

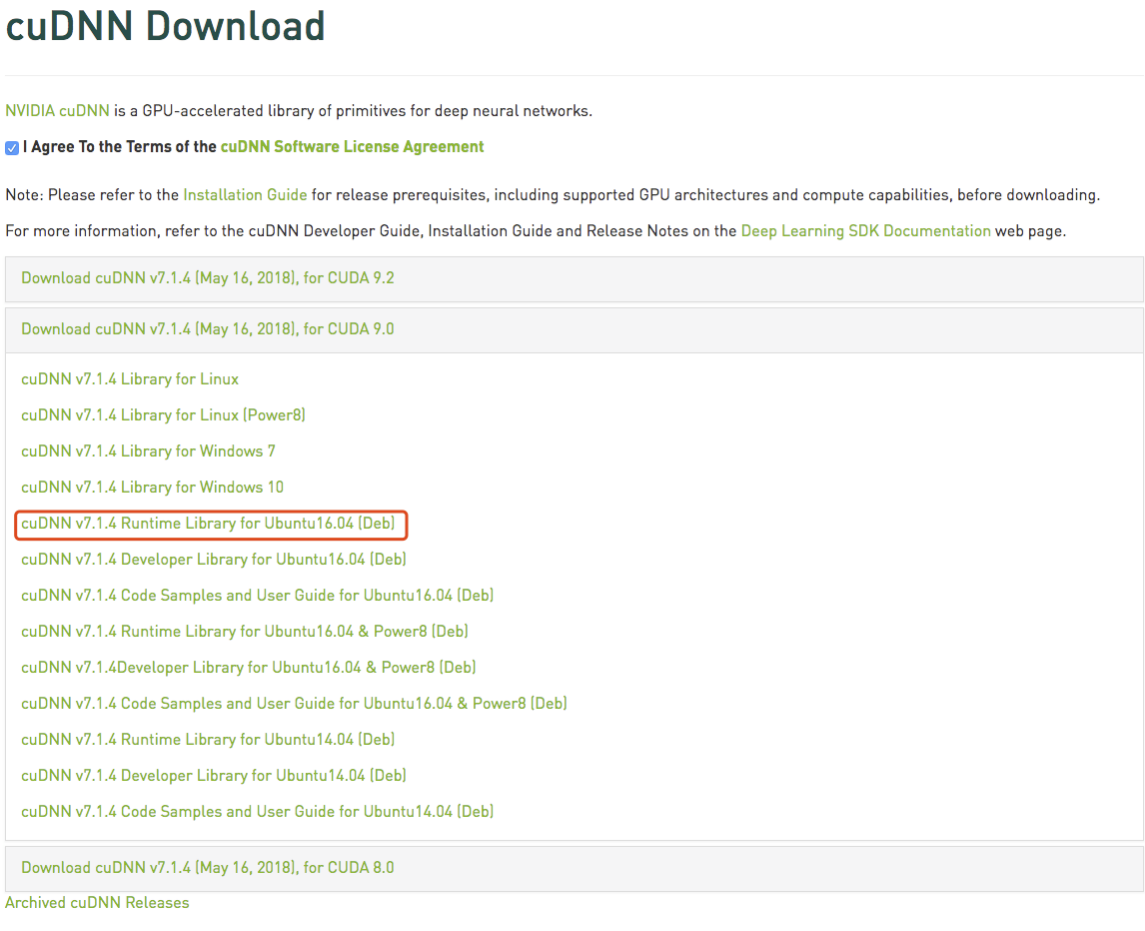
The NVIDIA CUDA® Deep Neural Network library (cuDNN) is a GPU-accelerated library of primitives for deep neural networks.

Official site: https://developer.nvidia.com/cudnn

Download cuDNN, you need to join NVIDIA Developer Program.



Install cuDNN



cuDNN Download

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

☑ **I Agree To the Terms of the cuDNN Software License Agreement**

Note: Please refer to the Installation Guide for release prerequisites, including supported GPU architectures and compute capabilities, before downloading.

For more information, refer to the cuDNN Developer Guide, Installation Guide and Release Notes on the Deep Learning SDK Documentation web page.

Download cuDNN v7.1.4 (May 16, 2018), for CUDA 9.2

Download cuDNN v7.1.4 (May 16, 2018), for CUDA 9.0

cuDNN v7.1.4 Library for Linux

cuDNN v7.1.4 Library for Linux (Power8)

cuDNN v7.1.4 Library for Windows 7

cuDNN v7.1.4 Library for Windows 10

cuDNN v7.1.4 Runtime Library for Ubuntu16.04 (Deb)

cuDNN v7.1.4 Developer Library for Ubuntu16.04 (Deb)

cuDNN v7.1.4 Code Samples and User Guide for Ubuntu16.04 (Deb)

cuDNN v7.1.4 Runtime Library for Ubuntu16.04 & Power8 (Deb)

cuDNN v7.1.4Developer Library for Ubuntu16.04 & Power8 (Deb)

cuDNN v7.1.4 Code Samples and User Guide for Ubuntu16.04 & Power8 (Deb)

cuDNN v7.1.4 Runtime Library for Ubuntu14.04 (Deb)

cuDNN v7.1.4 Developer Library for Ubuntu14.04 (Deb)

cuDNN v7.1.4 Code Samples and User Guide for Ubuntu14.04 (Deb)

Download cuDNN v7.1.4 (May 16, 2018), for CUDA 8.0

Archived cuDNN Releases

Just use `sudo dpkg -i` to install downloaded cuDNN deb file.

Install TensorFlow-GPU

TensorFlow™ 是一个开放源代码软件库，用于进行高性能数值计算。借助其灵活的架构，用户可以轻松地将计算工作部署到多种平台（CPU、GPU、TPU）和设备（桌面设备、服务器集群、移动设备、边缘设备等）。TensorFlow™ 最初是由 Google Brain 团队（隶属于 Google 的 AI 部门）中的研究人员和工程师开发的，可为机器学习和深度学习提供强力支持，并且其灵活的数值计算核心广泛应用于许多其他科学领域。

Easiest way:

```
pip install tensorflow-gpu
```

Other ways:

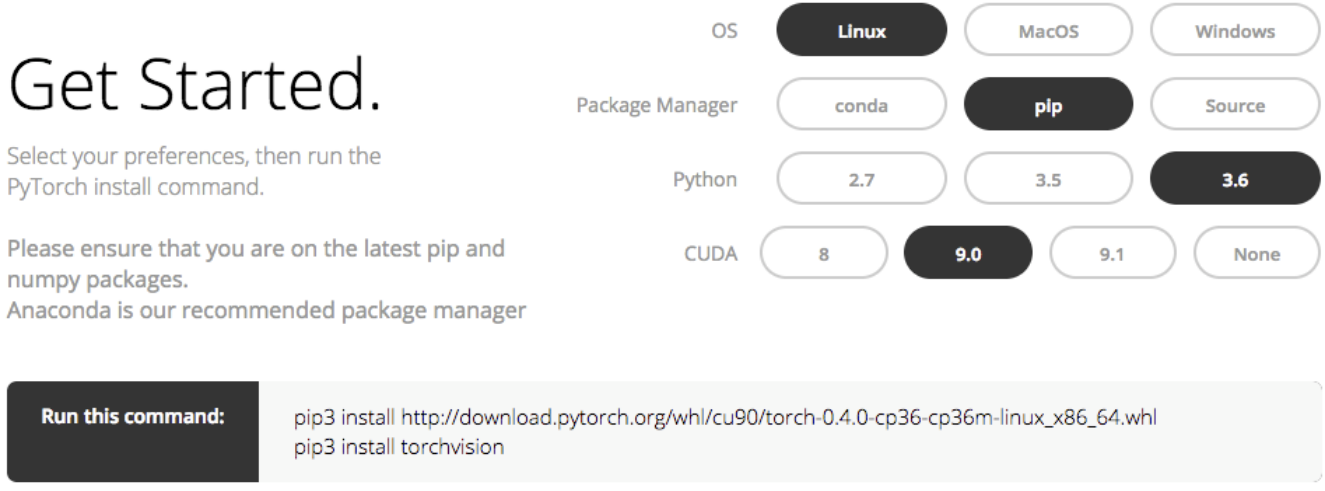
TensorFlow install: https://www.tensorflow.org/install/

Install Pytorch-GPU

PyTorch is an optimized tensor library for deep learning using GPUs and CPUs.

Official site: https://pytorch.org/

Just follow the official guide:



Example: `Ubuntu18.04` `CUDA9.0` `Python3.6`

```
pip3 install http://download.pytorch.org/whl/cu90/torch-0.4.0-c
pip3 install torchvision`
```