CUDA & cuDNN Installation for Linux Ubuntu 16.04 x86_64

1. Upgrade the system, and reboot if required.
```
$ sudo apt update
$ sudo apt upgrade
$ [ -e /var/run/reboot-required ] && sudo reboot
```
2. Install CUDA Toolkit from official site.
   https://developer.nvidia.com/cuda-zone.
   The latest release is CUDA 9.1 (Dec 2017). You may want to install previous releases.
   Select the platform and follow the instructions listed on the site to install CUDA.

   Installing with deb (either by local or by network) is recommended:
```
$ wget http://developer.download.nvidia.com/compute/cuda/repos/ubuntu1604/x86_64/cuda-repo-ubuntu1604_9.1.85-1_amd64.deb
$ sudo dpkg -i cuda-repo-ubuntu1604_9.1.85-1_amd64.deb
$ sudo apt-key adv --fetch-keys
http://developer.download.nvidia.com/compute/cuda/repos/ubuntu1604/x86_64/7fa2af80.pub
$ sudo apt-get update
$ sudo apt-get install cuda
```
3. Add CUDA into the PATH.
   Modify “9.1” to the installed version.
```
$ echo 'export PATH=/usr/local/cuda-9.1/bin${PATH:+:${PATH}}' >> ~/.bashrc
$ echo 'export LD_LIBRARY_PATH=/usr/local/cuda-9.1/lib64${LD_LIBRARY_PATH:+:${LD_LIBRARY_PATH}}' >> ~/.bashrc
```
4. Reboot the computer.
```
$ sudo reboot
```
5. Verify the installation.
```
$ cat /usr/local/cuda/version.txt
$ nvcc --version
$ nvidia-smi
```
6. Download the cuDNN library from official site.
   https://developer.nvidia.com/cudnn.
   A NVIDIA developer account is necessary for downloading.
   The latest version is v7.1.1 (Feb 2018).
   Select the compatible version to install.
7. Upload the archive file to the machine with SFTP client.
   The archive file of latest release is cudnn-9.1-linux-x64-v7.1.tgz.
8. Install the cuDNN library.
   Modify “9.1” and “7.1” to the correct version you want to install.
```
$ tar zxvf cudnn-9.1-linux-x64-v7.1.tgz
$ sudo cp cuda/include/cudnn.h /usr/local/cuda-9.1/include
$ sudo cp cuda/lib64/libcudnn* /usr/local/cuda-9.1/lib64
$ sudo chmod a+r /usr/local/cuda-9.1/include/cudnn.h /usr/local/cuda-9.1/lib64/libcudnn*
```
9. Reboot the computer.
```
$ sudo reboot
```