

CUDA 9.0

→La carte NVIDIA GTX 1050 Ti (CC=6.1) supporte la version 9.0 de CUDA :

CUDA VERSION	Min CC	Deprecated CC
Default CC	Min Version	Ubuntu/Mint
6.5	1.1	1.x
2.0	340.93	14.04/17.3
7.0	2.0	N/A
2.0	346.46	14.04/17.3
7.5	2.0	N/A
2.0	352.31	14.04/17.3
8.0	2.0	2.x
2.0	375.26	16.04/18.3
9.0	3.0	N/A
3.0	384.81	16.04/18.3

Min CC = minimum compute capability that can be specified to nvcc

Deprecated CC = if you specify this CC, you will get a deprecation message, but compile should still proceed

Default CC = the architecture that will be targetted if no ``-arch`` or ``-gencode`` switches are used

→Avant d'installer CUDA 9.0, il convient de vérifier dans le Gestionnaire de pilotes la version du pilote NVIDIA (384.130 ≥ 384.81) :



NVIDIA Corporation

Ce périphérique utilise le pilote recommandé.

nvidia-384 (recommandé)

- Version 384.130-0ubuntu0.16.04.1
NVIDIA binary driver - version 384.130

xserver-xorg-video-nouveau (open-source)

- Version 1:1.0.12-1build2
X.Org X server -- Nouveau display driver



Intel(R) Core(TM) i5-7300HQ CPU @ 2.50GHz

Microcode du processeur



intel-microcode (open-source)

- Version 3.20180807a.0ubuntu0.16.04.1
Processor microcode firmware for Intel CPUs
- Ne pas mettre à jour le microcode du processeur

→Télécharger le fichier ***cuda_9.0.176_384.81_linux.run*** sur le site ***developer.nvidia.com/cuda-90-download-archive*** :

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)	cluster (local)		

Download Installers for Linux Ubuntu 16.04 x86_64

The base installer is available for download below.
There are 4 patches available. These patches require the base installer to be installed first.

[> Base Installer](#) [Download \(1.6 GB\) !\[\]\(90b72a2399b1982a0f0b7a8676dcfc8d_img.jpg\)](#)

Installation Instructions:

1. Run `sudo sh cuda_9.0.176_384.81_linux.run``
2. Follow the command-line prompts

Le fichier ***cuda_9.0.176_384.81_linux.run*** (1,5 Go) se trouve dans le répertoire ***~/Téléchargements***

→Exécutez les commandes suivantes depuis le Terminal :

```
$ cd ~/Téléchargements
$ chmod +x cuda_*.run
$ ./cuda_*.run -extract=~/Téléchargements/cuda-9.0
$ cd cuda-9.0
```

```
$ sudo ./cuda-linux*.run
Ctrl+C | accept | default | default | default
```

→Quitter le Terminal et dans ***.bashrc*** ajouter en fin de fichier :

```
# CUDA 9.0
export PATH=/usr/local/cuda-9.0/bin:$PATH
```

export

LD_LIBRARY_PATH=/usr/local/cuda-9.0/lib64:\$LD_LIBRARY_PATH

→Ouvrir un nouveau Terminal et exécutez les commandes suivantes :

```
$ cd ~/Téléchargements/cuda-9.0
```

```
$ ./cuda-samples*.run
```

```
Ctrl+C | accept | ~/cuda-9.0/samples | default
```

```
$ cd ~/cuda-9.0/samples
```

```
$ sudo apt install g++
```

```
$ make -j4
```

Patiencez 5 minutes environ.

→Vérification :

```
$ cd 1*/deviceQuery
```

```
$ ./deviceQuery
```

```
ms@eva ~/~/cuda-9.0/samples/1_Uilities/deviceQuery
Fichier Édition Affichage Rechercher Terminal Aide
ms@eva ~/~/cuda-9.0/samples/1_Uilities/deviceQuery $ ./deviceQuery
./deviceQuery Starting...

CUDA Device Query (Runtime API) version (CUDA static linking)

Detected 1 CUDA Capable device(s)

Device 0: "GeForce GTX 1050 Ti"
  CUDA Driver Version / Runtime Version      9.0 / 9.0
  CUDA Capability Major/Minor version number: 6.1
  Total amount of global memory:             4037 MBytes (4232904704 bytes)
  ( 6) Multiprocessors, (128) CUDA Cores/MP: 768 CUDA Cores
  GPU Max Clock rate:                       1620 MHz (1.62 GHz)
  Memory Clock rate:                        3504 Mhz
  Memory Bus Width:                         128-bit
  L2 Cache Size:                            1048576 bytes
  Maximum Texture Dimension Size (x,y,z)    1D=(131072), 2D=(131072, 65536), 3D=(16384, 16384, 16384)
  Maximum Layered 1D Texture Size, (num) layers 1D=(32768), 2048 layers
  Maximum Layered 2D Texture Size, (num) layers 2D=(32768, 32768), 2048 layers
  Total amount of constant memory:          65536 bytes
  Total amount of shared memory per block:   49152 bytes
  Total number of registers available per block: 65536
  Warp size:                                32
  Maximum number of threads per multiprocessor: 2048
  Maximum number of threads per block:      1024
  Max dimension size of a thread block (x,y,z): (1024, 1024, 64)
  Max dimension size of a grid size (x,y,z): (2147483647, 65535, 65535)
  Maximum memory pitch:                     2147483647 bytes
  Texture alignment:                        512 bytes
  Concurrent copy and kernel execution:     Yes with 2 copy engine(s)
  Run time limit on kernels:                Yes
  Integrated GPU sharing Host Memory:       No
  Support host page-locked memory mapping:  Yes
  Alignment requirement for Surfaces:       Yes
  Device has ECC support:                   Disabled
  Device supports Unified Addressing (UVA): Yes
  Supports Cooperative Kernel Launch:      Yes
  Supports MultiDevice Co-op Kernel Launch: Yes
  Device PCI Domain ID / Bus ID / location ID: 0 / 1 / 0
  Compute Mode:
    < Default (multiple host threads can use ::cudaSetDevice() with device simultaneously) >

deviceQuery, CUDA Driver = CUDART, CUDA Driver Version = 9.0, CUDA Runtime Version = 9.0, NumDevs = 1
Result = PASS
ms@eva ~/~/cuda-9.0/samples/1_Uilities/deviceQuery $
```

L'installation complète de **CUDA 9.0** demande 20 minutes environ.

Il ne reste plus qu'à installer OpenCV 3.4.4 en lançant le script **install_opencv.sh** sous la racine (/home/ms) pour créer l'environnement nécessaire pour développer et exécuter le logiciel EVA sous Linux Mint 18.3 .