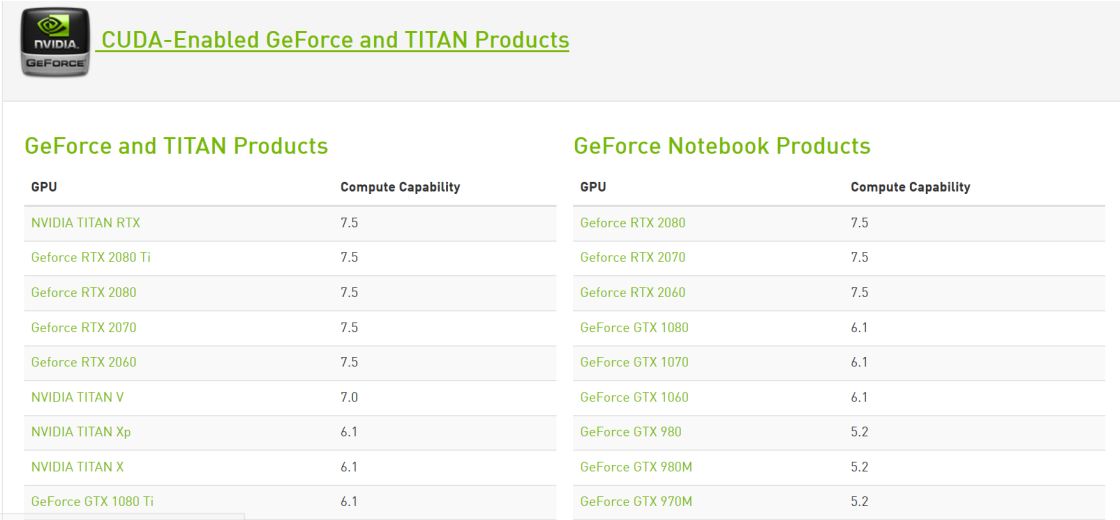
paddlepaddle (GPU版) 安装过程总结

1. 打开cmd，输入 `nvidia-msi`，最后一栏没装好之前应该是 unsuport the GPU，如图红线标出来的就是显卡型号

```
C:\Users\15487>nvidia-smi
Sat Oct 05 00:06:31 2019
+-----------------------------------------------------------------------------+
| NVIDIA-SMI 436.48       Driver Version: 436.48       CUDA Version: 10.1     |
|-------------------------------+----------------------+----------------------+
| GPU  Name            TCC/WDDM | Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf  Pwr:Usage/Cap|         Memory-Usage | GPU-Util  Compute M. |
|===============================+======================+======================|
|   0  GeForce 940MX      WDDM  | 00000000:01:00.0 Off |                  N/A |
| N/A   41C    P8    N/A /  N/A |     37MiB /  2048MiB |      0%      Default |
+-------------------------------+----------------------+----------------------+

+-----------------------------------------------------------------------------+
| Processes:                                                       GPU Memory |
|  GPU       PID   Type   Process name                             Usage      |
|=============================================================================|
|  No running processes found                                                 |
+-----------------------------------------------------------------------------+
```

2. 查看自身显卡是否支持 GPU [支持CUDA的显卡算力表]



CUDA-Enabled GeForce and TITAN Products

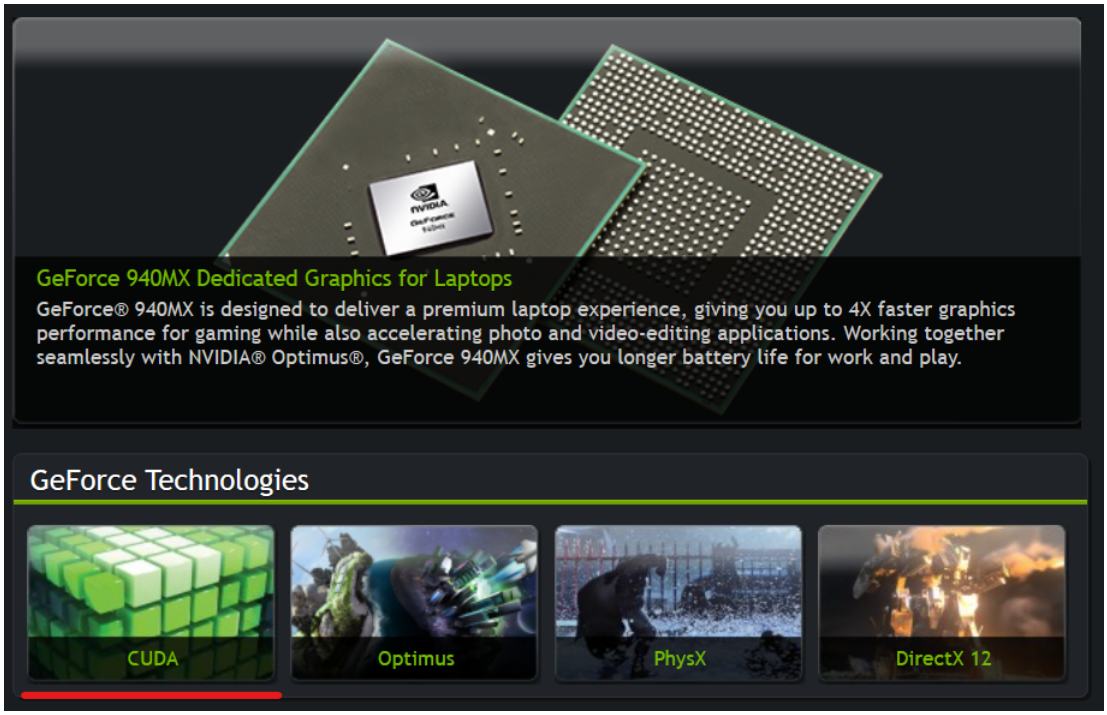
GeForce and TITAN Products

GPU	Compute Capability
NVIDIA TITAN RTX	7.5
Geforce RTX 2080 Ti	7.5
Geforce RTX 2080	7.5
Geforce RTX 2070	7.5
Geforce RTX 2060	7.5
NVIDIA TITAN V	7.0
NVIDIA TITAN Xp	6.1
NVIDIA TITAN X	6.1
GeForce GTX 1080 Ti	6.1

GeForce Notebook Products

GPU	Compute Capability
Geforce RTX 2080	7.5
Geforce RTX 2070	7.5
Geforce RTX 2060	7.5
GeForce GTX 1080	6.1
GeForce GTX 1070	6.1
GeForce GTX 1060	6.1
GeForce GTX 980	5.2
GeForce GTX 980M	5.2
GeForce GTX 970M	5.2

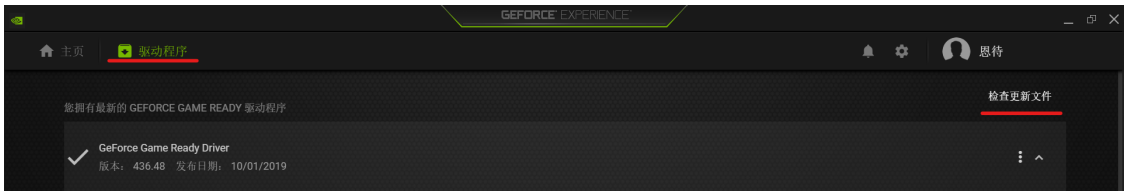
如果没有在算力表找到自己的对应显卡型号，并不代表不支持CUDA，到相应的页面去看，可以看到该显卡支持。



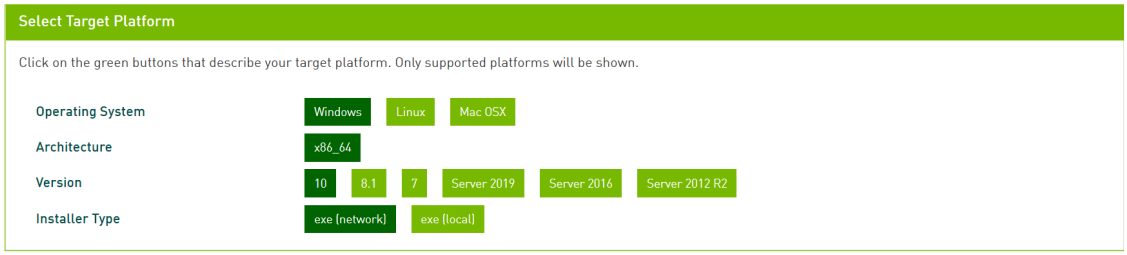
2. 搜索显卡驱动程序，根据我的显卡型号，搜索栏输入如下，最新的驱动程序如下。

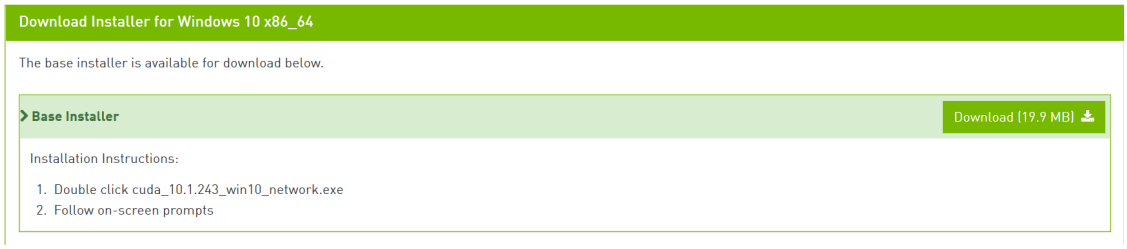
   网址：[驱动程序官网]

另一种方法是在自己电脑搜索 `GeForce Experience`，然后更新安装



3. 选择对应的配置，下载 `CUDA`， [CUDA toolkit]





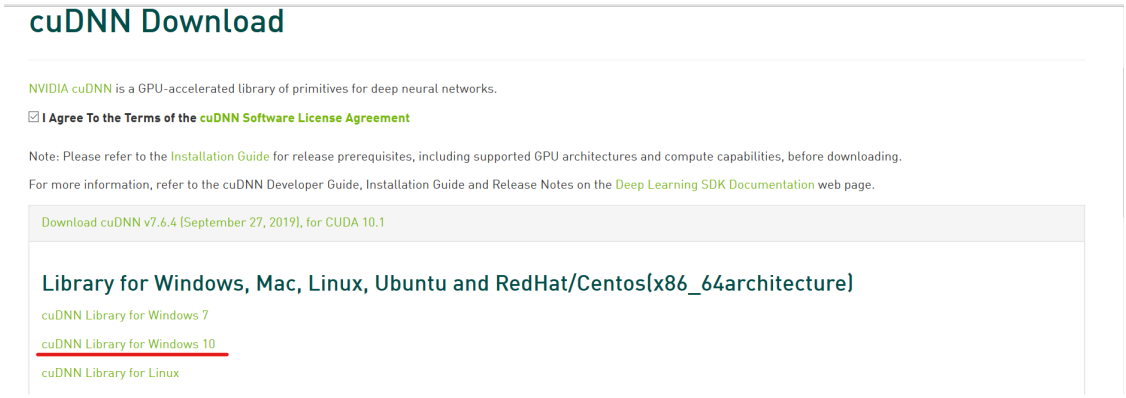
确认 `CUDA` 安装成功

```
C:\Users\15487>nvcc -V
nvcc: NVIDIA (R) Cuda compiler driver
Copyright (c) 2005-2019 NVIDIA Corporation
Built on Sun_Jul_28_19:12:52_Pacific_Daylight_Time_2019
Cuda compilation tools, release 10.1, V10.1.243

C:\Users\15487>set cuda
CUDA_PATH=C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v10.1
CUDA_PATH_V10_1=C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v10.1
```

需要注意的是：在 `C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v10.1\bin` 你是找不到 `cublas64_100.dll` 的，这导致之后在运行 `paddle.fluid.install_check.run_check()` 的时候会报错，`module can't find`，官方的文档里也显示最新的标记未100，但是不要慌，你会发现文件夹下有 `cublas64_10.dll`，将它复制出来一个，把10改成100后放回去。

4. 下载对应的 `cuDNN`，cuDNN下载（需要注册账号）



根据 installation_guide 完成 `cuDNN` 的安装，最重要的其实就是第三步，第四步的话会发现其实在安装 `CUDA` 的时候已经完成了。

3. Copy the following files into the CUDA Toolkit directory.
   a. Copy `<installpath>\cuda\bin\cudnn64_7.dll` to `C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.0\bin`.

   b. Copy `<installpath>\cuda\ include\cudnn.h` to `C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.0\include`.

   c. Copy `<installpath>\cuda\lib\x64\cudnn.lib` to `C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.0\lib\x64`.

4. Set the following environment variables to point to where cuDNN is located. To access the value of the `$(CUDA_PATH)` environment variable, perform the following steps:
   a. Open a command prompt from the Start menu.

   b. Type `Run` and hit Enter.

   c. Issue the `control sysdm.cpl` command.

   d. Select the Advanced tab at the top of the window.

   e. Click Environment Variables at the bottom of the window.

   f. Ensure the following values are set:
   ```
   Variable Name: CUDA_PATH
   Variable Value: C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v9.0
   ```

5. 现在应该已经完成了，按照 paddlepaddle 安装官网 的指示一步步做下来就好了。

   如果有问题，检查驱动程序是不是最新（否则容易出现明明已安装的包却无法导入的问题）