**Heterogeneous Computing - ECGR 6090**

**Home Work 2, Roy Liu (801137940) - Mar. 16, 2020.**

* The files in the package are for all problem 1-5 in homework2.
* The source codes was composed under WIN10+VS2015+cuda10.2 environment which covers both CUDA and openCL, they can run under both Win10 or Linux
* Any questions call my phone: +1 704 858 7806

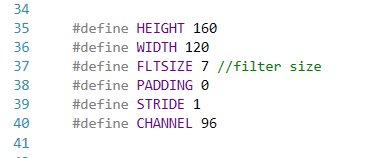
**Package including:**

* Homework report
* Image folder (named images)
* Readme.pdf
* Programs associated with problems are listed in below table

|  |  |  |  |
| --- | --- | --- | --- |
| Prob. Item | Description | CUDA | OpenCL |
| 1 | Direct convolution + global memory | naiveconv\_globalMM\_cuda.cu | naiveconv\_cl.c + naiveconv\_globalMM\_kernel.cl |
| GMM convolution + global memory | gemmconv\_globalMM\_cuda.cu | gemmconv\_cl.c + gemmconv\_globalMM\_kernel.cl |
| 2 | Direct convolution + local/shared memory | naiveconv\_sharedMM\_cuda.cu | naiveconv\_cl.c + naiveconv\_localMM\_kernel.cl |
| GMM convolution + local/shared memory | gemmconv\_sharedMM\_cuda.cu | gemmconv\_cl.c + gemmconv\_localMM\_kernel.cl |
| 3 | GMM convolution with 96 filters + global memory | gemmconv\_globalMM\_96ch\_ cuda.cu | gemmconv\_cl\_96ch.c + gemmconv\_globalMM\_96ch\_kernel.cl |
| 4 | GMM convolution with 96 filters + local/shared memory | gemmconv\_sharedMM\_96ch\_ cuda.cu | gemmconv\_cl\_96ch.c + gemmconv\_localMM\_96ch\_kernel.cl |
| 5 | convolution batching | batchconv\_cuda.cu | batchconv\_cl.c + batchconv\_kernel.cl |

**For configuration:**

* If change parameter, find the define area in the code for each cuda (.cu) or OpenCL (.c) fiels, and change the value accordingly, such as set 7 for filter size as below figure.



* Images are put in the fold of named “images”, this fold to be put in the same directory as the executable files.