Weekly report
July 22, 2019
Xingxing

This week I have tried to write a basic CNN via OpenCL and read through the paper:PipeCNN: An OpenCL-Based FPGA Accelerator for Large-Scale Convolution Neuron Networks(Dong Wang, etc). Next, I will dig into PipeCNN and its implementation. Following are some links to the resources I used. And then I will try to implement my own one and borrow the idea from PipeCNN.
PipeCNN: https://github.com/doonny/PipeCNN
OpenCL implementation of a NN and CNN:
https://github.com/jacqt/OpenCL-Neural-Network
OpenCL Programming Examples:
https://github.com/yywyz/OpenCL-Programming-Examples

July 29, 2019
In the past week, I read PipeCNN paper and some related papers it refers in order to have a comprehensive understanding about PipeCNN. To be specific, they are "Optimizing FPGA-based accelerator design for deep convolutional neural networks" and "Throughput-Optimized OpenCL-based FPGA accelerator for large-scale convolutional neural networks". Then I looked through the codes provided by PipeCNN's author--Doonny, mainly the four kernel functions in *conv_pipe.cl* in project file. Next I will dig into the PipeCNN codes and talk with Zhizhou about next step! Following are links to some materials I used to study as well as papers.

1. https://github.com/doonny/PipeCNN/tree/master/project/device
2. https://pdfs.semanticscholar.org/3468/a27c2e3019e1216ee9fe8bbf1ed3a0155ff4.pdf
3. http://www.isfpga.org/fpga2016/index_files/Slides/1_1.pdf

August 5, 2019
This week, I was working on how to write grouped convolution, where we can use two or models that train in parallel in OpenCL. Group convolution is a crucial component in CLCNet. I have read several papers and interpretation about grouped convolution like AlexNet in which group convolution was first introduced. I am trying to find a C++ version that implements group convolution but I have not found a nice prototype yet. Now, I decided to dig into PipeCNN code and may modify from it. Following are links to some resources I used.

1.https://www.intel.com/content/www/us/en/programmable/documentation/mwh1391807965224.html#ewa1411748206225
2.https://blog.yani.io/filter-group-tutorial/
3.https://papers.nips.cc/paper/4824-imagenet-classification-with-deep-convolutional-neural-networks.pdf

4.https://arxiv.org/pdf/1904.00346.pdf