JLESC: Collaboration with RIKEN

Investigation of heterogeneous platform for deep learning

We are be investigating a heterogeneous platform for deep learning in which GPUs are applied for training and FPGAs are initially used for inference, and later on will be adapted for training with customizable data types. Ultimately, we will be looking at how to utilize both GPUs and FPGAs for training and inference in a tightly coupled system.

People

Yiyu Tan, RIKEN AICS, research scientist

Volodymyr Kindratenko, NCSA, senior research scientist

- Janish Yerra, ECE, undergraduate student
- Yike Li, ECE, Undergraduate student

Links

Proposal: JLESC_collaboration_proposal.pdf

System at NCSA: Xilinx Kintex UltraScale FPGA KCU1500 Acceleration Development Kit

SDK documentation: https://www.xilinx.com/products/design-tools/software-zone/sdaccel.html

Work in progress

Week of September 4th

- Go over UG1023 and UG1021 tutorials
- Running tools on iridium:

```
sdx &
```

  - make sure your workspace is in /home/NetID/project/workspace
  - device is xilinx:kcu1500:4ddr-xpr:4.0
- Copy examples to your own space:

```
cd ~/project
cp -r /opt/Xilinx/SDx/2017.1/samples .
cp -r /opt/Xilinx/SDx/2017.1/examples .
```

  - you now have your own copy of samples and examples in ~/project
  - up-to-date list of examples is in https://github.com/Xilinx/SDAccel_Examples

Week of September 11th

- Continue with UG1023 and UG1021 tutorials

Documentation

Tutorials: https://www.xilinx.com/html_docs/xilinx2017_2/sdaccel_doc/index.html
Examples: https://github.com/Xilinx/SDAccel_Examples

- **UG1023** - SDAccel Environment User Guide (ver2017.2)
- **UG1021** - SDAccel Environment Tutorial: Introduction (ver2017.2)

Development documenttion

- **UG1207** - SDAccel Environment Optimization Guide (ver2017.2)
- **UG1253** - SDx Pragma Reference Guide (ver2017.2)

Hardware-related

- **UG1238** - SDx Environments Release Notes, Installation, and Licensing Guide (ver2017.2)
- **UG1164** - SDAccel Environment Platform Development Guide (ver2017.2)
- **UG1234** - SDAccel Platform Reference Design User Guide: Developer Board for Acceleration with KCU1500 (ver2017.2)