ChainerMN

High Performance Scientific Computing 2018
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Chainer examples

Setup:

```
> qrsh -g tga-hpc-lecture -l q_node=1 -l h_rt=0:10:00
-pty yes -display $DISPLAY -v TERM /bin/bash
> module load python-extension
> git clone https://github.com/chainer/chainer
> cd chainer
> git checkout v2
```

How to run:

```
> cd examples/mnist
> python train_mnist.py
> python train_mnist.py -g 0
```

How to profile:

```
> nvprof --print-gpu-trace python train_mnist.py -g 0
> nvvp python train_mnist.py -g 0
```

References:

http://corochann.com/deep-learning-tutorial-with-chainer

ChainerMN examples

Setup:

```
> qrsh -g tga-hpc-lecture -l f_node=1 -l h_rt=0:10:00
-pty yes -display $DISPLAY -v TERM /bin/bash
> module load python-extension
> pip install --user chainermn
> git clone https://github.com/chainer/chainermn
```

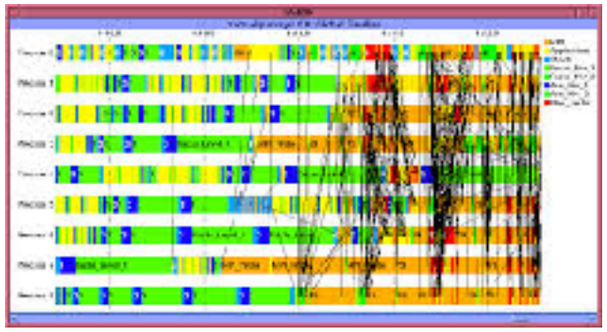
How to run:

```
> cd chainermn/examples/mnist
> mpirun -np 4 python train_mnist.py
> mpirun -mca pml cm -mca mtl psm2 -x LD_LIBRARY_PATH -x
PSM2_CUDA_MEMCACHE_ENABLED=0 -x PSM2_CUDA=1 -x
PSM2_GPUDIRECT=1 -npernode 4 -n 4 python train_mnist.py -
g --communicator flat
```

References:

http://chainermn.readthedocs.io/en/latest/tutorial/

ChainerMN + Score-p + Vampir



Setup:

```
> module load openmpi vampir
> export PATH=$PATH:/gs/hs1/tga-hpc-lecture/scorep
> git clone https://github.com/score-p/scorep_binding_python
>
```

How to run:

```
> export SCOREP_ENABLE_TRACING=true
> export SCOREP_EXPERIMENT_DIRECTORY=scorep
> mpirun -mca pml cm -mca mtl psm2 -x
LD_LIBRARY_PATH -x PSM2_CUDA_MEMCACHE_ENABLED=0 -x
PSM2_CUDA=1 -x PSM2_GPUDIRECT=1 -npernode 4 -n 4
python train_mnist.py -g --communicator flat
> cd scorep
> vampir traces.otf2
```

CuPy

Reference:

> https://docs-cupy.chainer.org/en/stable/tutorial/

> https://media.readthedocs.org/pdf/cupy/v1.0.1/cupy.pdf

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cuDNN

Reference:

> https://developer.nvidia.com/cudnn

> http://images.nvidia.com/content/gtc-kr/part_2_vuno.pdf