ECE408 Final Project Report

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Team Name: smartconvolutionteam

Milestone 1: Due October 24, 2018

Include a list of all kernels that collectively consume more than 90% of the program time

Top 10 kernels are as below:

1. volta_scudnn_128x32_relu_interior_nn_v1
2. Implicit_convolve_sgemm
3. volta_sgemm_128x128_tn
4. activation_fw_4d_kernel
5. pooling_fw_4d_kernel
6. MapPlanLargeKernel
7. SoftmaxKernel
8. MapPlanKernel
9. volta_sgemm_32x32_sliced1x4_tn
10. computeOffsetsKernel

Include a list of all CUDA API calls that collectively consume more than 90% of the program time

Top 10 CUDA API calls are as below:

1. cudaStreamCreateWithFlags
2. cudaMemGetInfo
3. cudaFree
4. cudaEventCreateWithFlags

5. cudaMemcpy2DAsync
6. cudaFuncSetAttribute
7. cudaStreamSynchronize
8. cudaMalloc
9. cudaGetDeviceProperties
10. cudaMemcpy

Include an explanation of the difference between kernels and API calls

Kernels are programmer defined functions, while API calls are built-in.

Show output of rai running MXNet on the CPU

```
* Running /usr/bin/time python m1.1.py
Loading fashion-mnist data... done
Loading model... done
New Inference
EvalMetric: {'accuracy': 0.8177}
```

List program run time

```
19.48user 4.09system 0:13.30elapsed 177%CPU
```

Show output of rai running MXNet on the GPU

```
* Running /usr/bin/time python m1.2.py
Loading fashion-mnist data... done
Loading model... done
New Inference
EvalMetric: {'accuracy': 0.8177}
```

List program run time

```
4.05user 2.67system 0:04.63elapsed 145%CPU
```

MileStone 2: Due Octber 29, 2018

List program run time

```
163.39user 6.65system 2:37.27elapsed 108%CPU
```

List program OP time

```
Op Time: 29.471506
Op Time: 123.357700
Correctness: 0.817 Model: ece408
```