

Name: Ruiqi Li  
NetID: ruiqili4  
Section: AL1

## ECE 408/CS483 Milestone 1 Report

1. Show output of rai running Mini-DNN on the CPU (CPU convolution implemented) for batch size of 1k images. This can either be a screen capture or a text copy of the running output. Please do not show the build output. (The running output should be everything including and after the line "*Loading fashion-mnist data...Done*").

<output here>

```
Loading fashion-mnist data...Done
Loading model...Done
Conv-CPU==
Op Time: 8290.58 ms
Conv-CPU==
Op Time: 23916.8 ms
```

Test Accuracy: 0.886

```
real 0m41.631s
user 0m41.455s
sys 0m0.160s
```

2. List Op Times (CPU convolution implemented), whole program execution time, and accuracy for batch size of 1k images.

Batch Size	Op Time 1	Op Time 2	Total Execution Time	Accuracy
1000	8290.58 ms	23916.8 ms	0m41.631s	0.886

3. Show percentage of total execution time of your program spent in your forward pass function with 'gprof'. This can either be a screen capture or a text copy of gprof output. You should only include the line that includes your CPU forward pass function '*conv\_forward\_cpu*', so please do not give more than this line.

<gprof output here>

```
86.27  3.33  3.33   2  1.67  1.67 conv_forward_cpu(float*, float const*, float const*, int, int,
int, int, int, int)
```

```

1 Flat profile:
2
3 Each sample counts as 0.01 seconds.
4
5 % cumulative self self total
6 time seconds seconds calls s/call s/call name
7 86.27 3.33 3.33 2 1.67 1.67 conv_forward_cpu(float*, float const*, float const*, int, int, int, int, int, int)
8 1.30 3.38 0.05 15953396 0.00 0.00 Eigen::internal::noncopyable::~noncopyable()
9 1.04 3.42 0.04 8346241 0.00 0.00 Eigen::internal::evaluator<Eigen::PlainObjectBase<Eigen::Matrix<float, -1, -1, 0, -1, -1> > >
10 1.04 3.46 0.04 8346120 0.00 0.00 Eigen::DenseCoeffsBase<Eigen::Matrix<float, -1, -1, 0, -1, -1>, 1>::operator()(long, long)
11 0.78 3.49 0.03 8352320 0.00 0.00 Eigen::internal::evaluator<Eigen::PlainObjectBase<Eigen::Matrix<float, -1, -1, 0, -1, -1> > >
12 0.78 3.52 0.03 2 0.02 0.23 MaxPooling::forward(Eigen::Matrix<float, -1, -1, 0, -1, -1> const&)
13 0.65 3.55 0.03 16700658 0.00 0.00 Eigen::PlainObjectBase<Eigen::Matrix<float, -1, -1, 0, -1, -1> >::rows() const
14 0.52 3.57 0.02 3196820 0.00 0.00 std::vector<int, std::allocator<int> >::operator[](unsigned long)
15 0.52 3.59 0.02 2602932 0.00 0.00 void Eigen::internal::pstore<float, float __vector(4)>(float*, float __vector(4) const&)
16 0.52 3.61 0.02 1102400 0.00 0.00 void Eigen::internal::generic_dense_assignment_kernel<Eigen::internal::evaluator<Eigen::Matrix<float, -1, -1, 0, -1, -1> > >::operator()(float const*, float __vector(4) const&)
17 0.39 3.62 0.02 15953396 0.00 0.00 Eigen::internal::noncopyable::~noncopyable()
18 0.39 3.64 0.02 15213260 0.00 0.00 Eigen::EigenBase<Eigen::Matrix<float, -1, 1, 0, -1, 1> >::derived() const
19 0.39 3.65 0.02 7606628 0.00 0.00 Eigen::EigenBase<Eigen::Matrix<float, -1, 1, 0, -1, 1> >::cols() const
20 0.26 3.66 0.01 16697899 0.00 0.00 Eigen::EigenBase<Eigen::Matrix<float, -1, -1, 0, -1, -1> >::rows() const

```