

## Analyzer Report {Dataflow}

This report generated by Convolutional Neural Network Inference Analyzer (CNN-IA) to summarize the analysis needed to reach the optimal dataflow exploration for mlp\_fc3\_batch16 using restricted schedule space.

### Memory Architecture :

	L0	L1	L2
Capacity	16	16384	536870912
Access cost	0	3	200
Static cost	0	0	0
Parallel count	256	1	1
Parallel mode	1	0	0
Parallel cost	2	0	0
Precision	: 16		
Minimum utilization	: 0.0%		
Outputs can be buffered by mac	: 0		
Replication to improve utilization	: True		

### Glossary :

- Memory Levels : ( L0, L1, L2 )  
The smallest index the nearest to CPU.
- Loop Notations : ( FX, FY, OX, OY, OC, IC, ON )

**FX** : FILTER WIDTH  
**FY** : FILTER HEIGHT  
**OX** : OUTPUT WIDTH  
**OY** : OUTPUT HEIGHT  
**OC** : OUTPUT CHANNEL  
**IC** : INPUT CHANNEL  
**ON** : BATCH

**OC, IC**

[cost: 33050440.0pJ, utilization: 0.09765625%]

**Loop Blocking ( factors ):**

	L0	L1	L2
FX	1	1	1
FY	1	1	1
OX	1	1	1
OY	1	1	1
OC	2	1	25
IC	4	25	1
ON	1	16	1

**Loop Partitioning ( units ):**

	L0	L1	L2
FX	1	1	1
FY	1	1	1
OX	1	1	1
OY	1	1	1
OC	5	1	1
IC	5	1	1
ON	1	1	1

**Loop Ordering (from the innermost):**

	L0	L1	L2
FX	6	6	6
FY	6	6	6
OX	6	6	6
OY	6	6	6
OC	0	6	0
IC	1	1	6
ON	6	0	6

**OC, ON**

[cost: 32071160.0pJ, utilization: 0.078125%]

**Loop Blocking ( factors ):**

	L0	L1	L2
FX	1	1	1
FY	1	1	1
OX	1	1	1
OY	1	1	1
OC	2	1	25
IC	1	500	1
ON	4	1	1

**Loop Partitioning ( units ):**

	L0	L1	L2
FX	1	1	1
FY	1	1	1
OX	1	1	1
OY	1	1	1
OC	5	1	1
IC	1	1	1
ON	4	1	1

**Loop Ordering (from the innermost):**

	L0	L1	L2
FX	6	6	6
FY	6	6	6
OX	6	6	6
OY	6	6	6
OC	0	6	0
IC	6	0	6
ON	1	6	6

**IC, ON**

[cost: 32079160.0pJ, utilization: 0.15625%]

**Loop Blocking ( factors ):**

	L0	L1	L2
FX	1	1	1
FY	1	1	1
OX	1	1	1
OY	1	1	1
OC	1	250	1
IC	4	1	25
ON	2	1	1

**Loop Partitioning ( units ):**

	L0	L1	L2
FX	1	1	1
FY	1	1	1
OX	1	1	1
OY	1	1	1
OC	1	1	1
IC	5	1	1
ON	8	1	1

**Loop Ordering (from the innermost):**

	L0	L1	L2
FX	6	6	6
FY	6	6	6
OX	6	6	6
OY	6	6	6
OC	6	0	6
IC	0	6	0
ON	1	6	6

Optimal cost

[b: blocking factor, p: partitioning unit]

MEM - L2:  
for ( OC, 25b, 1p )

MEM - L1:  
for ( IC, 500b, 1p )

MEM - L0:  
for ( ON, 4b, 4p )  
for ( OC, 2b, 5p )

spatially unrolled loops: (OC)(ON)

Optimal utilization

[b: blocking factor, p: partitioning unit]

MEM - L2:  
for ( IC, 25b, 1p )

MEM - L1:  
for ( OC, 250b, 1p )

MEM - L0:  
for ( ON, 2b, 8p )  
for ( IC, 4b, 5p )

spatially unrolled loops: (IC)(ON)