Analyzer Report {Loop Blocking}

This report generated by Convolutional Neural Network Inference Analyzer (CNN-IA) to summarize the analysis needed to reach the optimal loop blocking for mlp_fc3_batch16 in a restricted schedule space.

Memory Architecture:

	L0	L1	L2	L3
Capacity	4	16	65536	536870912
Access cost	0.0125	0.05	6.0	200.0
Static cost	0.0	0.0	0.0	0.0
Parallel count	1	256	1	1
Parallel mode	0	1	0	0
Parallel cost	0.0	2.0	0.0	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, L3)
  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

Map Configuration

Loop Blocking (factors):

	L0	L1	L2	L3
FX	1.0	**3.0**	1.0	1.0
FY	1.0	**1.0**	1.0	1.0
OX	1.0	1.0	1.0	1.0
OY	1.0	**1.0**	1.0	1.0
OC	1.0	2.0	1.0	50.0
IC	1.0	1.0	250.0	2.0
ON	1.0	2.0	1.0	8.0

Loop Partitioning (units):

	L0	L1	L2	L3
FX	1.0	**1.0**	1.0	1.0
FY	1.0	**3.0**	1.0	1.0
OX	1.0	1.0	1.0	1.0
OY	1.0	**13.0**	1.0	1.0
OC	1.0	**4.0**	1.0	1.0
IC	1.0	1.0	1.0	1.0
ON	1.0	1.0	1.0	1.0

Loop Ordering (from the innermost):

	L0	L1	L2	L3
FX	6.0	**0.0**	6.0	6.0
FY	6.0	**1.0**	6.0	6.0
OX	6.0	6.0	6.0	6.0
OY	6.0	**3.0**	6.0	6.0
OC	6.0	2.0	6.0	0.0
IC	6.0	6.0	0.0	1.0
ON	6.0	4.0	6.0	2.0

(Hinted schedule configurations are in green)

Schedule

MEM - L3:
for (ON, 8b, 1p)
for (IC, 2b, 1p)
for (OC, 50b, 1p)

MEM - L2:
for (IC, 250b, 1p)

MEM - L1:
for (ON, 2b, 1p)
for (OY, 1b, 13p)
for (OC, 2b, 4p)
for (FY, 1b, 3p)
for (FX, 3b, 1p)
spatially unrolled loops: (FX)(FY)(OY)(OC)

MEM - L0:

Cost

MEM	ENERGY (pJ)
L0	99950.0
L1	2139800.0
L1-PARA	35648000.0
L2	8472000.0
TOTAL	46359750.0

- L3 memory was not checked for invalid underutilization.