Combinatorial evaluation of pairs partition permutations

1. In the case of 2-Way SUMT-V in-order processor, the input of the issue scheduler is a 2x4 instruction image, i.e., eight instructions. The permutations of choosing four instruction pairs that cover a given Instruction Image under constraint of in-order processor is equal to 52.

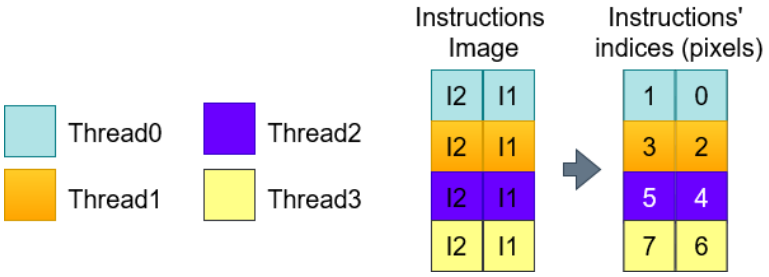

Fig.1: Output of four Instruction Queues as an Instructions Image size of 2x4 pixels. Instruction Image indices 0,1 i.e., II(0,1) are the IQ0's output channels 1,2 respectively (each IQ has two output channels). II(2,3) are the IQ1's output channels 1,2 respectively. II(4,5) are the IQ2's output channels 1,2 respectively. II(6,7) are the IQ3's output channels 1,2 respectively.

2. Combinatorial evaluation of permutations for choosing four instruction pairs that covers a given Instruction Image:

3. The unfolded list of all 52 permutations:

Permutation Number	Pair 1		Pair 2		Pair 3		Pair 4	
	(left element	right element)	(left element	right element)	(left element	right element)	(left element	right element)
1	0	2	1	3	4	6	5	7
2	0	4	1	5	2	6	3	7
3	0	6	1	7	2	4	3	5
4	0	2	1	5	3	7	4	6
5	0	2	1	7	3	5	4	6
6	0	4	1	7	2	6	3	5
7	0	4	1	3	2	6	5	7
8	0	6	1	3	2	4	5	7
9	0	6	1	5	2	4	3	7
10	0	1	2	3	4	5	6	7
11	0	1	2	4	3	6	5	7
12	0	1	2	4	3	7	5	6
13	0	1	2	4	3	5	6	7
14	0	1	2	6	3	4	5	7
15	0	1	2	6	3	5	4	7
16	0	1	2	6	3	7	4	5
17	0	1	2	5	3	7	4	6
18	0	1	2	7	3	5	4	6
19	0	1	2	3	4	6	5	7
20	0	4	1	6	2	3	5	7
21	0	4	1	7	2	3	5	6
22	0	4	1	5	2	3	6	7
23	0	6	1	4	2	3	5	7
24	0	6	1	7	2	3	4	5
25	0	6	1	5	2	3	4	7
26	0	5	1	7	2	3	4	6
27	0	7	1	5	2	3	4	6
28	0	2	1	6	3	7	4	5
29	0	2	1	7	3	6	4	5
30	0	2	1	3	4	5	6	7
31	0	6	1	2	3	7	4	5
32	0	6	1	3	2	7	4	5
33	0	3	1	7	2	6	4	5

34	0	7	1	3	2	6	4	5
35	0	2	1	4	3	5	6	7
36	0	2	1	5	3	4	6	7
37	0	4	1	2	3	5	6	7
38	0	4	1	3	2	5	6	7
39	0	3	1	5	2	4	6	7
40	0	5	1	3	2	4	6	7
41	0	2	1	4	3	6	5	7
42	0	2	1	6	3	4	5	7
43	0	4	1	2	3	6	5	7
44	0	4	1	6	2	5	3	7
45	0	6	1	2	3	5	4	6
46	0	6	1	4	2	7	3	5
47	0	3	1	7	2	4	5	6
48	0	5	1	7	2	4	3	6
49	0	3	1	5	2	6	4	7
50	0	7	1	5	2	6	3	4
51	0	7	1	3	2	5	4	6
52	0	5	1	3	2	7	4	6