## Final Project Report

### 1. Data structure

Data structure

/ node: string type

4 vector for nodes:

/ G\_node: store all nodes

2: G\_Input: store PIs

3. G\_output: store POs

4. G\_Intermediate

Data structure

2. Gate

fanins = G - fanont

/. string fanont: the fanont node

2. vector fanin: the fanin nodes

3. int gate\_type: not, and, or....

Data structure

3. LUT input De output

String output: the output of CUT

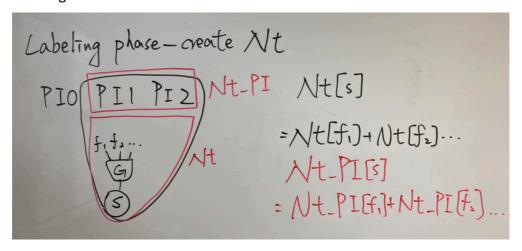
vector input: the input set of LUT

vector gate: the gates inside the LUT

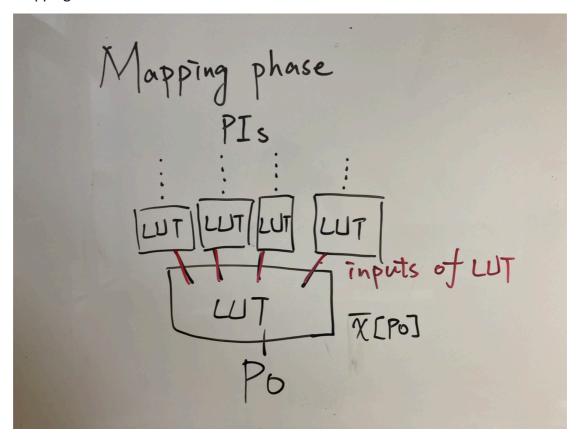
### 2. Decompose

# 3. Technology mapping

Labeling



#### Mapping



### Construct LUT

Construct the look up table

1. Topology sort the gates in LUT

2. Read input pattern

3. Execute the gate depends on the order

Propagate the pattern to the output

# 4. Experience result

	alu4	big2	C1355	C6288	des	k2
Decompose	0.03	1.5	0.01	0.32	1.17	0.18
time						
K = 4	3.41	34.01	2.84	40.96	29.73	3.92
Mapping time						
K = 6	5.21	45.59	6.66	79.49	43.43	4.83
Mapping time						
K = 8	7.61	63.01	9.07	92.07	78.93	9.93
Mapping time						
K = 4	767/15	5437/16	220/7	2017/39	4265/9	1797/10
node/level						
with min_label						
K =6	616/10	5109/10	197/5	1302/21	3630/6	1426/7
node/level						
with min_label						
K = 8	413/8	3668/8	147/4	1060/17	2713/5	939/5
node/level						
with min_label						
K = 4	784/15	5354/16	229/7	2035/39	4241/9	1496/10
node/level						
with						
max_label						
K =6	621/10	5098/10	207/5	1300/21	3630/6	1250/7
node/level						
with						
max_label		2272/2			2222/5	222/5
K = 8	413/8	3658/8	160/4	1155/17	2696/5	892/5
node/level						
with						
max_label						