Physical Design PA2 Floorplanning by B* Tree

我使用的方式是B* Tree，Perturbation為

1. 交換任意兩個Node
2. 移除任意一個Node、插入此Node到任意一個Node
3. Rotate一個Block

我的Cost function為

`obj = alpha*(Area/avgArea) + (1-alpha)*(HPWL/avgHPWL) + (fixed aspect ratio-aspect ratio)^2`

我的SA設定為

T = 10

r = 0.99

freeze = 0.001

N = 500

floorplan

```
void Floorplanner::floorplan() {
    initTree();
    preSA();
    SA();
    setBestResult();
    plot();
    return;
}
```

結果 (alpha = 0.5)

	cost	wirelength	area	width	height	runtime
ami33	672534	78810	1266258	1239	1022	11s
ami49	20304820	1060759	39548880	5320	7434	79s
apte	25325406	751340	49899472	9956	5012	7s
hp	5052187	251846	9852528	3304	2982	7s
xerox	10464637	504800	20424474	3906	5229	8

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*不確定助教測試環境有無 gnuplot，程式方面已經先註解掉。

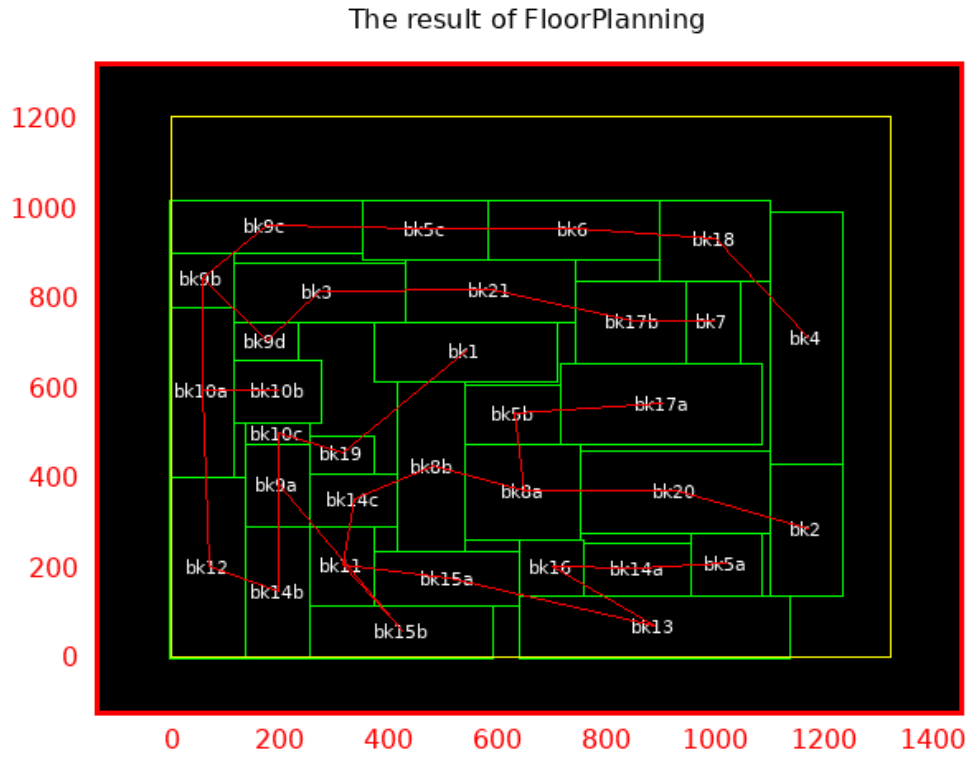

圖1. ami33

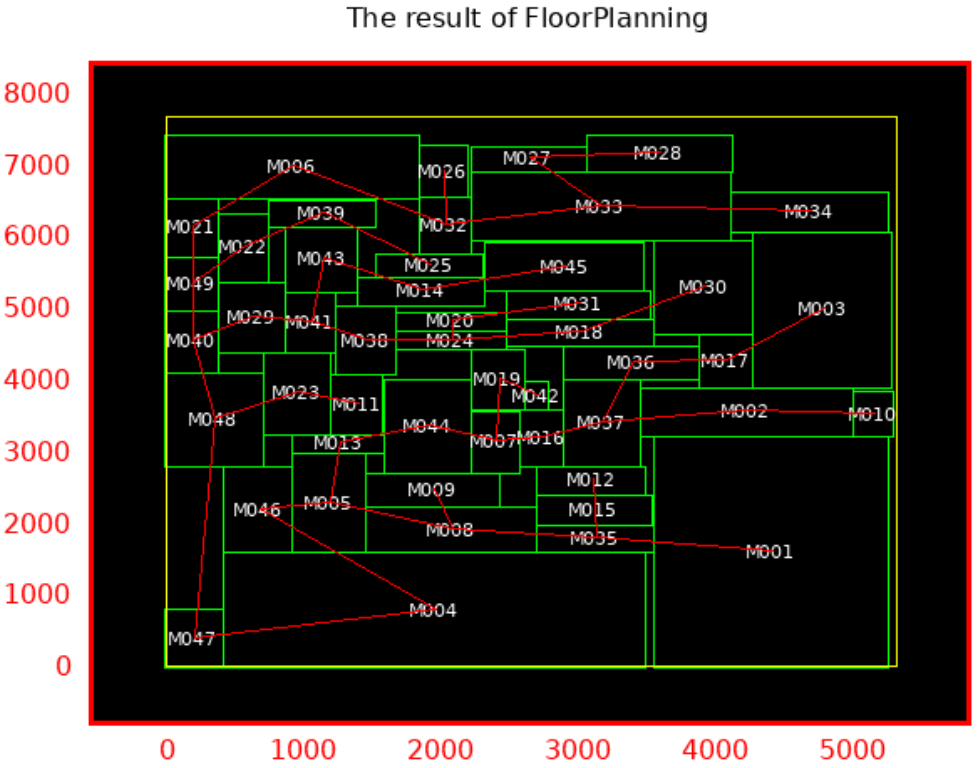

圖2. ami49

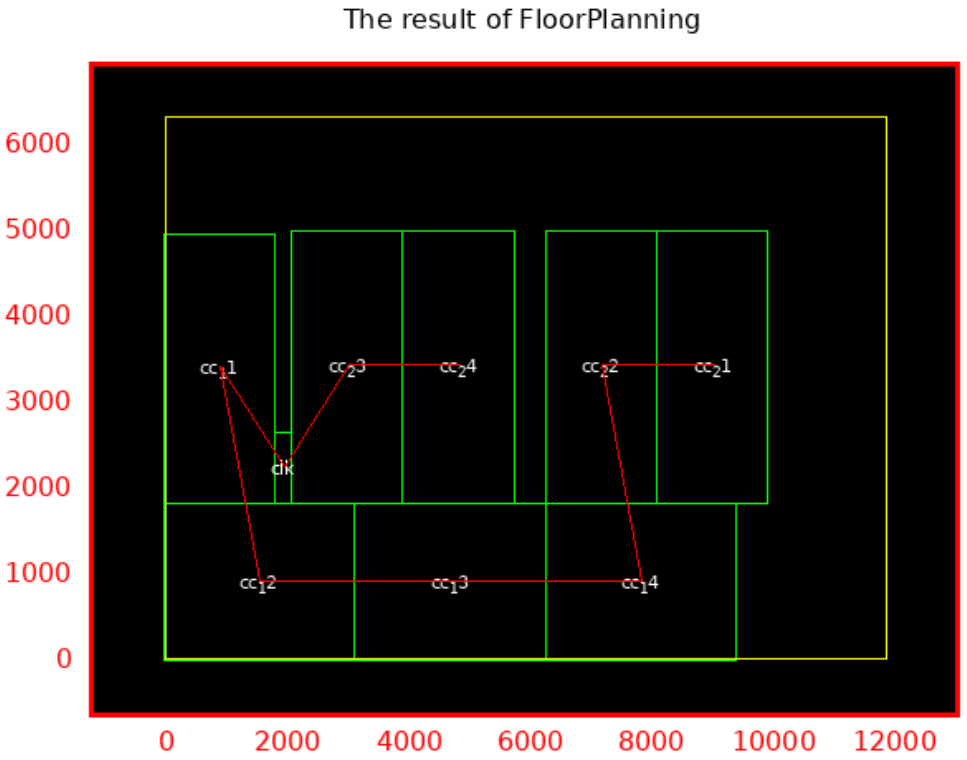
The result of FloorPlanning
6000
5000
4000
3000
2000
1000
0
0
2000
4000
6000
8000
10000
12000
cc1 1
cc2 3
cc2 4
cc2 2
cc2 1
clk
cc1 2
cc1 3
cc1 4

圖3. apte

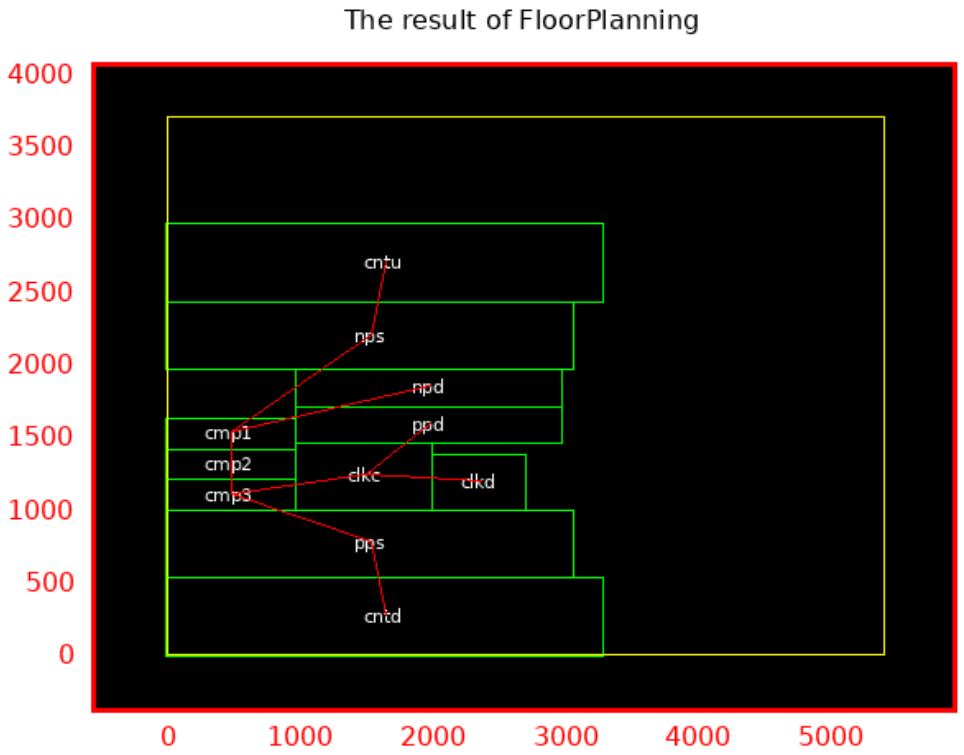
The result of FloorPlanning
4000
3500
3000
2500
2000
1500
1000
500
0
0
1000
2000
3000
4000
5000
cntu
nps
npd
ppd
cmp1
cmp2
cmp3
clkc
clkd
pps
cntd

圖4. hp

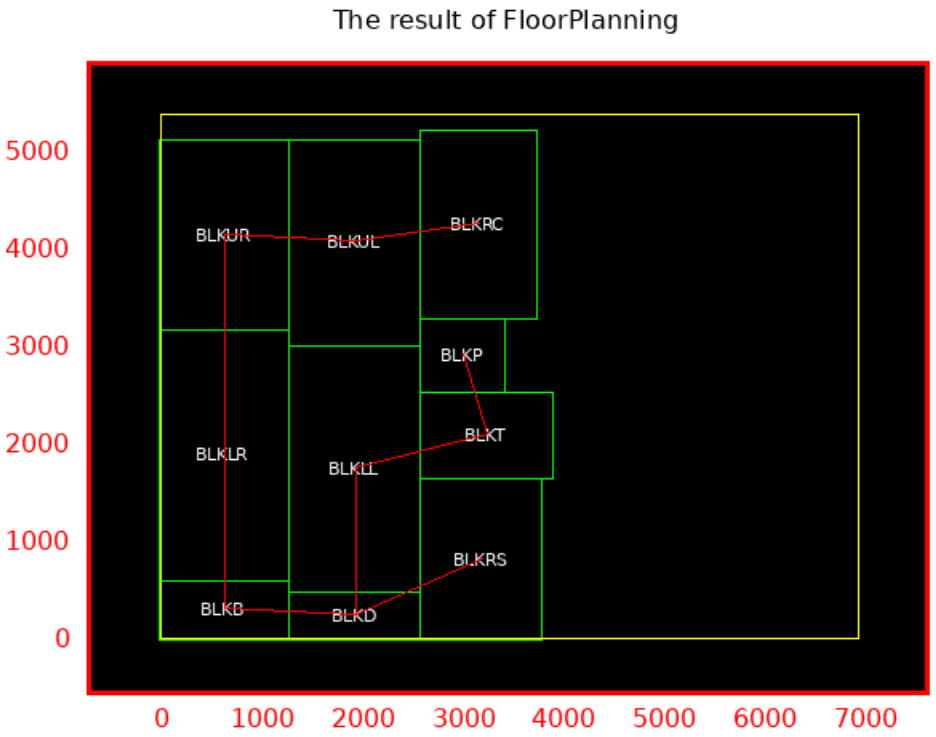

圖5. xerox

結語

我覺得影響很大的會是Perturbation的找法，我的方法一開始是如果Node有兩個child node就不delete、和要insert的地方有兩個child node就不insert在這裡，我發現結果與同學比較後相差很多，在實驗後發現是solution space的問題，如果Perturbation沒有很好的涵蓋的所有的可能性，SA的結果就不會太好。