7.

 Λ- shaped framework is better at handling problems that emphasizes local properties, such as routability and white space fraction. But it lacks the global view in the earlier clustering process, which may result in less favorable results in the problems rely on global information more. V-shape framework is basically opposite to Λ- shaped in the aforementioned aspect. It considers the global information at the very beginning. So the choices for local floorplans would possibly not as good as Λ- shaped framework.

8.

1. Divide and conquer methods such as applying partitioning methods at first.

Strength: This method can scale up easily with good efficiency.

Weakness: The quality of solution may not very favorable, since each subproblem only focus on local optimality and ignore the cross-partition influences.

1. Multilevel frameworks like Λ- shaped framework and V-shape framework.

Strength: These methods have provided a smooth flow that do both large-scale planning and local refinement. Which have a good approximation to the optimal solution.

Weakness: The more consideration in global/local information will lead to the less consideration of local/global information. Need to trade off.

1. Restriction: Not directly handle the problem itself, but the problem with extra input constraints, which make it as achieves speed ups based on some heuristics or observations.

Strength:

Weakness: The solution can’t apply to all input problems. Thus, we can’t apply this method only to solve the original problem.

1. Successive/progressive: Solve the problem gradually in a direction. For example: 1D/2D progressive that places the blocks that new blocks are add to the top/adjacent area of the placed blocks.

Strength: It’s easy to implement with good efficiency.

Weakness: The influence of newer block on older block is ignored, since when the older block is placed, no position information of new blocks is given, which would damage the optimality.

I would apply a 2-stage algorithm to address this problem. The first stage determines the rough location of each module, while the second stage determines the actual outline of the soft blocks.

The first stage is implemented by force driven analytical method referenced to [1].

We use a point representing each block. There are 2 types of force involved. The wire force and repel force.

Where is the smoothed wirelength [1], and

)

In second stage, first constructing an Voronoi diagram calculated by additive weighted L1 norm with weight of each node being it’s area.

[1]: M. -K. Hsu and Y. -W. Chang, "Unified Analytical Global Placement for Large-Scale Mixed-Size Circuit Designs,"

DIY:

You are the owner of a small restaurant.