Multi-objective global routing for IC design automation

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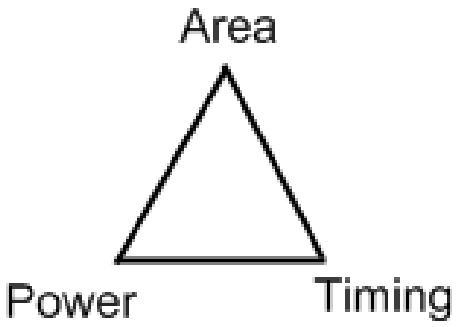
Main objectives



- Local density → Total wire length and Timing decrease
- Total wire length → Local density and Timing decrease
- Timing → Total wire length and Local density decrease

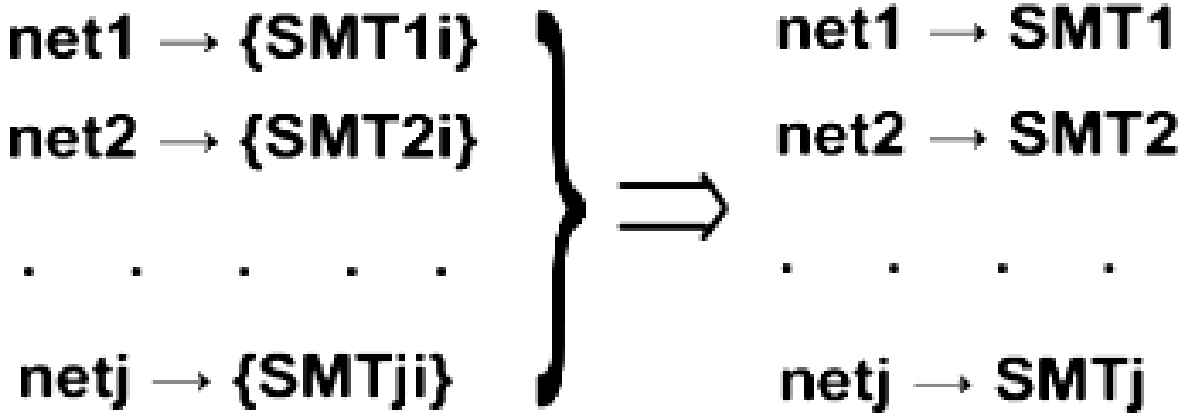
Approaches

- Sequential optimization
- Multiobjective function

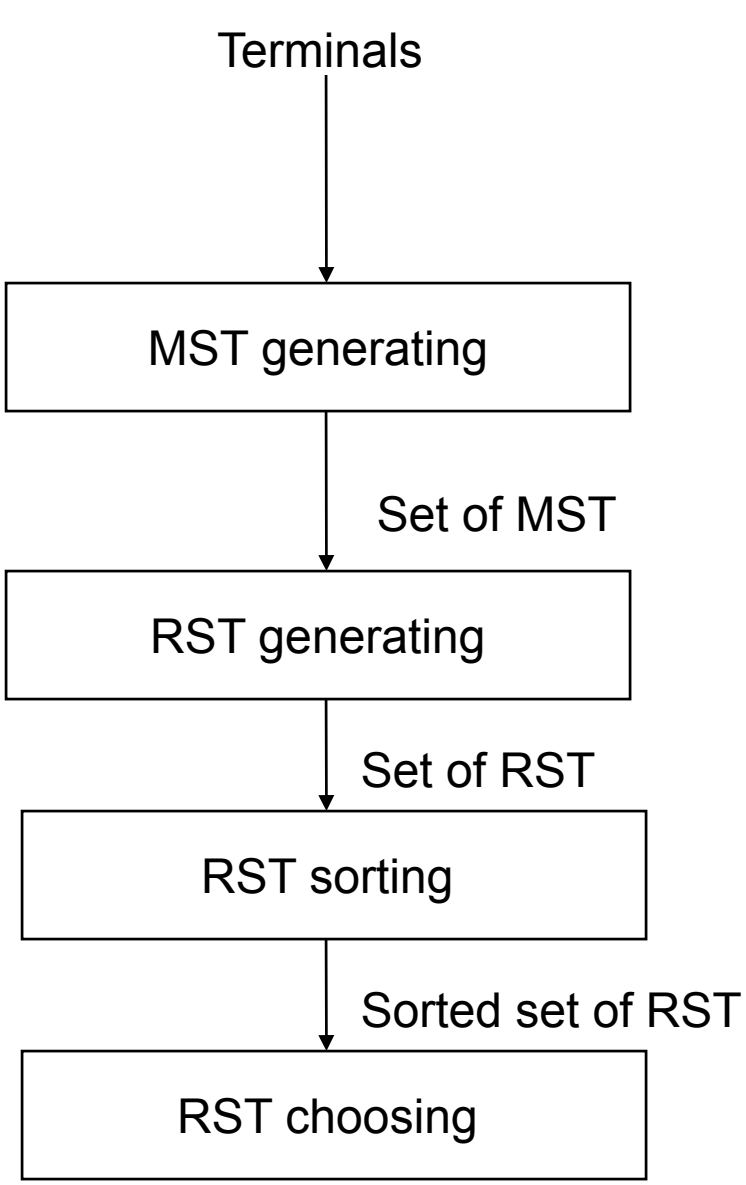
Weak points:

- Local optimization
- Results degradation
- IC's architecture adaptation
- User’s refinement

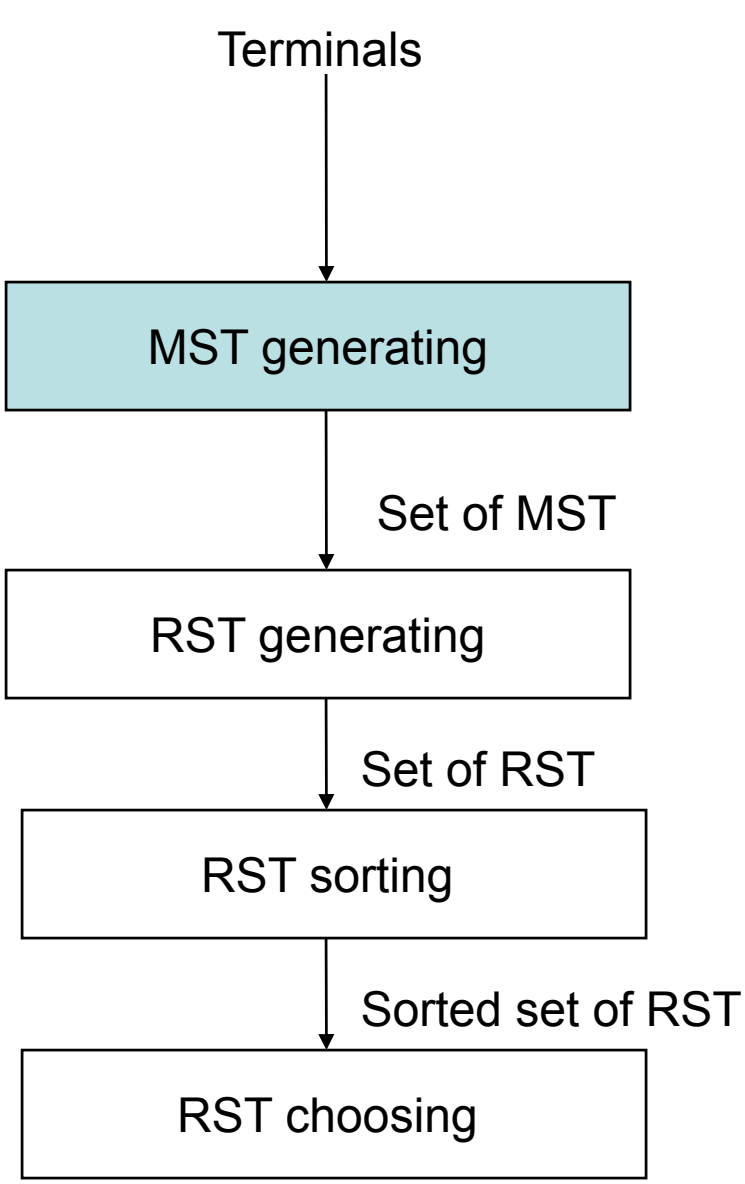
Main idea



- Sets of SMT(Steiner Min Tree)
- Density decrease


Terminals
MST generating
Set of MST
RST generating
Set of RST
RST sorting
Sorted set of RST
RST choosing

Terminals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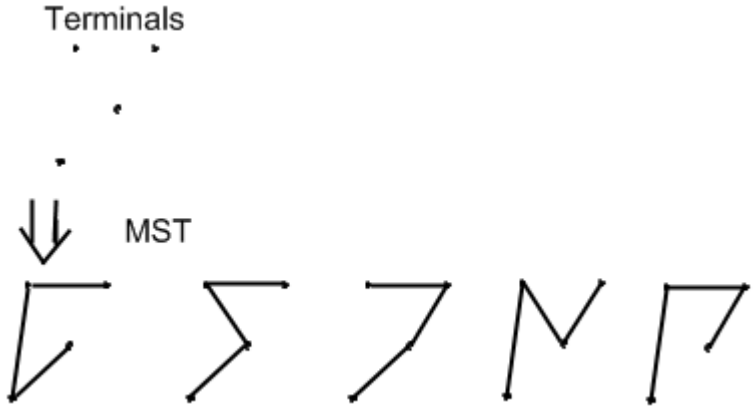
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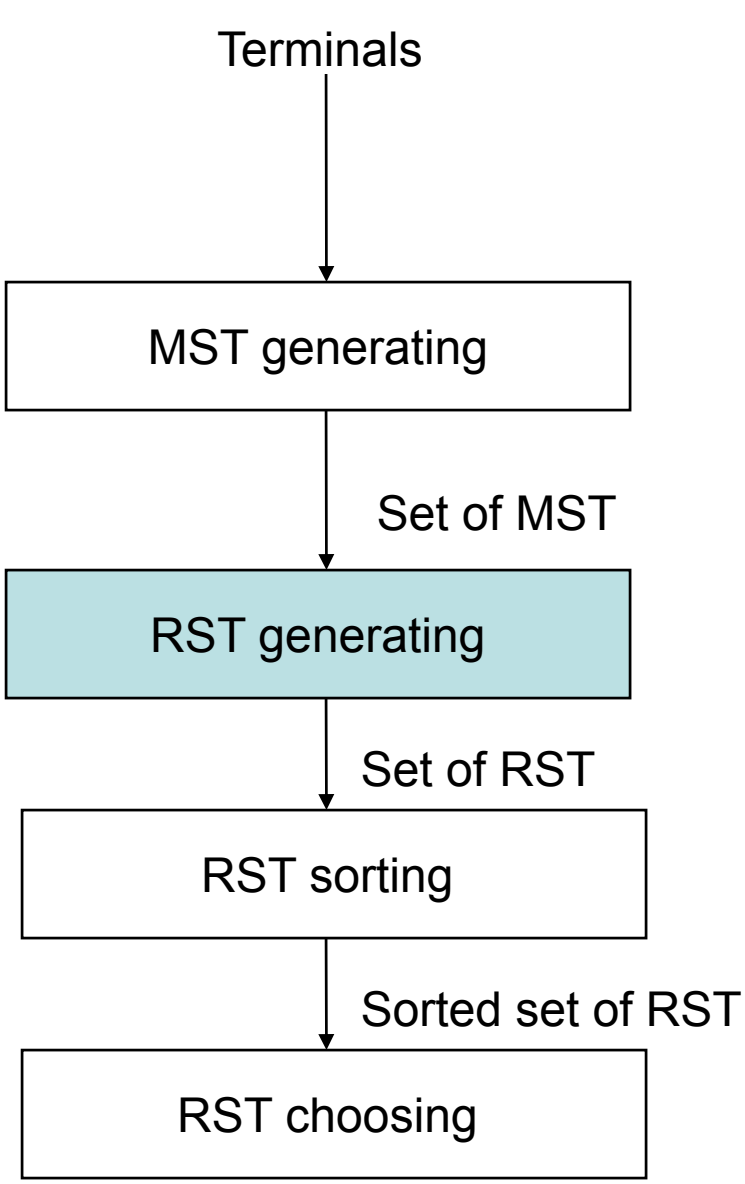
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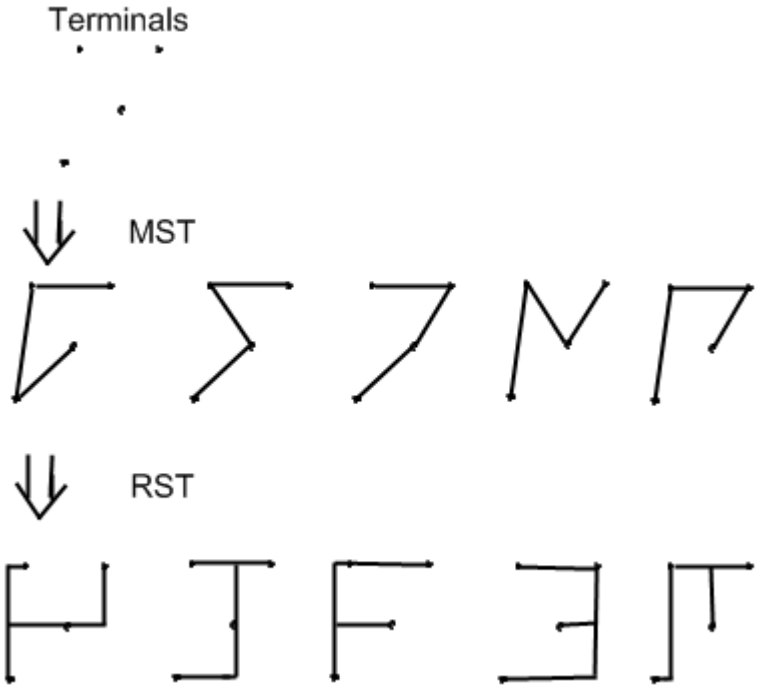
Terminals
MST
RST

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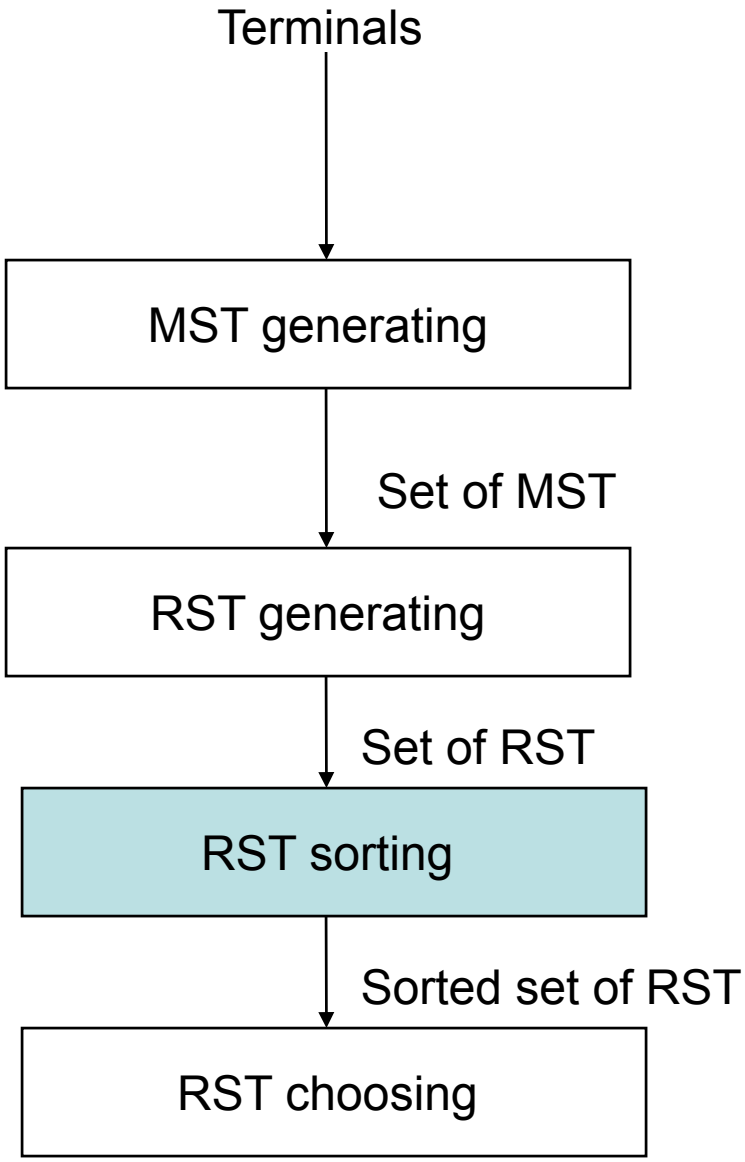
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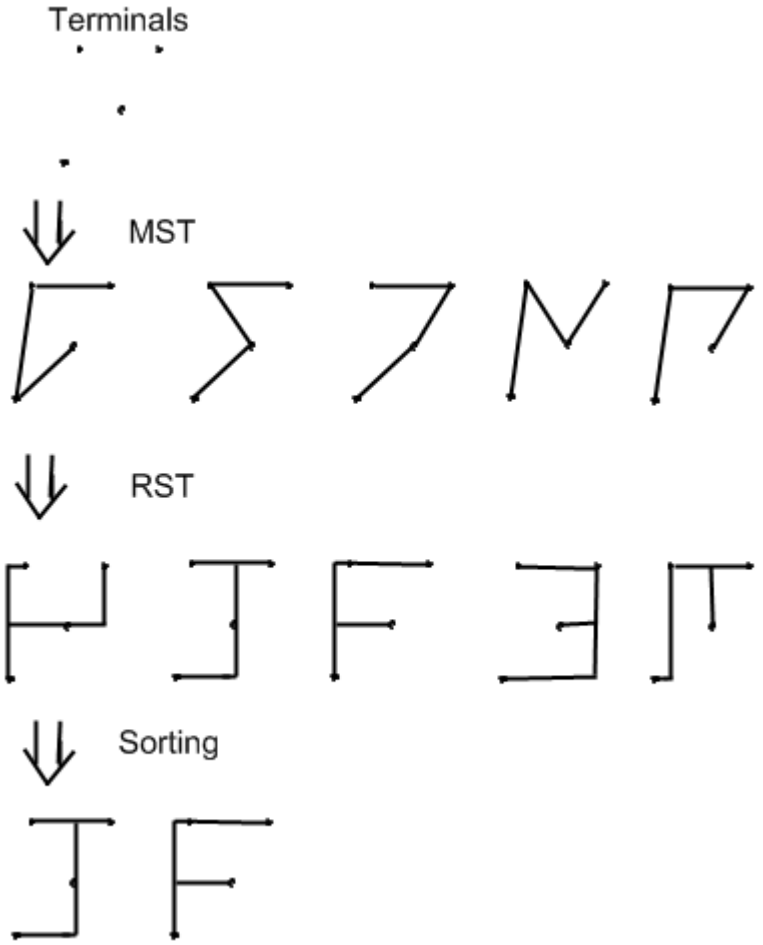
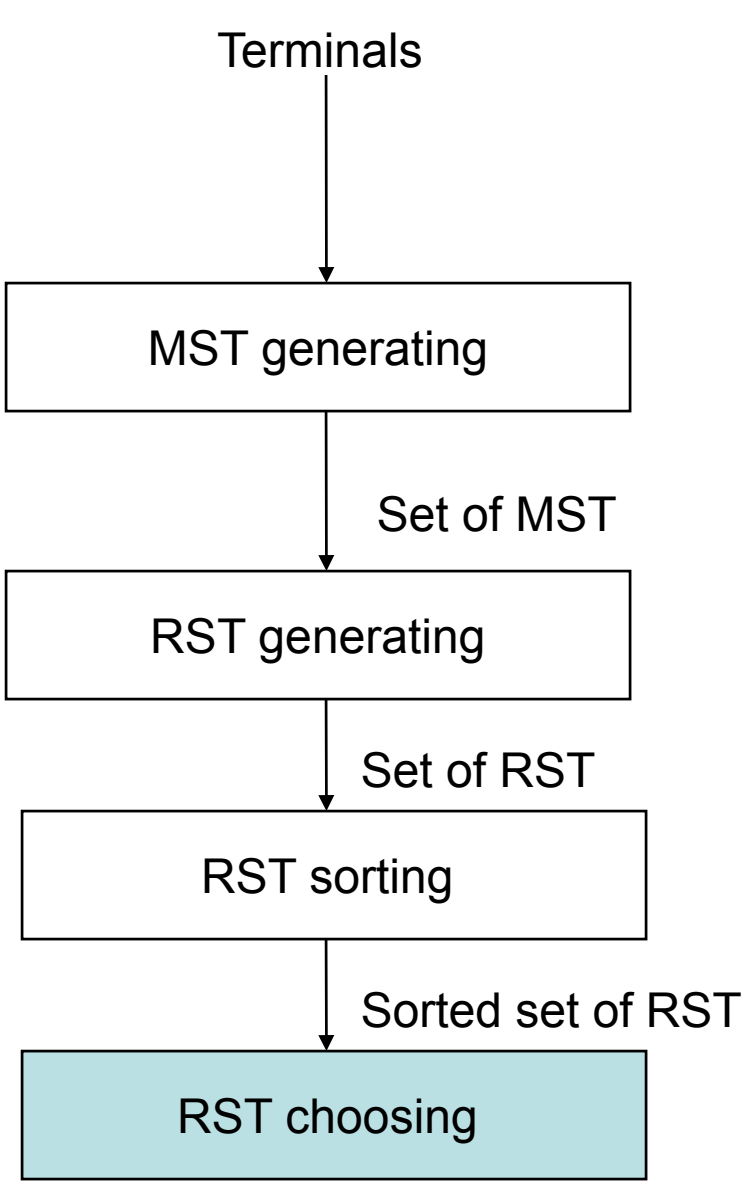

Terminals
MST
RST
Sorting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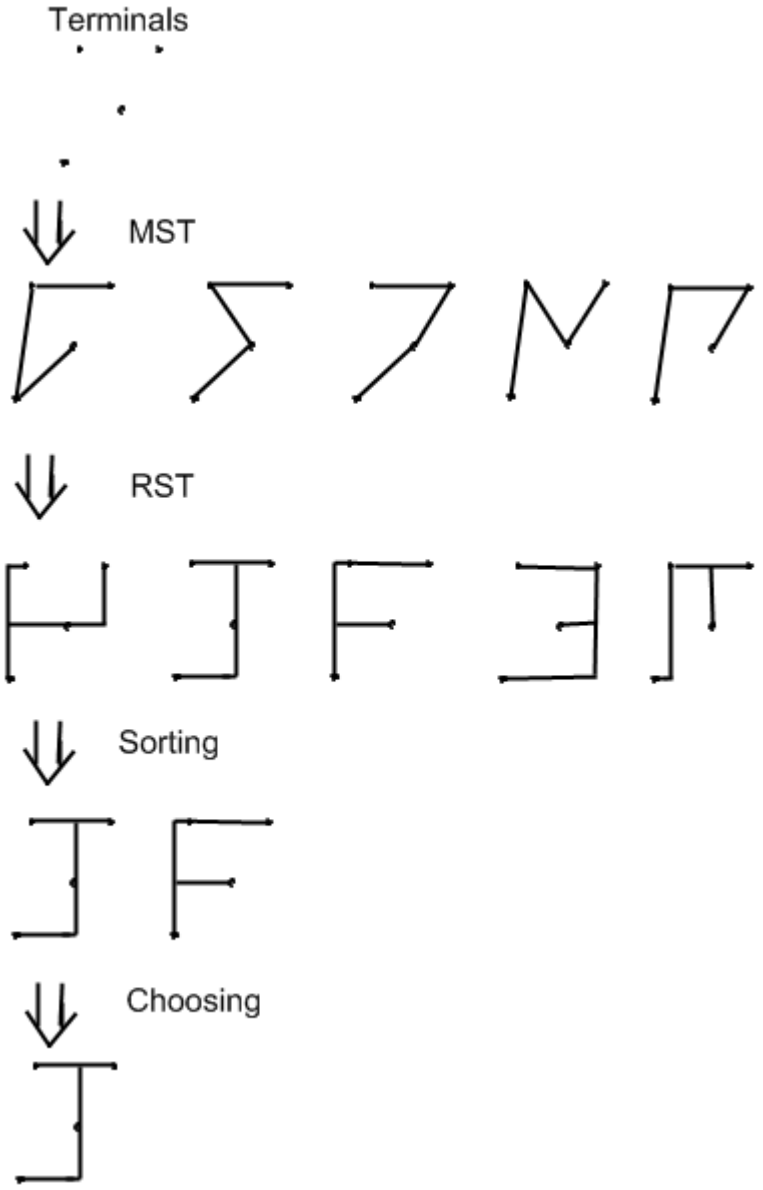
Terminals
MST
RST
Sorting
Choosing

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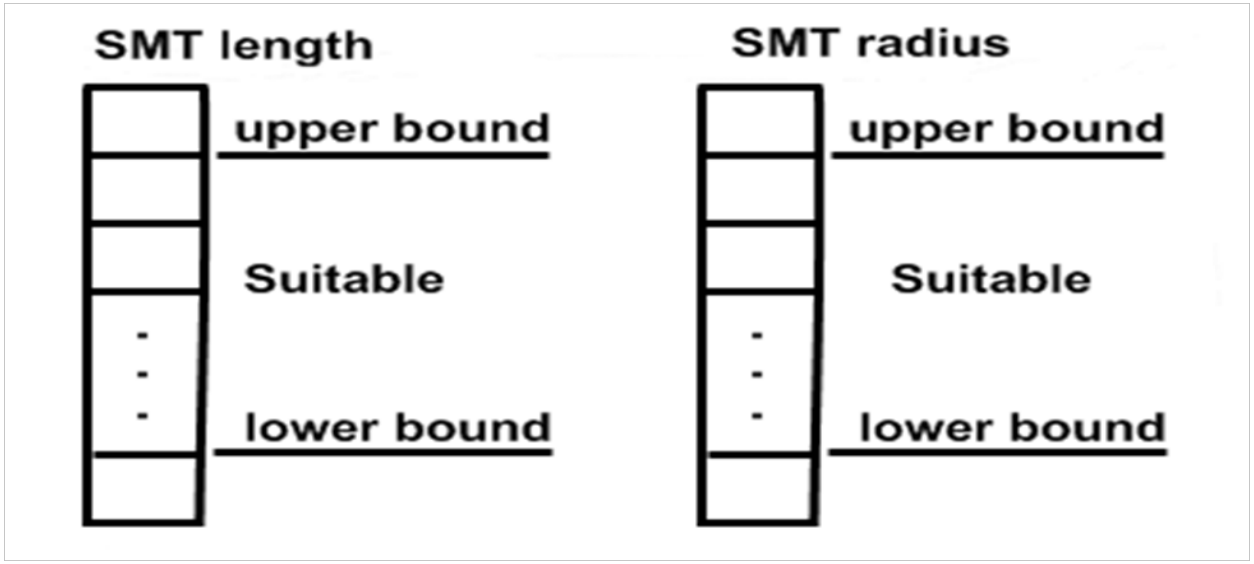
MST generating

$$MST \rightarrow \{MSTi\},$$

$$Cost(MSTi) - Cost(MST) \leq \Delta$$

- Modified Kruskal's algorithm
- Timing
- Wire length

SMT sorting



- Balanced tree
- Flexibility
- Complexity decrease

Thank you for attention