



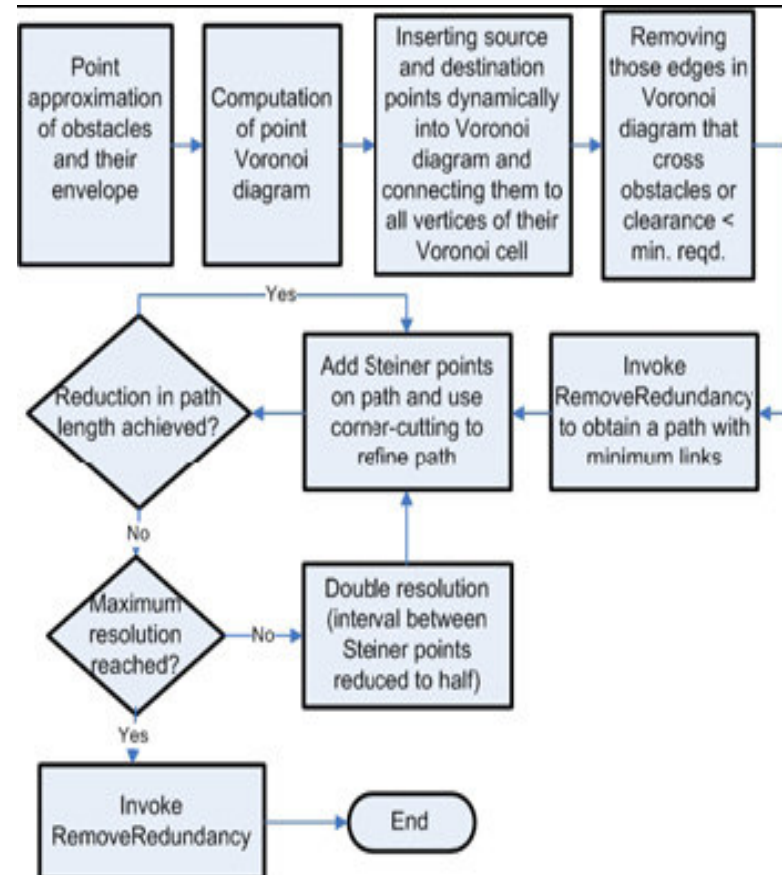
# Geometric Algorithms for Clearance Based Optimal Path Computation

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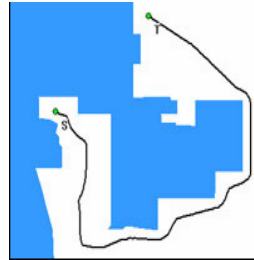
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# [ Algorithm ]

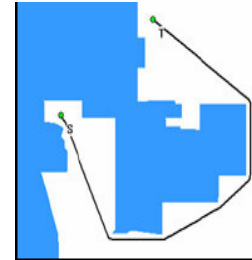
- The algorithm is based on the Voronoi diagram for clearance based optimal path generation between source and destination points in the presence of simple disjoint polygonal obstacles in  $O(n \log n)$ .
- We compute the Voronoi diagram ( $V_c$ ) of the obstacle vertices. The source and destination are added dynamically to  $V_c$ . After this, we remove all edges from  $V_c$  that have clearance  $< C_{min}$ . The remaining edges represent the connectivity of the free space and constitute the roadmap.



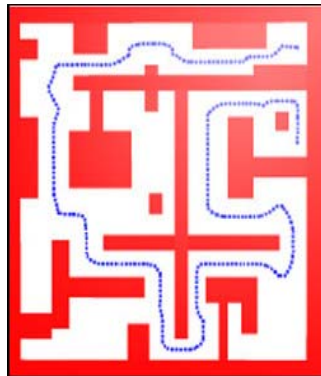
# Results



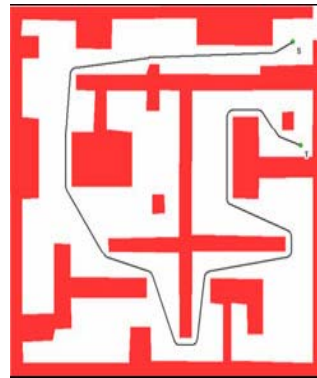
Path from  
roadmap



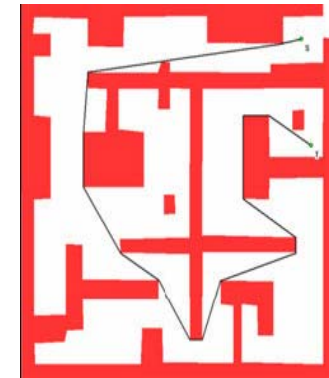
Path after iterative  
refinement



Optimal path



Final refined  
path ( $C_{min} = 12$ )



Final refined  
path ( $C_{min} = 0$ )

Method outperforms visibility graph and roadmap based approaches.