Obstacle-Aware Longest Path using Rectangular Pattern Detouring in Routing Grids

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Abstract

As the clock frequency increases, signal propagation delays on PCBs are requested to meet the timing specifications with very high accuracy. Generally speaking, the length controllability of a net decides the routing delay of the net. If a routing result has the higher length controllability, the routing delay will be obtained with higher accuracy. In this paper, given a start terminal, S, and a target terminal, T, in $m\times n$ routing grids with obstacles, based on the rectangular partition in routing grids and the analysis of unreachable grids in rectangular pattern detouring, an efficient $O(mn\log(mn))$ algorithm is proposed to generate the longest path in routing grids from S to T. Compared with the US routing[5], our proposed routing approach can achieve longer paths for tested examples in less CPU time.

Keyword：PCB design, Bus routing, Pattern detouring