Wire Routing by Optimizing Channel Assignment

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Abstract

This review paper talks about an efficient method of routing wires between components in a two-layer printed circuit board. While this "Left Edge" algorithm was initally introduced by its authors for this purpose, it now finds use in an analogous problem in VLSI physical design. The problem is defined as follows: given N wires that must be placed in given intervals, what is the minimum number of parallel channels required to accommodate the wires, on the condition that wires of overlapping intervals may not lie in the same channel? The paper by Hashimoto and Stevens, which introduced the Left Edge algorithm, showed that this problem can be solved in $\mathcal{O}(N\,logN)$ time. The algorithm relies on a greedy mechanism for choosing wires, which provably leads to the optimal solution.