Computing maximum non-crossing matching in convex bipartite graphs.


Summary: We consider computing a maximum non-crossing matching in convex bipartite graphs. For a convex bipartite graph of $n$ vertices and $m$ edges, we present an $O(n \log n)$ time algorithm for finding a maximum non-crossing matching in the graph. The previous best algorithm takes $O(m + n \log n)$ time [F. Malucelli et al., ibid. 47, No. 2, 175–179 (1993; Zbl 0789.68113)]. Since $m = \Theta(n^2)$ in the worst case, our result improves the previous work.

Keywords: maximum non-crossing matching; maximum matching; convex bipartite graphs; algorithms; data structures

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