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Popular matchings in the stable marriage problem. (English) Zbl 1334.05168


Summary: The input is a bipartite graph \( G = (A \cup B, E) \) where each vertex \( u \in A \cup B \) ranks its neighbors in a strict order of preference. A matching \( M^* \) is said to be popular if there is no matching \( M \) such that more vertices are better off in \( M \) than in \( M^* \). We consider the problem of computing a maximum cardinality popular matching in \( G \). It is known that popular matchings always exist in such an instance \( G \), however the complexity of computing a maximum cardinality popular matching was not known so far. In this paper we give a simple characterization of popular matchings when preference lists are strict and a sufficient condition for a maximum cardinality popular matching. We then show an \( O(mn_0) \) algorithm for computing a maximum cardinality popular matching in \( G \), where \( m = |E| \) and \( n_0 = \min(|A|, |B|) \).

For the entire collection see [Zbl 1217.68003].

MSC:
05C85 Graph algorithms (graph-theoretic aspects)
05C70 Edge subsets with special properties (factorization, matching, partitioning, covering and packing, etc.)
91B68 Matching models

Full Text: DOI

References:


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