

Stable Marriage and Roommates problems with restricted edges

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Abstract

In the Stable Marriage and Roommates problems, a set of agents is given, each of them having a strictly ordered preference list over some or all of the other agents. A matching is a set of disjoint pairs of mutually acceptable agents. If any two agents mutually prefer each other to their partner, then they block the matching, otherwise, the matching is said to be stable. We investigate the complexity of finding a solution satisfying additional constraints on restricted pairs of agents. Restricted pairs can be either forced or forbidden. A stable solution must contain all of the forced pairs, while it must contain none of the forbidden pairs. In this talk we describe a range of algorithmic results for problems involving computing stable matchings in the presence of restricted edges. Whilst in some cases NP-hardness and strong inapproximability results prevail, certain other cases give rise to polynomial-time algorithms and constant-factor approximation algorithms. This is joint work with Agnes Cseh.