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“Assortative matching in social networks”

Abstract

Consider social networks with a structure like Facebook or LinkedIn: links are active or in active and requires mutual consent. Under peer effects of a partner's ability, sufficient conditions for assortative matching are established when utility is either transferable or non-transferable,or a convex combination of the two. Assortative behaviour arises due to cost-convexity in link-formation. The cost-convexity implies a limited amount of connections are beneficial, which in turn leads to discrimination of some individuals. This results in all sufficiently unattractive potential partners are rejected. Analysis is performed under complete information. Under some transferability of resources, it is shown that complementarity is a sufficient condition for assortative matching, analogue to Becker (1973)'s marriage market. The method relies, like Becker, on the super modularity that holds even though there is an individual cost of establishing the link. The strongest results are derived under non-transferable utility where a first order condition on peer effects for types is a sufficient condition for assortative matching. The proof is constructive by proposing an algorithm based on Gale and Shapley (1962)'s 'deferred acceptance' and demonstrating it is at the base of all strongly stable outcome.