

COST Action IC1205 on Computational Social Choice: STSM Report

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On Noncooperative Hedonic Centrality Games

The goal of our project is to study the evolution and formation of coalitions in social networks. In particular we look at the setting in which, given a social network represented by a graph where the nodes are the agents and the links represent the relations between them, the agents dynamically choose the coalition to join, based on their preferences. The framework may be modelled by the class of hedonic games, in which each agent has preferences over the set of coalitions, and in some cases by the particular class of additively-separable hedonic games, in which the utility of each agent is given by the summation of different agent-specific contributions, one for each agent in the coalition. We mainly focus on the scenario in which the preferences of an agent are based on his centrality, that is how influential he is within the coalition. In order to model the centrality we take into account several parameters, such as the set of neighbours in the coalition, the distance to all the nodes in the same coalition, and the size of the coalition. We study and compare several notions of centrality, by proving the existence and performances of Nash equilibria. Moreover we give preliminary results on the analysis of the dynamic process of coalition formation in which the agents iteratively decide to join a new coalition in accordance to their preferences.