Cooperative and selfish task allocation in agent social networks

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As a fundamental problem in MAS research, task allocation problem (TAP) has been extensively studied in recent years. However, many real-world applications where relations between agents play a role require a slightly more general model than current ones.

In our work, we introduce a new variant of the task allocation problem, where the agents are connected in a social network and tasks arrive at the agents distributed over the network. We show this general TAP (STAP) remains NP-hard. We then discuss the social task allocation problem in both cooperative and self-interested settings. For cooperative agents, we propose various algorithms and heuristics for optimal (sub-optimal) task allocation solutions in the system. While for self-interested agents, which intend to maximize their own utilities and thus may manipulate the system, we introduce truthful mechanism in the system such that agents are incentivized to report their true values for allocating the tasks. Some experimental results will also be shown in the talk.