

## عنوان مقاله:

A Multi-objective Multi-agent Optimization Algorithm for the Community Detection Problem

## محل انتشار:

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## خلاصه مقاله:

This paper addresses the community detection problem as one of the significant problems in the field of social network analysis. The goal of the community detection problem is to find sub-graphs of a network where they have high density of within-group connections, while they have a lower density of between-group connections. Due to high practical usage of community detection in scientific fields, many researchers developed different algorithms to meet various scientific requirements. However, single-objective optimization algorithms may fail to detect high quality communities of complex networks. In this paper, a novel multi-objective Multi-agent Optimization Algorithm, named the MAOA is proposed to detect communities of complex networks. The MAOA aims to optimize modularity and community score as objective functions, simultaneously. In the proposed algorithm, each feasible solution is considered as an agent and the MAOA organizes agents in multiple groups. The MAOA uses new search operators based on social, autonomous and self-learning behaviors of agents. Moreover, the MAOA uses the weighted sum method (WSM) in finding the global best agent and leader agent of each group. The Pareto solutions obtained by the MAOA is evaluated in terms of several performance measures. The results of the proposed method are compared with the outputs of three meta-heuristics. Experiments results based on five real-world networks show that the MAOA is more efficient in finding better communities than other methods

## کلمات کلیدی:

.Community Detection Problem; Complex Networks; Multi-agent Systems; Social Networks

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/993154>

