Optimizing community detection in social networks using antlion and K-median

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Abstract

Antlion Optimization (ALO) is one of the latest population based optimization methods that proved its good performance in a variety of applications. The ALO algorithm copies the hunting mechanism of antlions to ants in nature. Community detection in social networks is conclusive to understanding the concepts of the networks. Identifying network communities can be viewed as a problem of clustering a set of nodes into communities. k-median clustering is one of the popular techniques that has been applied in clustering. The problem of clustering network can be formalized as an optimization problem where a qualitatively objective function that captures the intuition of a cluster as a set of nodes with better in ternal connectivity than external connectivity is selected to be optimized. In this paper, a mixture antlion optimization and k-median for solving the community detection problem is proposed and named as K-median Modularity ALO. Experimental results which are applied on real life networks show the ability of the mixture antlion optimization and k-median to detect successfully an optimized community structure based on putting the modularity as an objective function.

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