A new hierarchical method to find community structure in networks

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Description

Community structure is very important to understand a network which represents a context. Many community detection methods have been proposed like hierarchical methods. In our study, we propose a new hierarchical method for community detection in networks based on genetic algorithm. In this method we use genetic algorithm to split a network into two networks which maximize the modularity. Each new network represents a cluster (community). Then we repeat the splitting process until we get one node at each cluster. We use the modularity function to measure the strength of the community structure found by our method, which gives us an objective metric for choosing the number of communities into which a network should be divided. We demonstrate that our method are highly effective at discovering community structure in both computer-generated and real-world network data.