

A Model Based Metaheuristic for Hybrid Hierarchical Community Structure in Social Networks

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Abstract : In recent years, the study of community detection in social networks has received great attention. The hierarchical structure of the network leads to the emergence of the convergence to a locally optimal community structure. In this paper, we aim to avoid this local optimum in the introduced hybrid hierarchical method. To achieve this purpose, we present an objective function where we incorporate the value of structural and semantic similarity based modularity and a metaheuristic namely bees colonies algorithm to optimize our objective function on both hierarchical level divisive and agglomerative. In order to assess the efficiency and the accuracy of the introduced hybrid bee colony model, we perform an extensive experimental evaluation on both synthetic and real networks.

Keywords : social network, community detection, agglomerative hierarchical clustering, divisive hierarchical clustering, similarity, modularity, metaheuristic, bee colony

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