

Some techniques for detecting community structure in social network graphs

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Abstract: Community detection is a core problem in social network analysis, helping to clarify hidden connections and group behaviors. This study focuses on surveying typical techniques, from the Girvan-Newman hierarchical method to modularity optimization approaches such as the Louvain algorithm. The main objective is to analyze the performance and accuracy of each technique on network graphs of varying scales. Through experimentation, the study expects to identify influencing factors and propose suitable algorithms for each type of data structure. The research results not only hold high academic value but also have practical significance in building recommendation systems and analyzing information propagation.

Keywords: community detection, social network, graph theory, Louvain algorithm, modularity optimization