# Fuzzy duocentric community detection model in social networks

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## Abstract

The main goal of this paper is to present a clustering model to identify duocentric communities in the complex networks. A duocentric community is built around two central nodes which are as close as possible to other nodes, while the central nodes are connected enough to each other to shape the center of the community. To detect such communities, we develop a new objective function based clustering model. The network's nodes are assigned to the duocentric communities by the type-2 fuzzy numbers which indicate the degrees of belonging to the communities by upper and lower membership values. Generated interval type-2 fuzzy membership values by our proposed model are able to determine how much each node belongs to the both central nodes and how it is shared among communities. Also, the compatible verification index with the proposed model is introduced to evaluate and compare the results of the proposed model with the existing approach in the literature. Finally, the performance of the proposed algorithm is validated by detecting duocentric communities in three artificial networks and two real social networks.