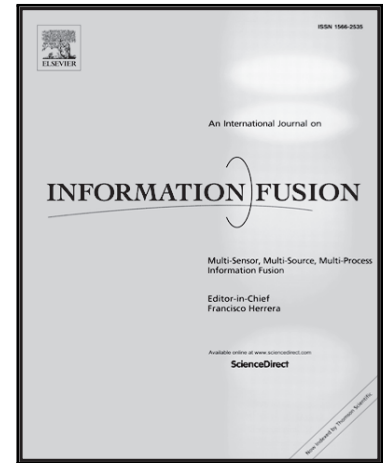


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Revealing Community Structures by Ensemble Clustering using Group Diffusion

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Abstract

We propose an ensemble clustering approach using group diffusion to reveal community structures in data. We represent data points as a directed graph and assume each data point belong to single cluster membership instead of multiple memberships. The method is based on the concept of ensemble group diffusion with a parameter to represent diffusion depth in clustering. The ability to modulate the diffusion-depth parameter by varying it within a certain interval allows for more accurate construction of clusters. Depending on the value of the diffusion-depth parameter, the presented approach can determine very well both local clusters and global structure of data. At the same time, the ability to combine single outcomes of the method results in better cluster segmentation. Due to this property, the proposed method performs well on data sets where other conventional clustering methods fail. We test the method with both simulated and real-world data sets. The results support our theoretical conjectures on improved accuracy compared to other selected methods.

Keywords: Clustering, Diffusion, Markov chain, Social network, Community structure

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