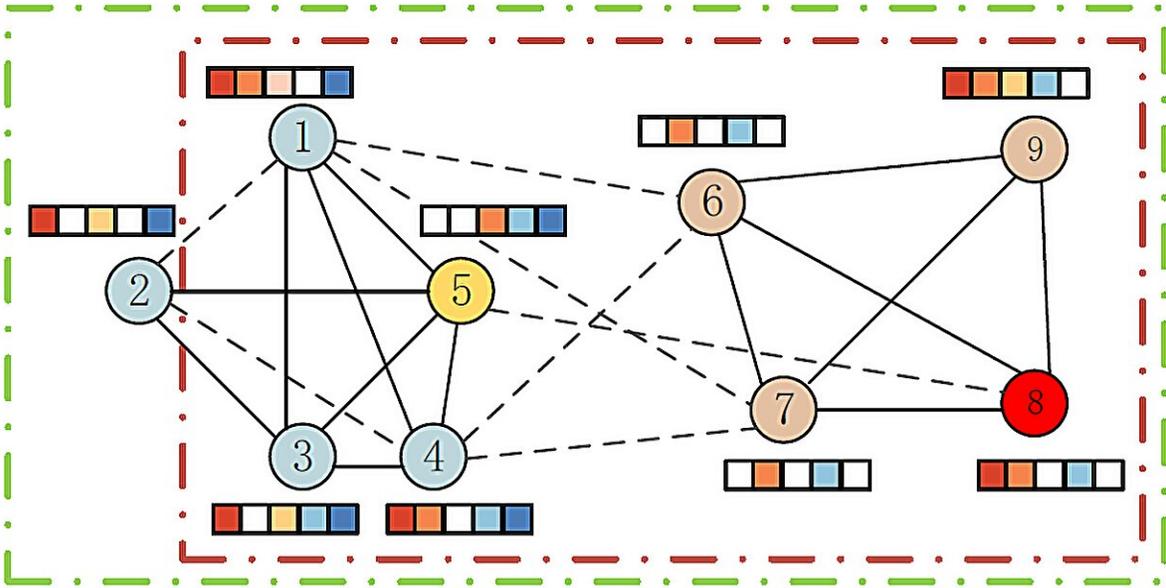


Adaptive fusion of structure and attribute-guided polarized communities search

February 22 2024



An example of the polarized communities in an attributed signed network. Solid edges are positive, while dashed edges are negative. The polarized communities where the green box is located utilize topology, while the polarized communities where the red box is located consider both topology and attribute. Credit: *Frontiers of Computer Science* (2023). DOI: 10.1007/s11704-023-2776-7

The exploration of polarized communities, which consist of two antagonistic subgraphs and include a set of query nodes, is a crucial task in community search on signed networks. Most existing methods either

predominantly rely on topological structure while disregarding node attributes or tend to prioritize the global identification of all polarized communities. Thus, they fail to consider two crucial insights.

First, integrating node attributes with network structure can enhance the search quality for polarized [communities](#) in attributed signed networks by leveraging complementary information. Second, global criteria-based polarized community detection aims to identify all polarized communities, neglecting personalized analyses centered around individual users.

To solve the problems, a research team led by Huifang Ma published their [research](#) in *Frontiers of Computer Science*.

The research team introduced a novel community search framework termed "Polarized Communities via Adaptively Fusing Structure and Attribute in Attributed Signed Networks." Their approach starts by performing statistical analyses on the signed graph at the attribute level, establishing associations with the topological relationships.

Subsequently, an adaptive fusion mechanism of the topological structure and attribute information is introduced. In order to detect polarized communities that include query nodes, a sparse indicator-vector is formulated based on the generalized Rayleigh quotient in local spectral eigenspaces, achieved by solving a linear programming problem.

More information: Fanyi Yang et al, Adaptive fusion of structure and attribute guided polarized communities search, *Frontiers of Computer Science* (2023). [DOI: 10.1007/s11704-023-2776-7](https://doi.org/10.1007/s11704-023-2776-7)

Provided by Frontiers Journals

Citation: Adaptive fusion of structure and attribute-guided polarized communities search (2024, February 22) retrieved 6 May 2024 from <https://techxplore.com/news/2024-02-fusion-attribute-polarized-communities.html>

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