

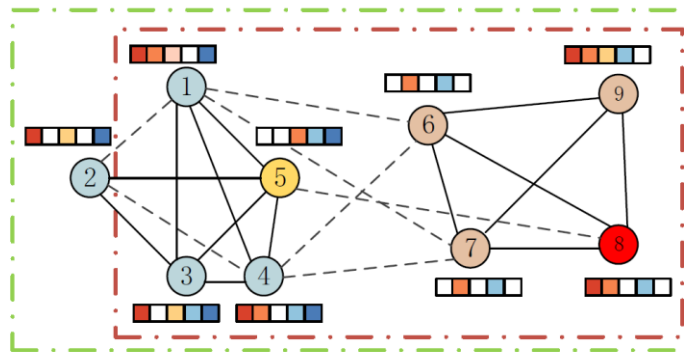
Adaptive Fusion of Structure and Attribute Guided Polarized Communities Search

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Problems & Ideas

- Problems of Polarized Communities Search:
 - Most existing methods primarily rely on topological structure while disregarding node attributes.
 - Global criteria-based polarized community detection aims to identify all polarized communities, neglecting personalized analyses centered around individual users.
- Ideas: **A novel community search framework for identifying polarized communities in attributed signed networks by leveraging the rich information inherent in node attributes and integrating it with the network's topological structure.**



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.

Main Contributions

- Contributions:
 - Providing a unified way to model a new augmented signed graph that adaptively takes into account both topology and node attributes;
 - Using the generalized Rayleigh quotient, the sparse indicator vector is solved by normalizing the Laplacian matrix span eigenspace and discrete rounding is performed to obtain the polarized communities.

Table 1 Comparisons of overall performance between PCAS and baselines

Methods	Epinions			Slashdot		
	precision	recall	F1	precision	recall	F1
PolarSeeds	0.747	0.711	0.729	0.785	0.769	0.777
RE	0.631	0.618	0.624	0.674	0.658	0.667
Timbal	0.673	0.652	0.662	0.719	0.694	0.706
PolarSeeds+Attri	0.754	0.729	0.741	0.799	0.782	0.790
Timbal+Attri	0.689	0.671	0.680	0.782	0.716	0.722
PCAS-noAttri	0.729	0.706	0.717	0.773	0.756	0.764
PCAS-Factor	0.774	0.743	0.758	0.803	0.797	0.801
PCAS	0.793	0.750	0.771	0.821	0.804	0.812