Stochastic Blockmodeling And Variational Baye Learning For Signed Network Analysis

ABSRACT

- Signed networks with positive and negative links attract considerable interest in their studying since they contain more information than unsigned networks.

- Community detection and sign (or attitude) prediction are still primary challenges, as the fundamental problems of signed network analysis.

- For this, a generative Bayesian approach is presented wherein, A signed stochastic block model is proposed to characterize the communite structure in the context of signed networks, by explicit formulating the distributions of the density and frustration of signed links from a stochastic perspective, and

- A model learning algorithm is advanced by theoretical deriving a variation Bayes EM for the parameter estimation and variation-based approximate evidence for the model selection

EXISTING SYSTEM

- For this, a generative bayesian approach is presented wherein 1) a signed stochastic blockmodel is proposed to characterize the community structure in the context of signed networks, by explicit formulating the distributions of the density and frustration of signed links from a stochastic perspective,

- And 2) a model learning algorithm is advanced by theoretical deriving a variational bayes em for the parameter estimation and variation-based approximate evidence for the model selection.

- The comparison of the above approach with the state-of-the-art methods on synthetic and real-world networks, shows its advantage in the community detection and sign prediction for the exploratory networks.

DISADAVANTAGE

- Motivated by the document clustering problems, CC (Correlation Clustering) partitions the signed networks by maximizing agreements or minimizing disagreements in the network by means of the polynomial-time approximation clustering scheme

- For UN-I and UN-II, SSL performs much better than other algorithms, as its plateau areas are much larger than those of others.

- In view of this, many efforts have been made to address the problem of detecting the communities with signed networks.

PROPOSED WORK

- Although many methods have been proposed for the community detection since studies by girvan and newman [5],
- Most of them are exclusively designed for unsigned networks, which focus on the link density rather than the link sign to define and detect the communities.
- Therefore, the major techniques adopted by them, such as modularity optimization [6], markov random walk [7],
- Clique percolation model [8], spectral analysis [9], and evolutionary optimization [10], cannot be directly applied to signed networks.
- In view of this, many efforts have been made to address the problem of detecting the communities with signed networks.

ADVANTAGES

- NMI is an information-theoretic measure of the agreement between two partitions, and thus can be used to quantitatively measure the accuracy of group detections.

- The performance in terms of NMI of an algorithm applied to a specific network model

- The first column show the performance of six algorithms applied to the balanced signed networks, where 1 and 1 denote the densities of the positive intercommunity and negative intercommunity links, respectively

SYSTEM REQUIREMENT

- **HARDWARE REQUIREMENT:**
- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Floppy Drive : 1.44 Mb.
- Monitor : 15 VGA Colour.
- Mouse : Sony.
- Ram : 512 Mb.

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- **SOFTWARE REQUIREMENT:**
- Operating system : Windows XP.
- Coding Language : ASP. Net with C#
- Data Base : SQL Server 2005.

CONCULSION

- The community detection and sign prediction are the fundamentals of signed network analysis. Most of the existing methods, as discussed in above section, are discriminative, depending on either predefined optimization objectives or heuristics.

- Distinctly, this work introduced a generative approach to addressing these challenges.

- A signed stochasticblockmodel (SSBM) was proposed to characterize the block structures of signed networks in terms of both link density and sign.