Tracking Temporal Community Strength in Dynamic Networks

Community formation analysis of dynamic networks has been a hot topic in data mining which has attracted much attention. Recently, there are many studies which focus on discovering communities successively from consecutive snapshots by considering both the current and historical information. However, these methods cannot provide us with much historical or successive information related to the detected communities. Different from previous studies which focus on community detection in dynamic networks, we define a new problem of tracking the progression of the community strength - a novel measure that reflects the community robustness and coherence throughout the entire observation period. To achieve this goal, we propose a novel framework which formulates the problem as an optimization task. The proposed community strength analysis also provides foundation for a wide variety of related applications such as discovering how the strength of each detected community changes over the entire observation period. To demonstrate that the proposed method provides precise and meaningful evolutionary patterns of communities which are not directly obtainable from traditional methods, we perform extensive experimental studies on one synthetic and five real datasets: social evolution, tweeting interaction, actor relationships, bibliography and biological datasets. Experimental results show that the proposed approach is highly effective in discovering the progression of community strengths and detecting interesting communities.

EXISTING SYSTEM:

There have been extensive research studies on community detection in networks. The existing system came up with an efficient algorithm to conduct overlapping community detection in large-scale social networks.

In the existing system, a novel method was proposed for the community discovery in complex networks based on an extremal modular optimization framework. In the existing system,the system is introduced the modularity concept in social networks and leveraged eigenvectors of characteristic matrix for the detection task. Also, system discussed a benchmark method to test the detected communities. However, these methods focus on the static scenario and cannot be easily extended to dynamic networks.

With the availability of many online datasets, dynamic network analysis has become a hotly discussed topic today.

In the existing system, an optimization framework based on logistic regression was proposed to estimate the network evolution.

The system discussed the biological dynamic networks and proposed the method to predict the state of protein complexes. The system also analyzed the dynamic molecular interactions, which is crucial in regulating the functioning of cells and organisms. In the existing system, the authors investigated the subgraph discovery in dynamic networks.

PROPOSED SYSTEM:

In the proposed system, the system defines that a community is with high strength if it has relatively stronger internal interactions connecting its members than the external interactions with the members to the rest of the world.

Dense internal interactions and weak external interactions guarantee that the community is under a low risk of member change (current members leaving or/and new members joining). Intuitively, a friend community is “strong” if its members tie together closely and ignore the temptation from the outside world. On the contrary, a friend community is regarded as a “weak” community if it is likely to confront a member alteration situation.

SYSTEM SPECIFICATION

Hardware Requirements:

- System : Pentium IV 3.4 GHz.
- Hard Disk : 40 GB.
- Monitor : 14’ Colour Monitor.
- Mouse : Optical Mouse.
- Ram : 1 GB.

Software Requirements:

- Operating system : Windows Family.
- Coding Language : J2EE (JSP,Servlet,Java Bean)
- Data Base : MY Sql Server.
- IDE : Eclipse Juno
- Web Server : Tomcat 6.0