Abstract

A large number of networks in nature, society and technology are defined by a mesoscopic level of organization, in which groups of nodes form tightly connected units, called communities, that are sparsely inter-linked to each other. Identifying this community structure is one of the most important problems in understanding of functions and structures of real world complex systems, which is still a challenging task. Various methods proposed so far are not efficient and accurate for large networks which comprise of millions of nodes because of their high computational cost.

In this manuscript we will provide the implementation and behavioral analysis of BGLL algorithm for determining the structure of complex networks. This method is a variant of hierarchical agglomerative clustering approach, which finds the communities which are nested within one another. This method emphasizes on the idea of building the communities by combining the initial partition into super networks by repeatedly optimizing the modularity. In this work we will implement the BGLL Algorithm on various large networks which exhibit the community structure. We will also determine the optimal modularity at every pass and determine the hierarchical structure of large complex systems that comprise of millions of nodes. We will also provide a brief comparison of BGLL algorithm with some methods.
Community Detection in Complex Network via BGLL Algorithm

References

- L. Euler, Solutio problematis ad geometriam situs pertinentis, Commentarii Academiae Petropolitanae 8 (1736) 128-140.
- G. W. Flake, S. Lawrence, C. L. Giles, Efficient identification of web communities, in: Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press, Boston, USA, 2000, pp. 150160.
- V. D. Blondel, J. -L. Guillaume, R. Lambiotte, E. Lefebvre, Fast unfolding of
Community Detection in Complex Network via BGLL Algorithm

C1,III IV,801-804.
- Code of the BGLL is used from the link http://findcommunities.googlepages.com.

Index Terms

Computer Science Networks

Keywords

Complex Networks Community Structure