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Detecting Large Cohesive Subgroups in Networks

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ABSTRACT

The concept of a cohesive subgroup was first introduced in social network analysis, but it also used (under different names, such as cluster or module) in several other important application areas, including wireless networks, telecommunications, and graph-based data mining. One of the earliest and most popular graph models used for studying cohesive subgroups was the clique model; however, the clique approach describes an “ideal” cohesive subgroup and is overly restrictive. In this talk, we will present alternative approaches that relax various aspects of the ideal definition of a cohesive subgroup. We will discuss advantages and disadvantages of each model, algorithms for detecting the corresponding cohesive subgroups and results of computational experiments with social, biological and random networks.

BIO

Sergiy Butenko received his B.S. and M.S. degrees from Kyiv Taras Shevchenko University (Ukraine) in 1998 and 1999, respectively, and M.S. and Ph.D. degrees from the University of Florida in 2001 and 2003, respectively. His research concentrates mainly on global and discrete optimization and their applications. In particular, he is interested in theoretical and computational aspects of continuous global optimization approaches for solving discrete optimization problems on graphs. Applications of interest include network-based data mining, computational biology, social networks and remote sensing.