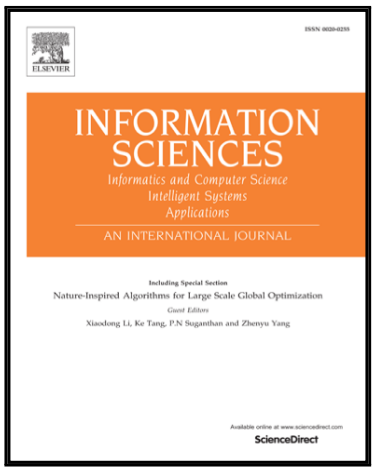

Detecting and refining overlapping regions in complex networks with three-way decisions

Hong Yu, Peng Jiao, Yiyu Yao, Guoyin Wang

PII: S0020-0255(16)30670-3
DOI: 10.1016/j.ins.2016.08.087
Reference: INS 12490

To appear in: *Information Sciences*

Received date: 16 June 2015
Revised date: 30 May 2016
Accepted date: 26 August 2016

Please cite this article as: Hong Yu, Peng Jiao, Yiyu Yao, Guoyin Wang, Detecting and refining overlapping regions in complex networks with three-way decisions, *Information Sciences* (2016), doi: 10.1016/j.ins.2016.08.087

Highlights

- The three-way representation of communities as a triple of positive, boundary and negative regions brings more insight into interpretation of communities.
- The overlapping regions are further refined into 4 macro types and 8 micro types.
- The three-way decision strategies are introduced to detect the overlapping communities based on the introduced relation-graph.
- A new fitness function is devised to adapt to processing networks with overlapping.
- The refinement of overlapping regions can reveal the different significance to impact forming or changing of communities.
- The proposed method is efficient and highly appropriate for detecting overlapping communities.