University of Victoria | Graduate Studies

Notice of the Final Oral Examination
for the Degree of Master of Science

of

RAN WEI

BSc (Jiangnan University, 2014)

**"Efficient Algorithms for Discovering Importance-Based Communities
in Large Web-Scale Networks"**

Department of Computer Science

Wednesday, August 16, 2017
9:00 A.M.
Engineering and Computer Science Building
Room 468

Supervisory Committee:
Dr. Alex Thomo, Department of Computer Science, University of Victoria (Supervisor)
Dr. Venkatesh Srinivasan, Department of Computer Science, UVic (Member)

External Examiner:
Dr. Alex Kuo, School of Health Information Science, UVic

Chair of Oral Examination:
Dr. Stephen Neville, Department of Electrical Engineering, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

k-core is a notion capturing the cohesiveness of a subgraph in a social network graph. Most of current research works only consider pure network graphs and neglect an important property of the nodes: influence. Li, Qin, Yu, and Mao [PVLDB'15] introduced a novel community model called \k-influential community" which is based on the concept of k-core enhanced with node influence values. In this model, we are interested not only in subgraphs that are well-connected, but also have a high lower bound on their influence. More precisely, we are interested in finding top r (with respect to influence), k-core communities. We present novel approaches that provide an impressive scalability in solving the problem for graphs of billions of edges using only a consumer-grade machine.