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

of

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“Graph-XLL: a Graph Library for Extra Large Graph Analytics on a Single Machine”

Department of Computer Science

Friday, August 16, 2019
10:30 A.M.
Engineering/Computer Science Building
Room 467

Supervisory Committee:
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Abstract

Graph libraries containing already-implemented algorithms are highly desired since users can conveniently use the algorithms off-the-shelf to achieve fast analytics and prototyping, rather than implementing the algorithms with lower-level APIs. Besides the ease of use, the ability to efficiently process extra large graphs is also required by users. The popular existing graph libraries include the igraph R library and the NetworkX Python library. Although these libraries provide many off-the-shelf algorithms for users, the in-memory graph representation limits their scalability for computing on large graphs. Therefore, in this work, we develop Graph-XLL: a graph library implemented using the WebGraph framework in a vertex-centric manner, with much less memory requirement compared to igraph and NetworkX. Scalable analytics for extra large graphs (up to tens of millions of vertices and billions of edges) can be achieved on a single consumer grade machine within a reasonable amount of time. Such computation would cause out-of-memory error if using igraph or NetworkX.