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DEPARTMENT OF
COMPUTER SCIENCE
計算機科學系

ONLINE SEMINAR
2022 SERIES

Department of Computer Science

Dr. Renchi Yang

Postdoctoral Research Fellow
School of Computing
National University of Singapore, Singapore

Date: 10 August 2022 (Wednesday)
Time: 9:30am – 10:30am
Registration: http://bit.ly/bucs-ereg

(*Zoom details will only be provided to registrants)

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Efficient Network Embeddings for Big Graph Analytics

ABSTRACT

In the era of big data, a vital challenge is to efficiently and effectively exploit graph-structured data, such as the World Wide Web, social networks, and biomedical knowledge graphs. In recent years, network embedding emerges as a powerful technique for graph analytics. Network embedding aims to transform nodes in a graph into low-dimensional vectors, which can be fed into off-the-shelf machine learning models used for downstream tasks, and thus, create extensive practical applications in real life. However, most of the existing solutions for network embedding struggle to cope with large graphs (let's say in the order of billions of edges), as they either incur significant computation costs or yield low-quality embeddings on such graphs. In this talk, I will present two effective network embedding approaches that scale to billion-edge graphs with and without node attributes, respectively, using a single commodity machine. The basic idea is to first model the affinity between elements in the graph based on random walks, and then factorize the affinity matrix to derive the embeddings. The main challenges that we address include (i) the choice of the affinity measure and (ii) the reduction of space and time overheads entailed by the construction and factorization of the affinity matrix. Extensive experiments on large graphs demonstrate that our solutions outperform existing methods in terms of both embedding quality and efficiency.

BIOGRAPHY

Dr. Renchi Yang is now a postdoctoral research fellow in the School of Computing, National University of Singapore. Prior to that, he got his Ph.D. in computer science from Nanyang Technological University in 2021. His research mainly focuses on developing efficient algorithms and systems for large-scale data analysis, with special interests in graph query processing, community detection, and network embedding. He has published 12 papers in big data-related conferences/journals including SIGMOD, VLDB, TODS, KDD, and WWW. His research works received the VLDB 2021 Best Research Paper Award, 2022 ACM SIGMOD Research Highlight Award, and Best Paper Award Nominee in WWW 2022.

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