Due to the growing need of analyzing big graphs such as online social networks and web graphs, recent years have witnessed a surge in developing distributed graph analytics systems. Among these systems, the think-like-a-vertex computation framework pioneered by Google’s Pregel gains particular interest. In Pregel, a user only needs to specify the behavior of one generic vertex when developing parallel graph algorithms. This talk introduces the latest development in the field of big graph analytics systems. It starts with a brief review on Pregel, followed by an introduction on how to develop Pregel algorithms for various graph problems with performance guarantees. We then proceed to identify the weaknesses of the existing Pregel-like systems, and introduce a few novel ideas and designs in improving the basic model of Pregel. These techniques often provide orders of magnitude performance improvements. This talk will cover important topics including computation model, communication mechanism, on-demand querying, out-of-core support, fault tolerance, etc. Many of the introduced works have been published in first-tier conferences, including four recent VLDB papers and one recent WWW paper. The talk will also provide a vision on future research directions on big graph analytics.

Dr Da Yan is currently a postdoctoral fellow of Computer Science in the Chinese University of Hong Kong. He received his Ph.D. degree in Computer Science from the Hong Kong University of Science and Technology in 2014, and his B.S. degree in Computer Science from Fudan University in Shanghai in 2009. He is the winner of Hong Kong 2015 Young Scientist Award in Physical/Mathematical Science. He will join the Department of Computer and Information Sciences (CIS) at the University of Alabama at Birmingham as a tenure-track assistant professor in Big Data research this fall semester.

Dr Yan’s research focuses on the development of scalable systems and algorithms for big data analytics, with a special emphasis on graph data, geo-spatial data and data uncertainty. The results of his research have been published in top-tier conferences such as SIGKDD, ICDE, EDBT, and top-tier journals such as PVLDB and TKDE. Notably, his first research paper won the best paper award in the 2011 DASFAA conference. His research has been awarded with ITF and GRF grants, and the systems he developed have been used by many research groups as well as companies (e.g., Taobao).

All are welcome!