



Ariful Azad

Indiana University

Friday, January 18, 2019

3:00 pm

Luddy Hall, Rm. 1106

Toward Exascale Graph Analytics

Abstract: Graphs or Networks have proven to be popular representation for scientific and business datasets such as interacting proteins and online friendships. As large-scale problems are transitioning from billion-edge to trillion-edge networks, the associated computational demands are fast moving toward exascale (10^{18} calculations). In this talk, I will discuss current state of extreme-scale graph analytics and a viable path toward exascale graph computations.

I will discuss two recent work where we scale a graph clustering and a connected component algorithm to 262,000 processor cores. In this framework, it is possible to utilize millions of cores by careful algorithm design: a combination of communication-avoiding algorithms and efficient inter-processor communication primitives. Hence, despite its low computation to communication ratio and irregular communication pattern, graph analytics is on track toward exascale.

Biography: Ariful Azad is an Assistant Professor of Intelligent Systems Engineering (ISE) at Indiana University School of Informatics, Computing, and Engineering. Before joining IU, he was a Research Scientist in the Computational Research Division at Lawrence Berkeley National Laboratory. Dr. Azad obtained his Ph.D. from Purdue University and B.S. from Bangladesh University of Engineering and Technology. His research interests are in parallel graph algorithms, high performance computing, data-intensive computing, and bioinformatics. He is part of two DOE Exascale Computing Projects.

