Other

Development of Cyberinfrastructure: Networks, Clusters, and S/W Frameworks for Big Data

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Electrical Engineering Building 117
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Abstract:
To advance scientific discovery, federal agencies have invested huge amount of resources for big sciences to develop cyberinfrastructures including (i) large-scale scientific instruments which produce unprecedented sheer volume of data, (ii) supercomputers which process and analyze the big data, and (iii) high speed networks which transfer them to remote places. Although most of research universities and institutes have deployed those cyberinfrastructures inside their campuses, there are still challenges at storages, networks, high performance computing (HPC) clusters, and software frameworks.
To address those problems, I have developed (1) 10Gbps high-speed campus research network (BIC-LSU) connecting major big data research laboratories, and 100TB of Solid State Drive storages with HPC clusters computer network protocols at transport (e.g., DMCTCP) and network layers (e.g., FaLL); (2) software frameworks based on Hadoop over distributed computing clusters; and (3) big data application (PGA: A Parallel Giraph-based Genome Assembler) using Hadoop and in-memory graph processing frameworks Giraph for genome sequence analysis over supercomputers. Those research projects have been supported by federal funding agencies, NSF, DoD, NIH, etc. The seminar will focus on three major research papers, DMCTCP, FaLL and PGA due to time limitation.

Speaker's Bio:

Seung-Jong Park is an associate professor in the Division of Computer Science and Engineering. He received his PhD in electrical and computer engineering from the Georgia Institute of Technology. From 1995 to 2000, he worked for Shinsegi Telecomm, which is the first CDMA cellular service provider in the world and now merged into the SK Telecom. His teaching interests include computer networks, network protocols, wireless networks, mobile computing, distributed systems and operating systems.

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