Keynote Address

Scalable Parallel and Cluster Computing Abstract

Kai Hwang

In this talk, Dr. Hwang will present two approaches to scalable parallel computing: The first approach is based on scaling STAP benchmarks on Cray T3D, IBM SP2, and Intel Paragon. STAP was originally developed by the MIT Lincoln Laboratory for real-time signal processing. The benchmark suite was recently parallelized and tested on several available MPPs (massively parallel processors). The second approach is to develop an SSI (Single-System-Image) cluster of UNIX workstations and SMP servers for distributed multimedia and Intranet applications.

The talk will evaluate scalable multiprocessors and network-based cluster architectures. Specific R/D topics to be covered include the following:

- STAP benchmark evaluation of T3D, SP2, Paragon, and Power Challenge/XL - Architectural assessment of recent advances in CC-NUMA and Clusters.
- Hardware and software support for SSI in a cluster of workstations and servers.
- Distributed cluster computing in multimedia and Intranet applications.

Scalable parallel computer platforms provide not only an incremental growth path, but also performance scaling and enhanced availability. These features are very much desired in today's business and scientific applications. Dr. Hwang will share the research findings and benchmarking experiences from his research groups at USC and HKU. He will also comment on the research, development, and application trends in parallel and cluster computing.