



Saal Auditorium Rm.202, Alon High-Tech Building 37

Seminar Series Supported by Jeffrey and Holly Ullman

# HPC Day and LinkSCEEM User Meeting

24 October, 2011

10:30 Coffee & Registration

10:50 Opening Remarks and Greeting

Prof. Shlomi Dolev

11:00 Watson wins Jeopardy!

Dafna Sheinwald, IBM

Abstract: Watson is an application of advanced natural language processing, information retrieval, knowledge representation and reasoning, and machine learning technologies to the field of open domain question answering. Watson is built on IBM's DeepQA technology for hypothesis generation, massive evidence gathering, analysis, and scoring. Watson runs on a cluster of 90 IBM Power 750 servers in 10 racks with a total of 2880 POWER7 processor cores and 16 Terabytes of RAM. The POWER7 processor's massively parallel processing capability is an ideal match for Watson's IBM DeepQA software, enabling it to respond within less than 3 seconds. As a test of its abilities, Watson competed on the renowned television quiz show Jeopardy! The competition aired in three Jeopardy! episodes, dedicated to this IBM Challenge, running from February 14–16, 2011, and attracting millions of viewers, at home and at numerous "watch parties" across North America. Watson competed against Ken Jennings, the record holder for the longest championship streak and Brad Rutter, the current biggest all-time money winner on Jeopardy!. Watson passed the test -- he emerged victorious. The grand challenge, Watson's architecture and technologies built to meet it, IBM Haifa's contributions to them, and anecdotes from the celebrated match are delineated in this talk.

11:45 Modern HPC architectures in Europe

Giannis Koutsou, LinkSCEEM

Abstract: This talk will cover current HPC architectures in Europe with a few words on the race to exa-flop. The PRACE project will be introduced, with some emphasis on WP9-prototyping activities. An overview of Cy-Tera, Cyprus flagship HPC facility, will also be given.

12:30 Developing an HPC e-Infrastructure for the Eastern Mediterranean

Fotis Georgatos, LinkSCEEM

Abstract: This talk is a general one about the LinkSCEEM-2 project; it covers project goals, structure, partners, e-infrastructure developed, HPC importance in the area, plus User Support & Training activities, including opportunities for accessing the infrastructure developed.

13:05 Lunch Break

13:45 Introduction to Isragrid services – Israel National NGI

Zeev Vaxman Fisher, Isragrid

14:00 Building a National Cyber Infrastructure - The Open Science Grid Experience

Miron Livny

14:45 Paving the road to Exascale Computing

Michael Kagan, CTO of Mellanox

Abstract: PetaScale and Exascale systems will span tens-of-thousands of nodes, all connected together via high-speed connectivity solutions. With the growing size of clusters and CPU/GPU cores per cluster node, the interconnect needs to provide not only the highest throughput and lowest latency, but to be able to offload the processing units (CPUs, GPUs) from the communications work in order to deliver the desired efficiency and scalability. Mellanox Scalable HPC solution accelerate MPI and SHMEM environments with smart offloading techniques and deliver the needed infrastructure for faster and more efficient GPU communications. The presentation will cover the latest technology and solutions from Mellanox that connect the world fastest supercomputers, and a roadmap for the next generation InfiniBand speed.

15:30 Coffee Break

15:45 Modern HPC architectures in Europe

Barton Miller, University of Wisconsin

Abstract: I will discuss the problem of developing tools and middleware for large scale parallel environments. We are especially interested in systems, both leadership class parallel computers and clusters that have 100,000's or even millions of processors. The infrastructure that we have developed to address this problem is called MRNet, the Multicast/Reduction Network. MRNet's approach to scale is to structure control and data flow in a tree-based overlay network (TBON) that allows for efficient request distribution and flexible data reductions.

I will then present a brief overview of the MRNet design, architecture, and computational model and then discuss a few of the applications of MRNet. The applications include scalable automated performance analysis, STAT (a scalable stack trace analyzer running currently on 100,000's of processors on both the Cray XT and IBM BlueGene), and Totalview (the most popular and mature parallel debugger).

 LINKSCEEM

Sponsored by:

 ISRAGRID

