

Balaji Subramaniam

Department of Computer Science, Virginia Tech
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Education

Ph.D. Student, Computer Science, Virginia Tech Aug '09 to present
B.E., Computer Science and Engineering, Anna University May '09

Research Interests

My interests lie in the area of parallel computing with emphasis on metrics, models and methodologies for enabling energy-efficient parallel computing. Specifically, I focus on power modeling and prediction, hardware- and software-controlled power management and benchmarking.

Positions Held

Member, Synergy Lab, Virginia Tech
Research focuses on design and definition of metrics, workloads and methodologies to enable energy-efficient parallel computing.

Advisor: Dr. W. Feng Aug '09 to present

Graduate Assistant, Advanced Research Computing (ARC), Virginia Tech
Responsible for user support in ARC. Assistance with system administration and testing.

Supervisor: Dr. B. Kim Spring '12 to present

Research Assistant, Virginia Tech

Initial system configuration, integration, monitoring and support of a GPU-based supercomputer, HokieSpeed, for its LINPACK and CUDA-LINPACK runs for the TOP500 and Green500. HokieSpeed debuted at rank #96 on Top500 and rank #11 on Green500.

Supervisors: Dr. W. Feng and Dr. M. Gardner Fall '11

Summer Intern, Lawrence Livermore National Laboratory (LLNL)

Research included performance modeling based on load latency. The project involved leveraging advance performance counters such as precise event based sampling (PEBS) facility on Intel CPU architecture.

Mentor: Dr. B. Supinski Summer '11

Other Experience

Assistance with the Green500 List Jun '10 to present
Assistance with System Administration for Synergy Lab Jan '11 to present
Teaching Assistant, Computer Science Department, Virginia Tech Aug '09 to May '10
Research Trainee (Part-time), Waran Research Foundation (WARFT), India Aug '07 to Jul '09
Advisor: Prof. N. Venkateswaran

System Administration Skills

Familiar with setup and deployment of Rocks Cluster Distribution on NVIDIA GPU based systems and setup/debugging of Maui/Torque based job scheduling systems. Worked extensively with industry contact to get HokieSpeed setup for running LINPACK benchmark.

Select Publications

1. **B. Subramaniam**, W. Saunders, T. Scogland and W. Feng, Trends in Energy-Efficient Computing: A Perspective from the Green500, Accepted for Publication at the International Green Computing Conference (IGCC), 2013, Arlington, Virginia, USA.
2. **B. Subramaniam** and W. Feng, Towards Energy-Proportional Computing for Enterprise-Class Server Workloads, In the International Conference on Performance Engineering (ICPE), 2013, Prague, Czech Republic. **Best Paper Award Winner.**
3. **B. Subramaniam** and W. Feng, GBench: Benchmarking Methodology for Evaluating the Energy Efficiency of Supercomputers, In the special edition of the Springer Journal of Computer Science on Research and Development (presented at the International Supercomputing Conference (ISC)), 2012, Hamburg, Germany.
4. T. Scogland, **B. Subramaniam** and W. Feng, The Green500 List: Escapades to Exascale, In the special edition of the Springer Journal of Computer Science on Research and Development (presented at the International Supercomputing Conference (ISC)), 2012, Hamburg, Germany.
5. **B. Subramaniam** and W. Feng, The Green Index: A Metric for Evaluating System-Wide Energy Efficiency in HPC Systems, In Workshop on High-Performance Power-Aware Computing (HPPAC) held in conjunction with IPDPS, 2012, Shanghai, China.
6. **B. Subramaniam** and W. Feng, Statistical Power and Performance Modeling for Optimizing the Energy Efficiency of Scientific Computing, In International Conference on Green Computing and Communications (GreenCom), 2010, Hangzhou, China.

References

1. Dr. Wu-chun Feng
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2. Dr. Eli Tilevich
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3. Dr. Mark Gardner
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