JEFFREY K. HOLLINGSWORTH

1. PERSONAL INFORMATION

Professor, University of Maryland
Computer Science Department, UMIACS, and
Electrical and Computer Engineering Department (affiliate)

EDUCATION

- Ph.D. in Computer Sciences
  University of Wisconsin-Madison, August 1994

- Master of Science in Computer Sciences
  University of Wisconsin-Madison, May 1990

- Bachelor of Science in Electrical Engineering and Computer Science
  University of California-Berkeley, May 1988

EMPLOYMENT

07/06-	**Professor** University of Maryland, College Park
8/00-06/06	**Associate Professor** University of Maryland, College Park
8/00-2/01	**Visiting Scientist** IBM T. J. Watson Research Center
8/94 to 8/00	**Assistant Professor** University of Maryland, College Park
6/93 to 7/94	**ARPA High Performance Computing Fellow** University of Wisconsin, Madison
1/89 to 6/93	**Research Assistant** University of Wisconsin, Madison
9/88 to 12/88	**Teaching Assistant** University of Wisconsin, Madison
5/88 to 9/88	**Member of the Technical Staff** TRW, Redondo Beach CA
9/87 to 5/88	**Programmer/Analyst** University of California, Berkeley
Summers 1985-87	**Computer Programmer** TRW, Redondo Beach CA

2. RESEARCH, SCHOLARLY, AND CREATIVE ACTIVITIES

a Books

iii Chapters in Books

- J. K. Hollingsworth, and B. Turney, "Instrumentation and Measurement", in *The Grid: A Blueprint for the New Computing Infrastructure, 2nd Edition*, K. Kesselman and I. Foster, ed., Morgan-Kaufmann, 2003.
- J. K. Hollingsworth, P. Keleher, and K. D. Ryu*, "Resource-Aware Meta-Computing", in *Advances in Computers*, M. Zelkowitz, ed., Academic Press, 2000, pp. 109-169.
- J. K. Hollingsworth, and B. P. Miller, "Instrumentation and Measurement", in *The Grid: A Blueprint for the New Computing Infrastructure*, K. Kesselman and I. Foster, ed., Morgan-Kaufmann, 1998.
- J. K. Hollingsworth, B. P. Miller, and J.E. Lumpp, "Techniques for Performance Measurement of Parallel Programs", *Parallel Computing: Theory and Practice*, T. L. Casavant, ed., IEEE Computer Society Press, 1995.
- B. P. Miller, J. K. Hollingsworth, and M. D. Callaghan, "The Paradyn Parallel Performance Tools and PVM", *Environments and Tools for Parallel Scientific Computing*, SIAM Press, J. Dongarra and B. Tourancheua, eds., 1994.

b Articles in Refereed Journals

- L. Hochstein+, T. Nakamura, V. R. Basili, S. Asgari, M. V. Zelkowitz, J. K. Hollingsworth, F. Shull, J. Carver, M. Voelp, N.o Zazworka, P. Johnson, "Experiments to Understand HPC Time to Development", CTWatch Quarterly, **(2)**4A (Nov. 2006).
- B. Buck* and J. K. Hollingsworth, "A New Hardware Monitor Design to Measure Data Structure-Specific Cache Eviction Information", *International Journal of High Performance Computing Applications, **(20)**6 (Fall 2006).*
- M. Tikir*, and J. K. Hollingsworth, "Efficient Online Computation of Statement Coverage", *Journal of Systems and Software,* **(78)**2 (November 2005), pp. 146-165.
- C. C. Williams* and J. K. Hollingsworth, "Automatic Mining of Source Code Repositories To Improve Bug Finding Techniques", *IEEE Transactions on Software Engineering*, **(31)**6 (June 2005), pp. 466-480.
- K. D. Ryu*, and J. K. Hollingsworth, "Resource Policing to Support Fine-Grain Cycle Stealing in Networks of Workstations", *IEEE Transactions on Parallel and Distributed Systems*, **15**(10) (October 2004), pp. 878-892.
- I. Chung* and J. K. Hollingsworth, "Runtime Selection Among Different API Implementations", *Parallel Processing Letters* **(13)**2 (June 2003) pp. 123-134.
- H. S. Eom*, and J. K. Hollingsworth, "Achieving Efficiency and Accuracy in Simulation for I/O-Intensive Applications", *JPDC*, **(61)**12 (2001), pp. 1732-1750.
- H. S. Eom*, and J. K. Hollingsworth, "A Tool to Help Tune Where Computation is Performed", *IEEE Transactions on Software Engineering*, **(27)**7 (June 2001), pp. 618-629.
- B. Buck* and J. K. Hollingsworth, "An API for Runtime Code Patching", *International Journal of High Performance Computing Applications*, **(14)**4 (Winter 2000), pp. 317-329.

- T. M. Kurc, M. Uysal, H. Eom, J. Hollingsworth, J. Saltz, and A. Sussman "Efficient Performance Prediction for Large-Scale Data Intensive Applications", *International Journal of High Performance Computing Applications*, **(14)**3 (Fall 2000), pp. 217-227.
- K. D. Ryu*, and J. K. Hollingsworth, "Exploiting Fine Grained Idle Periods in Networks of Workstations", *IEEE Transactions on Parallel and Distributed Systems*, **(11)**7 July 2000, pp 683-698.
- J. K. Hollingsworth, and P. Keleher, "Prediction and Adaptation in Active Harmony", *Cluster Computing*, **2**(1999), pp. 195-205.
- E. L. Miller, K. Akala, J. K. Hollingsworth, "Binary Version Management for Computational Grids", *Parallel Processing Letters*, **(9)**2 (June 1999), pp. 215-226.
- J. K. Hollingsworth, "Critical Path Profiling of Message Passing and Shared Memory Programs", *IEEE Transactions on Parallel and Distributed Systems*, **(9)**10 (Oct. 1998), pp. 1029-1040.
- A. Whaeed, D. T. Rover, and J. K. Hollingsworth, "Modeling and Evaluating Design Alternatives for an Online Instrumentation System: A Case Study", *IEEE Transactions on Software Engineering*, **24**(6) (June 1998), pp. 451-470.
- J. K. Hollingsworth, and B. P. Miller, "An Adaptive Cost Model for Parallel Program Instrumentation", *Theoretical Computer Science (TCS)*, **(196)** 1-2 (April 1998), pp. 241-258.
- B. P. Miller, M. D. Callaghan, J. Cargille, J. K. Hollingsworth, R. B. Irvin, K. Karavanic, K. Kunchithapadam, T. Newhall, "The Paradyn Parallel Performance Measurement Tools", *IEEE Computer*, **28** (11) (November 1995), pp. 37-46.
- B. P. Miller, M. Clark, J. Hollingsworth, S. Kierstead, S-S. Lim, T. Torzewski, "IPS-2: The Second Generation of a Parallel Program Measurement System", *IEEE Transactions on Parallel and Distributed Systems*, **1** (2) (April 1990), pp. 206-217.

b' **Articles in Refereed Published Conferences**

- R. Alameh*, N. Zazworka, J. K. Hollingsworth , "Performance Measurement of Novice HPC Programmers' Code", Workshop on Software Engineering for High Performance Computing System (HPCS) Applications, May 2007.
- I-H. Chung*, J. K. Hollingsworth, "A Case Study Using Automatic Performance Tuning for Large-Scale Scientific Programs", International Symposium on High Performance Distributed Computing (HPDC), Paris, June 2006.
- J. Spacco, D. Hovemeyer, W. Pugh, J. K. Hollingsworth, N. Padua-Perez, F. Emad, "Experiences with Marmoset: Designing and Using an Advanced Submission and Testing System for Programming Courses", ITiCSE '06: Proceedings of the 11th annual conference on Innovation and technology in computer science education. ACM Press, June 2006.
- V. Tabatabaee*, A. Tiwari*, J. K. Hollingsworth, "Parallel Parameter Tuning for Applications with Performance Variability", SC'05, Seattle WA, Nov. 2005.
- L. Hochstein+, J. Carver, F. Shull, S. Asgari, V. R. Basili, J. K. Hollingsworth, M. V. Zelkowitz, "Parallel Programmer Productivity: A Case Study of Novice Parallel Programmers", SC'05, Seattle WA, Nov. 2005.
- J. Odom*, L. DeRose, K. Ekanadham, J. K. Hollingsworth, S. Sbaraglia , "Using Dynamic Tracing Sampling to Measure Long Running Programs", SC'05, Seattle WA, Nov. 2005.

- L. Hochstein[+], V. Basili, M. Zelkowitz, J. K. Hollingsworth, J. Carver, "Combining Self-reported and Automatic Data to Improve Programming Effort Measurement", Proceedings of Foundations of Software Engineering (FSE), Lisbon Portugal, Aug. 2005.
- C. Williams[*], and J. K. Hollingsworth, "Recovering System Specific Rules from Software Repositories", Proceedings of The International Workshop on Mining Software Repositories, St. Louis, MO, May 2005.
- S. Asgari, L. Hochstein[+], V. Basili, J. Carver, J. K. Hollingsworth, F. Shull, M. Zelkowitz, "Generating Testable Hypotheses from Tacit Knowledge for High Productivity Computing", Workshop on Software Engineering and High Performance Computing Applications, St. Louis, MO, May 2005.
- M. M. Tikir[*], J. K. Hollingsworth, "NUMA-Aware Java Heaps for Server Applications", Proceedings of IPDPS'05, Denver, CO, April 2005.
- J. K. Hollingsworth, A. Snavely, K. Ekanadham, S. Sbaraglia, "EMPS: An Environment for Memory Performance Studies", Next Generation Software Program Workshop (held in conjunction with IPDPS), Denver, CO, April 2005
- I-H. Chung[*], J. K. Hollingsworth, "Using Information from Prior Runs to Improve Automated Tuning Systems", Proceedings of SC'04, Nov. 2004.
- M. M. Tikir[*], J. K. Hollingsworth, "Using Hardware Counters to Automatically Improve Memory Performance", Proceedings of SC'04, Nov. 2004
- B. R. Buck[*], J. K. Hollingsworth, "Data Centric Cache Measurement on the Intel Itanium 2 Processor", Proceedings of SC'04, Nov. 2004.
- I. Chung[*], and J. K. Hollingsworth, "Automated Cluster-Based Web Service Performance Tuning", Proceedings of HPDC 2004, June 2004.
- C. C. Williams[*] and J. K. Hollingsworth, "Interactive Binary Instrumentation", Proceedings of the Second International Workshop on Remote Analysis and Measurement of Software Systems (RAMSS), May 2004.
- C. Williams[*] and J. K. Hollingsworth, "Bug Driven Bug Finders", The International Workshop on Mining Software Repositories, May 2004.
- S. Asgari, V. Basili, J. Carver, L. Hochstein[+], J. K. Hollingsworth, F. Shull, M. Zelkowitz, "Challenges in Measuring HPCS Learner Productivity in an Age of Ubiquitous Computing", Workshop on Software Engineering for High Performance Computing System (HPCS) Applications, May 2004.
- S. Asgari, V. Basili, J. Carver, L. Hochstein[+], J. K. Hollingsworth, F. Shull, M. Zelkowitz, "Studying Code Development for High Performance Computing: The HPCS Program", Workshop on Software Engineering for High Performance Computing System (HPCS) Applications, May 2004.
- K. D. Ryu[*], and J. K. Hollingsworth, "Unobtrusiveness and Efficiency in Idle Cycle Stealing for PC Grids", Proceedings of IPDPS 2004, April 2004.
- D. Hovemeyer, J. K. Hollingsworth, and B. Bhattacharjee, "Running on the Bare Metal with GeekOS", Proceedings of the ACM Technical Symposium on Computer Science Education, March 2004.
- M. M. Tikir[*], G-Y Lueh, and J. K. Hollingsworth, "Recompilation for Debugging Support in a JIT-Compiler, PASTE'02, Nov 2002.
- L. Derose, K. Ekanadham, J K. Hollingsworth, and S. Sbaraglia, "SIGMA: A Simulator to Guide Memory Analysis", Proceedings of SC'02, Nov. 2002.

- C. Tapus*, I. Chung*, and J. K. Hollingsworth, "Active Harmony: Towards Automated Performance Tuning", Proceedings of SC'02, Nov. 2002.
- M. Tikir*, J. K. Hollingsworth, "Efficient Instrumentation for Code Coverage Testing", Proceedings of ISSTA, July 2002, pp. 86-96.
- K. D. Ryu*, J. K. Hollingsworth, and P. J. Keleher, "Efficient Network and I/O Throttling for Fine-Grain Cycle Stealing", Proceedings of SC'01, Nov. 2001.
- Luiz DeRose, Ted Hoover, and Jeffrey K. Hollingsworth, "The Dynamic Probe Class Library - An Infrastructure for Developing Instrumentation for Performance Tools", IPDPS 2001, April 2001.
- B. Buck*, and J. K. Hollingsworth, "Using Hardware Performance Monitors to Isolate Memory Bottlenecks", SC'2000, Nov. 2000.
- H. Eom*, and J. K. Hollingsworth, "Speed vs. Accuracy in Simulation of I/O-Intensive Applications", *IPDPS'2000*, May 2000, pp. 315-322.
- R. Jaeger*, R. Duncan, F. Travostino, T. Lavian, and J. Hollingsworth, "Dynamic Classification in Silicon-Based Forwarding Engine Environments", *LanMan-99*, October 1999.
- T. Lavian, R. F. Jaeger*, and J. K. Hollingsworth, "Open Programmable Architecture for Java-enabled Network Devices", *Hot Interconnects*, Aug. 1999, pp. 265-277.
- K. D. Ryu*, J. K. Hollingsworth, and P. J. Keleher, "Mechanisms and Policies for Supporting Fine-Grained Cycle Stealing", *International Conference on Supercomputing*, Rhodes, Greece, June 1999, pp. 93-100.
- J. K. Hollingsworth and S. Maneewongvatana*, "Imprecise Calendars: An Approach to Scheduling Computational Grids", *International Conference on Distributed Computing Systems*, Austin, TX, June 1-4, 1999, pp. 352-359.
- P. J. Keleher, J. K. Hollingsworth, and D. Perkovic, **"**Exposing Application Alternatives", *International Conference on Distributed Computing Systems*, Austin, TX, June 1999, pp. 384-392
- D. I. Kang+, R. Gerber, L. Golubchik, J. K. Hollingsworth, and M. Saksena, "A Software Synthesis Tool for Distributed Embedded System Design", *SIGPLAN Workshop on Languages, Compilers, and Tools for Embedded Systems (LCTES)*, Atlanta, May 1999, pp. 87-95.
- A. Mink, W. Salamon, R. Arunachalam*, and J. K. Hollingsworth, "Performance Measurement using Low Perturbation and High Precision Hardware Assists", *1998 Real Time Systems Symposium*, Madrid, Dec. 1998, pp. 379-388.
- K. D. Ryu* and J. K. Hollingsworth, "Linger Longer: Fine-Grain Cycle Stealing for Networks of Workstations", *Proceeding of SC'98*, Orlando, Nov. 1998.
- K. Akala, E. L. Miller, and J. K. Hollingsworth, "Using Content-Derived Names for Package Management in Tcl", *1998 USENIX Tcl/Tk Conference*, San Diego, Sept. 1998, pp. 171-179.
- J. K. Hollingsworth and P. Keleher, "Prediction and Adaptation in Active Harmony", *High Performance Distributed Computing*, Chicago, July 28-31, 1998, pp. 180-188.
- H. Eom* and J. K. Hollingsworth, "LBF: A Performance Metric for Program Reorganization", *International Conference on Distributed Computing Systems*, Amsterdam, May 26 - 29, 1998, pp. 229-229.

- J. K. Hollingsworth, E. Guven*, and C. Akinlar*, "Benchmarking a Network of PCs Running Parallel Applications", *IEEE International Performance, Computing, and Communications Conference,* Feb. 1998, Tempe, Arizona, pp. 1-7.
- J. K. Hollingsworth, B. P. Miller, M. Gonccalves, O. Naim, Z. Xu, and L. Zheng "MDL: A Language and Compiler for Dynamic Program Instrumentation", *International Conference on Parallel Architectures and Compilation Techniques,* Nov 1997, San Francisco, pp. 201-212.
- J. K. Hollingsworth and E. L. Miller, "Using Content-Derived Names for Configuration Management", *ACM Symposium on Software Reusability*, Boston, MA, May 1997, pp. 104-109.
- A. Waheed, D. Rover, and J. K. Hollingsworth, "Modeling, Evaluation, and Testing of Paradyn Instrumentation System", *Supercomputing'96*, Pittsburgh, PA, November 1996.
- J. K. Hollingsworth and B. P. Miller, "An Adaptive Cost Model for Parallel Program Instrumentation", *Euro-Par'96*, Lyon, France, August 1996, pp. 88-98.
- J. K. Hollingsworth, "An Online Computation of Critical Path Profiling", *ACM SIGMETRICS Symposium on Parallel and Distributed Tools*, May 1996, pp. 11-20.
- A. Acharya, M. Uysal, R. Bennett, A. Mendelson, M. Beynon, J. K. Hollingsworth, J. Saltz, and A. Sussman "Tuning the Performance of I/O Intensive Parallel Applications", *4th ACM Workshop on I/O in Parallel and Distributed Systems*, May 1996, pp. 15-27.
- J. K. Hollingsworth, B. P. Miller, and J. Cargille, "Dynamic Program Instrumentation for Scalable Performance Tools", *Proceedings of the 1994 Scalable High Performance Computing Conference*, May 1994, pp. 841-850.
- J. K. Hollingsworth and B. P. Miller, "Dynamic Control of Performance Monitoring on Large Scale Parallel Systems", *7th ACM International Conference on Supercomputing* July 1993, pp. 185-194.
- J. K. Hollingsworth and B. P. Miller, "Parallel Program Performance Metrics: A Comparison and Validation", *Supercomputing'92*, Nov. 1992, pp. 4-13.
- J. K. Hollingsworth, R. B. Irvin, and B. P. Miller, "The Integration of Application and System Based Metrics in a Parallel Program Performance Tool", *3rd ACM SIGPLAN Symposium on Principals and Practice of Parallel Programming,* April 1991, pp. 206-217.

* Indicates a student, or Postdoc directly supervised by Dr. Hollingsworth.

+ Indicates a student co-advised by Dr. Hollingsworth.

e Talks, Abstracts, and Other Professional Papers Presented

i Invited Talks

"Three Questions To Ask About Clusters", Panel Presentation, Workshop on Clusters and Computational Grids for Scientific Computing 2006, Ashville, NC, September 2006.

"Active Harmony: Getting the Human Out of the Performance Tuning Loop", ScalPerf'06 Workshop, Bertinoro, Italy, September 2006.

"Grid Computing", IEEE Computer Society of Northern Virginia/Washington, College Park, MD, March 2006.

"Active Harmony: Parallel Automated Tuning of Parallel Programs", Dagstuhl Workshop on Parallel Tools, Germany, December 2005.

"From Hypotheses to Insight: Status of the Development Time Working Group", HPCS Workshop talk, Seattle WA, November 2005.

"Using Hardware Monitors to Improve Data Placement on NUMA Shared Memory Systems", Los Alamos Computer Science Institute (LACSI) Workshop on Performance and Productivity of Extreme Scale Systems, Santa Fe, NM, October 2005.

"EMPS: An Environment for Memory Performance Studies", Next Generation Software Workshop, Denver, CO, April 2005.

"Hardware Performance Monitors: Beyond Counting Events", Workshop on Clusters and Computational Grids for Scientific Computing, Le Chateau de Faverges de la Tour, France, September 2004.

"Active Harmony: Towards Automated Performance Tuning", LBL Workshop on Performance, Oakland, CA May 2004.

"Runtime Binary Modification Tools", IDA CCS, Bowie Maryland, December 2003.

"Bug Driven Bug Finders", Dagstuhl Workshop on Program Dynamics, Germany, December 2003.

"Opportunities and Challenges in Automatic Performance Tuning", Apart Workshop, November 2003.

"Runtime Binary Modification Tools", Cigital Corporation, Virginia, October 2002.

"Active Harmony: Towards Automated Performance Tuning", Workshop on Clusters and Computational Grids for Scientific Computing, Le Chateau de Faverges de la Tour, France, September 2002.

"Runtime Code Modification Tools", Blekinge Institute of Technology, Sweden, May 2002.

"Runtime Code Modification Tools", MITRE Corporation, April 2002.

"Instrumentation and Performance Analysis for Finding Memory Bottlenecks", LACSI Workshop on Tools for Performance Analysis of large Scale Applications, October 2001.

"Using Hardware Performance Monitors to Isolate Memory Bottlenecks", Sun Microsystems, Feb. 2001.

"Using Hardware Performance Monitors to Isolate Memory Bottlenecks", IBM Austin, Mar. 2001.

"Σ: SImulation Guided Measurement and Analysis", IBM T. J. Watson Research Center, January 2001.

"Σ: SImulation Guided Measurement and Analysis", Universität Karlsruhe, December 2000.

"Runtime Program Evolution", US-Venezuela Workshop on High Performance Computing, Puerta La Cruz, Venezuela, April 2000.

"Active Harmony: A framework for Adaptable Adaptations", Microsoft Research, February 2000.

"Runtime Program Evolution", National Security Agency, February 2000.

"Dyninst and Active Harmony: Evolving Programs During Execution", Apart Workshop, November 1999.

"Dyninst and DPCL", Lawrence Livermore National Laboratory, November 1999.

"Dyninst and DPCL", Los Alamos National Laboratory, July 1999.

"Application Binaries: Management and Manipulation", Georgia Tech, Oct. 1998.

"Linger-Longer: Fine-Grain Cycle Stealing for Networks of Workstations", NAS Workshop on Performance Engineered Systems, NASA Ames, Sept. 1998.

"Content-Derived Names: Automatic Management of Multiple Versions of Software Libraries", Microsoft Research, Sept. 1998.

"Content-Derived Names: Automatic Management of Multiple Versions of Software Libraries" at Workshop on Clusters and Computational Grids for Scientific Computing, Knoxville, TN. Sept. 1998.

"Online 'what-if' metrics" at Technische Universität München, June 1998.

"Management of Critical Systems", Panel on Critical Systems at Configurable Distributed Systems Conference, Annapolis, May 1998.

"Content-Derived Names: Automatic Management of Multiple Versions of Software Libraries" at Korea-U.S. Science & Technology Symposium, Chicago, April 1998.

"Tools to Help Parallel Programmers Evaluate Tuning Alternatives" at Sun Microsystems, Mountain View CA, Nov. 1997.

"Tools to Help Parallel Programmers Evaluate Tuning Alternatives" at NASA Ames Research Center, Moffit Field CA, Sept. 1997.

"Instrumentation and Measurement", at the Workshop on Building a Computational Grid, Argonne National Labs, Sept. 1997.

"Online 'what-if' Metrics" at Johns Hopkins Medical Center, Baltimore, MD, April 1997.

"Internet: The Technology behind the Hype", Mathematics Department, University of Maryland, April 23, 1997.

"Online 'what-if' Metrics" at University of Wisconsin, Madison, WI, Feb. 1997.

"Tuning the Performance of I/O Intensive Parallel Applications" at Information Sciences Institute, Marina Del Rey, CA, Jan. 1996.

"Performance Debugging of Parallel and Distributed Systems" at Hughes Networking Systems, Germantown, MD, Dec. 1995.

"Paradyn Parallel Performance Tools" at IBM T. J. Watson Research Center, Yorktown Heights, NY, Sept 1995.

"Online Semi-automatic Performance Debugging", at SIGMETRICS '95 Hot topics panel session, Ottawa, Canada, May 1995.

"Performance Tools for Large Scale Parallel Computers" at Brown University, Providence, RI, April 1993.

"Performance Tools for Large Scale Parallel Computers" at Center for High Performance Computing, Marlborough, MA, April 1993.

"The IPS-2 Parallel Performance Monitoring Tools" at Informix Inc., Portland, OR, January 1992.

"Parallel Programming Tools" at the Conferencia International de Computaciòn Avanzada, Viña del Mar, Chile, October 1991.

Contracts and Grants

"Tools for the Development of High-Performance Energy Applications" (renewal), *Department of Energy*, Principal Investigator, January 2006 – January 2009, $845,000.

"Dynamic Instrumentation API Development & Evaluation" (renewal), Lawrence Livermore National Lab, Principal Investigator, July 2005 – May 2006, $65,000.

"Empirical Studies for High Performance Computing," AFSRC, *Co-Principal Investigator*, $900,000, March 2005 – March 2008.

"High-End Computer System Performance Science and Engineering" (rewnewal), *Department of Energy, Principal Investigator*, September 2004 – September 2006, $550,000.

"Performance Measurement & Modeling of Deep Hierarchy Systems," *National Science Foundation, Principal Investigator*, August 2004- July 2008, $800,000.

"Empirical Studies for High Performance Computing," *NASA Ames*, Co-Principal Investigator, June 2004- November 2004, $150,000.

"SUR Grant: IBM Power 8-way Multi-processor Server", IBM Corporation, Aug 2003, $400,000.

"Tools for the Development of High-Performance Energy Applications", *Department of Energy*, Principal Investigator, September 2002 – December 2005, $784,636.

"Dynamic Instrumentation API Development & Evaluation" (renewal), Lawrence Livermore National Lab, Principal Investigator, May 2002 – September 2005, $150,000.

"A Cross-platform Infrastructure for Scalable Runtime Application Performance Analysis", *Department of Energy MICS, Principal Investigator*, September 2001-March 2005, $464,572.

"High-End Computer System Performance Science and Engineering", *Department of Energy, Principal Investigator*, September 2001 – September 2004, $770,913.

"System Support for Enterprise Application Servers", *National Science Foundation, Co-Principal Investigator*, September 2000 – August 2004, $861,000.

"High Performance Systems for Shape & Action Modeling", *National Science Foundation, Co-Principal Investigator*, September 1999-August 2002, $1,096,011.

"Tools for the Development of High-Performance Energy Applications", *Department of Energy*, Principal Investigator, August 1999 – September 2002, $747,634.

"Dynamic Instrumentation API Development & Evaluation", Lawrence Livermore National Lab, Principal Investigator, May 1999 – May 2002, $125,000.

"Distributed Performance Evaluation", *NIST*, Principal Investigator, Sept 1998 - Sept 2000, $199,000.

"Active Harmony: Dynamic Resource Management in the Large", *National Science Foundation*, Principal Investigator (with P. Keleher), Sept. 1997 - Aug. 2001, $200,000.

"Performance Prediction and Modeling of Computer and Data Intensive Applications on Current and Future Higher Performance Architectures", *DARPA*, Co-Principal Investigator (with J. Saltz and A. Argawala), April 1997 - September 1999, $1,400,000.

"Online Measurement, Evaluation and Adaptation of Parallel Applications", *National Science Foundation*, Principal Investigator, March 1997 - February 2002, $243,000.

"Dynamic Resource Management", *NSA*, Principal Investigator (with P. Keleher), March 1997 - Aug 2001, $250,000.

"Tools for the Development of High-Performance Energy Applications", *Department of Energy*, Principal Investigator, September 1996 – September 1999, $223,085.

"Performance Monitoring of I/O Intensive Parallel Applications", *General Research Board of Graduate Studies and Research*, *University of Maryland*, Principal Investigator, June 1995 - September 1995, $6,250.

"Performance Monitoring of I/O and Compute Intensive Applications", *National Institutes of Standards and Technology*, Principal Investigator (with J. Saltz), May 1995 - December 1996, $83,000.

j Fellowships, Prizes and Awards

Senior Member IEEE, 2003

IBM Faculty Partnership Award, 2001

Best Paper (Software) – IPDPS, 2000

Computer Science Department Teaching Award, 1998

NSF Faculty Early Career Development Award, 1997-2002

ARPA Fellowship in High Performance Computing, 1993-1994

International Information Science Foundation Travel Fellowship, 1993

k Editorial Boards and Reviewing Activities for Learned Publications

Editorial Boards

North American Editor, *Parallel Computing*, 2005-

Reviewing Activities

AADEBUG 2005

ACM Computing Surveys

ACM Transactions on Computer Systems

ACM Transactions on Software Engineering

HPCC, 2007-06-08

IEEE Communications

IEEE Computer

IEEE Parallel and Distributed Technology

IEEE Transactions on Parallel and Distributed Systems

Europar 1998-2004

Journal of Supercomputing Applications

PLDI, 2006

Software Practice and Experience

Supercomputing, 1993-05

Symposium on Parallel and Distributed Systems, 1996-8

International Parallel Processing Symposium, 1994, 1998

SIGMETRICS 1995-8

SPAA'97

IPDPS, 1999-2001, 2004-2005

ICSE, 2005-2006

l **Software Distributions**

- **Active Harmony:** An environment for creating adaptable, self tuning parallel programs.
- **Dyninst:** A C++ class library for platform independent runtime executable editing. Released on the Internet, and licensed by IBM and in negotiation with several other companies to commercialize it.
- **Grindstone:** A test suite for debugging and benchmarking parallel performance tools. Released on the Internet, and in used by several tools projects in the United States and Europe.
- **START:** A web based paper submission and review package. Used by to manage paper reviews for more than 40 research conferences in the US and internationally.

3. TEACHING AND ADVISING

a **Courses**

ii **Specialized Courses**

Semester	Course	# students	Description
Fall, 1994	CMSC 311	45	Computer Organization
Spring, 1995	CMSC 818J	25	Tools for Parallel Computing
Fall, 1995	CMSC 311	77	Computer Organization
Spring, 1996	CMSC 412	37	Operating Systems
Fall, 1996	CMSC 818Z	20	Introduction to Parallel Computing*
Spring, 1997	CMSC 417	31	Computer Networks*
Fall, 1997	CMSC 417	30	Computer Networks
Spring, 1998	CMSC 412	30	Operating Systems
Spring, 1999	CMSC 818Z	15	Introduction to Parallel Computing
Fall, 1999	CMSC 417	28	Computer Networks
Spring, 2000	CMSC 714	12	High Performance Computing
Fall, 2001	CMSC417	45	Computer Networks
Spring, 2002	CMSC412	50	Operating systems
Fall, 2002	CMSC714	12	High Performance Computing
Spring, 2003	CMSC412	40	Operating systems
Fall, 2003	CMSC714	16	High Performance Computing
Spring, 2004	CMSC412	55	Operating systems (two sections)
Spring, 2005	CMSC212	30	Introduction to System Programming*
Fall, 2006	CMSC714	18	High Performance Computing
Spring, 2007	CMSC212	52	Introduction to System Programming

* New Course Development

iv **Independent Studies**

Semester	Course	# students	Description
Spring, 1995	CMSC 386	1	Experiential Learning
Fall, 1995	CMSC 386	3	Experiential Learning
Spring, 1996	CMSC 386	4	Experiential Learning
Fall, 1996	CMSC 386	3	Experiential Learning
Spring, 1997	CMSC 818A	2	Advanced Operating Systems
Fall, 1997	CMSC 899	4	Topics in Parallel Computation
Spring, 1998	CMSC 899	4	High Performance Distributed Computing
Fall, 1999	CMSC 899	4	Topics in High Performance Computing
Spring, 1999	CMSC 899	3	Topics in Distributed Computing
Fall, 1999	CMSC 899	5	Topics in Distributed Computing
Spring, 2000	CMSC 899	5	Topics in Distributed Computing
Fall, 2001	CMSC 899	4	Topics in Distributed Computing
Spring, 2002	CMSC 899	4	Topics in Distributed Computing
Fall, 2002	CMSC 899	4	Topics in Distributed Computing
Spring, 2003	CMSC 899	4	Topics in Distributed Computing
Fall, 2003	CMSC 899	4	Topics in Distributed Computing
Spring, 2004	CMSC 899	4	Topics in Distributed Computing
Fall, 2004	CMSC 899	4	Topics in Distributed Computing
Spring, 2005	CMSC 899	4	Topics in Parallel Computing
Fall, 2005	CMSC 899	4	Topics in Parallel Computing
Spring, 2006	CMSC 899	4	Topics in Parallel Computing
Fall, 2006	CMSC 899	4	Topics in Parallel Computing
Spring, 2007	CMSC 899	3	Topics in Parallel Computing

b Course or Curriculum Development

CMSC 212 – Introduction to Systems Programming (2005)

Developed this new course from scratch. Selected textbook, developed syllabus, created projects (and reference solutions), and developed Powerpoint slides for all lectures. Materials have already been used by J. Plane to teach a second section of this course, and will be used in future semesters.

CMSC 311 - Computer Organization (1994)

Added a programming project and development of WWW pages with complete lecture notes and problems sets. Problem sets, lecture notes, and WWW pages have been used every semester.

CMSC 412 - Operating Systems (1996 & 2002)

Created WWW pages for lecture notes and project materials. Developed a new project based on using bocks x86 simulator. The project includes new assignments on memory management (and paging), file systems, and interposes communication. New project materials have been used by two faculty at UMD and several faculty at other universities.

CMSC 417 - Computer Networks (1997)

Completely revamped this course. Adopted a new text book, created lecture materials including WEB content for each lecture. Created a semester long programming project that requires students to design and implement a network protocol stack including a simulated IPv6 network layer and a reliable transport protocol. The project is intended to foster both design and implementation skills. As a result, the project description is intentionally vague and requires students to define many of their interfaces and select between multiple implementation options. Students work in small teams and are required to write both preliminary and revised design documents.

CMSC 818Z (now CMSC 714) - Introduction to Parallel Computing (1996)

Created a new course to provide first year graduate students with a broad introduction to parallel computing including computer architecture, system software, compilers, and tools. The class combines readings from a textbook with recent and seminal papers from the field. In addition, students work in teams to develop a mini-research project in the area of parallel computing. The project requires the students to define a problem, research it, implement or simulate their solution, quantitatively evaluate their results, and present their findings in a written paper and orally at an end of semester mini-conference.

CS Intro Course Sequence Committee – (Fall 2003- present)

Worked with several other colleagues to develop three new introductory computer science courses. We developed new syllabi, selected books, designed projects, and developed lecture material. In addition, I developed a new web-based computer system to allow recording of grades, secure student access to view their grades, and support the workflow of grading and re-grading assignments.

c Other Contributions to Teaching

Developed a web-based grading system (grades.cs.umd.edu) that allows automation of grading, returning, and re-grading assignments for Computer Science courses.

Created the *DSSL* (*Distributed Systems Software Laboratory* - a dual use (instruction and research) laboratory that uses COTS (Commodity Off The Shelf) hardware and software for parallel and distributed computation. The lab is equipped with ten duall processor AMD machines and ten Intel Pentium family machines with 100 Mb Ethernet and 1.2 Gbps Myrinet links connecting the machines to each other and to the parallel computing resources of the Institute for Advanced Computer Studies. To date this lab has been used to support four senior honors projects, several graduate classes, and the research activities of four faculty members and over two dozen graduate students. The lab is supported with financial and in-kind donations from the Computer Science Department, UMIACS, AITS, NSF and Microsoft.

e Advising: Non-research Direction

ii Graduate (Ph.D. Committees)

Sheng-Tzong (Steve) Cheng, 1995
Wayne Kelly, 1996
Seonho Choi, 1997
Ladan Gharai, 1998
Björn Þ. Jónsson, 1998
Sung Lee, 1998
Evan Golub, 1999
Tatiana Shpeisman, 1999

Mustafa Uysal, 1999
Mohamed Aboutabl, 1999
Kritchalach Thitikamol, 2000
Chialin Chang, 2001
Magnus Broberg (Blekinge Institute of Technology, Sweden) – Opponent, 2002
Dejan Perkovic, 2002
Neal Kumar Bambha, 2004
David Hovemeyer, 2005
Vida Kianzad (ECE), 2006
Lorin Hochstein, 2006
Jaime Spacco, 2006
Beomeok Nam, current
Taiga Nakamura, current
Nick L. Petroni, current

f Advising: Research Direction

i Undergraduate

Vanessa Heppo (honors thesis, "Device Driver optimization") 1995-1996.

Marshall Pratt (honors thesis, "Instrumenting the Windows 95 Filesystem"), 1995-1996.

Michael Steele (honors thesis, "Grindstone: A Test Suite for Parallel Performance Tools") 1996.

Dave Ross (honors thesis, "Measuring the Performance of the NTFS Filesystem") 1996-1997.

ii Masters

Li Zhang, 1995-1996

Ramu Arunachalam, 1996-1998

Cristian Tapus, 1999-2001

ii Doctoral

Dong-In Kang (co-advisor with R. Gerber), 1999
Thesis: "Automated Design Techniques for Distributed Real-Time Embedded Systems"

Kyungdong Ryu, 2001
Thesis: "Exploiting Idle Cycles in Networks of Workstations"

Bryan R. Buck, 2004
Thesis: "Applying Hardware and Software Instrumentation to the Measurement of Cache Behavior"

I-Hsin Chung, 2004
Thesis: “Towards Automatic Performance Tuning”

Mustafa Tikir, 2005
Thesis: “Using Hardware Monitors to Automatically Improve Memory Performance”

Chadd Williams, 2006
Thesis: “Using Historical Data From Source Code Revision Histories to Detect Source Code Properties”

Jeffrey Odom, 2003 to present

Nick Rutar, 2004 to present

Ananta Tiwari, 2005 to present

Tugrul Ince, 2006 to present

4. SERVICE

a Professional

ii Unpaid reviewing activities for agencies

Proposal reviewer, NSF 1995-2005.

DOE Proposal reviewer, 2003.

iv Other non-University Panels

Scatter Gather Track Chair, SC’07

Program Committee, HPCC’06

Program Committee, HPDC’05

Program Committee, AADEBUG’05

Program Committee, IPDPS 2001, 2003, 2005

Program Committee, SC’00, SC’04, SC’05

Program Committee, The Grid Workshop’05

Program Committee, EuroPar’04

Co-Chair Masterworks (invited talks), SC’04

Track General Chair, EuroPAR’03

Organizing Committee, SC’2002, SC’04, SC’06

Program Committee, Feedback-Directed Optimization workshop 2000

Program Committee, Dynamo’00

Program Committee, 1999 International Conference on Parallel Processing.

Tutorial Program Committee, SC’98, SC’99.

Program Committee Chair, 1998 ACM Symposium on Parallel and Distributed Tools.

Program Committee, 1998 IEEE Real-Time Systems Symposium.

Proceedings Chair, 1996 ACM Symposium on Parallel and Distributed Tools.

National Science Foundation Panels, 1995, 1999, 2001-2005.

b University

i Department

Director, UMIACS Center for Human Enhanced Secure Systems (CHESS), 2004-2006

UMIACS APT Committee, 2004-2005

Managed Access Gird Room Renovations and Installation, 2005

Teaching Evaluation Committee, 2004-05

Graduate Student Placement Committee, 2004-2005

Space Utilization Committee, Chair, 2004

Committee to Revise Intro Programming Courses, 2003-2005

Department Representative to Student Honor Council, 2004

Graduate Student Admissions Committee, 2004

Department Liaison to Construction Team for Building Addition, 1999-2004

Department Council, 2001-2002, 2006-2007

Steering Committee Center for Computational Science and Mathematical Modeling,1999-2001

Chair Computing Facilities Committee, 1998-1999

Lecture to student ACM Chapter, "Internet: The Technology Behind the Hype", 1997.

Graduate Admissions Committee, 1997.

Computing Facilities Committee, 1994-1999, 2001-2002.

Search Committee for Director of Computing Facilities, 1997.

Search Committee for Research Programmer, 1995-1997.

Director 6th Annual High School Programming Contest, 1996.

Coordinated Graduate Orientation, 1995.

Judge Annual High School Programming Contest, 1995-1998.

ii **College**

Appointments, Promotions & Tenure Committee, 2006-

c **Community**

Board of Directors, Habitat for Humanity of Montgomery County, 1995-2007
Chair of the board (2005-2007)

Board of Trustees, River Road Unitarian Church, 2003-2006
Chair of the board (2005-2006)

Board of Directors, Interfaith Housing Partnership, 1998-2000.

I certify this CV is accurate and complete – **January 19, 2007**

Jeffrey K. Hollingsworth