

# BRYAN R. BUCK

## *Curriculum Vitae*

### **Office address**

Department of Computer Science  
A.V. Williams Building  
University of Maryland  
College Park, MD 20742  
USA  
Phone: +1 301-405-8162  
Fax: +1 301-405-6707

### **Home address**

10609 Faulkner Ridge Circle  
Columbia, MD 21044-2232  
USA

buck at cs dot umd dot edu

### **Research Interests**

Performance evaluation tools, parallel and distributed computing, operating systems, multimedia, mobile computing.

### **Education**

**Ph.D. Candidate, Computer Science**, The University of Maryland, College Park. Degree expected Fall 2003. Dissertation: Applying Hardware and Software Instrumentation to the Measurement of Cache Behavior. Advisor: Dr. Jeffrey Hollingsworth.

**M.S., Computer Science**, The University of Maryland, College Park, 1996.

**B.S., Computer Science**, The University of Maryland, College Park, 1992.

**B.A., East Asian Languages and Literatures**, The University of Maryland, College Park, 1992. Specialization in Japanese.

### **Experience**

**Research Assistant**, The University of Maryland, College Park, Maryland, USA, 1996 – present. Advisor: Dr. Jeffrey K. Hollingsworth. Major projects:

- Participated in developing the Dyninst API, a general-purpose library that allows a user to insert instrumentation into and remove instrumentation from a running application. The API is machine-independent, allowing the creation of tools that run on multiple platforms.
- Studied the use of existing and proposed hardware performance counters to determine the cache behavior of source code level data structures. This included simulating a system that could provide information about the data that is evicted from the cache at the time of a cache miss, as well as using the hardware performance counters on IBM POWER processors to gather data structure-specific information about cache misses.
- Studied the performance of Dyninst API instrumentation code using the hardware performance counters on x86 processors. Studied the interaction of instrumentation code and processor features, such as the data and

instruction caches, with the goal of producing less intrusive instrumentation.

**Software Engineer**, Trusted Information Systems, Glenwood, Maryland, USA, 1988-1993 and 1995-1996. Major projects:

- Wrote support software for a secure communications device under IBM Secure Xenix (later renamed Trusted Xenix).
- Involved in the successful effort to gain a U.S. government B2 security rating for Trusted Xenix. This included implementing changes to the operating system and assisting with the documentation.
- Development work on Trusted Mach, including trusted components and device drivers, as well as writing technical documents to support a U.S. government review of the security of the operating system and hardware platform.

## **Publications**

“Using Hardware Performance Monitors to Isolate Memory Bottlenecks.” Buck, B. R. and Hollingsworth, J. K. SC 2000, November 2000, Dallas, TX.

“An API for Runtime Code Patching.” Buck, B. R. and Hollingsworth, J. K. Journal of High Performance Computing Applications, 14 (4) (Winter 2000), pp. 317-329.

“Locality and Performance of Page- and Object-Based DSMs.” Buck, B. and Keleher, P. Proceedings of the 12<sup>th</sup> International Parallel Processing Symposium & 9<sup>th</sup> Symposium on Parallel and Distributed Computing (IPPS/SPDP), March 1998, Orlando, FL.

## **Presentations**

“Hardware Support for Data Centric Cache Measurements.” Buck, B. R. and Hollingsworth, J. K. Paradyn/Condor Week, 2002, The University of Wisconsin, Madison, WI.

“Using Hardware Monitors to Measure the Cache Eviction Behavior of Application Data Structures.” Buck, B. R. and Hollingsworth, J. K. Lawrence Livermore National Laboratory, November 2001, Livermore, CA.

“Using Hardware Performance Monitors to Isolate Memory Bottlenecks.” Buck, B. R. and Hollingsworth, J. K. SC 2000, November 2000, Dallas, TX.

“Towards Measuring Memory Hierarchy Effects by Region.” Buck, B. R. and Hollingsworth, J. K. Paradyn Week, 1999, The University of Wisconsin, Madison, WI.

“Locality and Performance of Page- and Object-Based DSMs.” Buck, B. and Keleher, P. Proceedings of the 12<sup>th</sup> International Parallel Processing Symposium

& 9<sup>th</sup> Symposium on Parallel and Distributed Computing (IPPS/SPDP), March 1998, Orlando, FL.

“Performance of Runtime Instrumentation and Its Interaction with Processor Features.” Buck, B. R. and Hollingsworth, J. K. Paradyn Week, 1998, The University of Wisconsin, Madison, WI.

“An API for Runtime Code Patching.” Buck, B. R. and Hollingsworth, J. K. Presented at Paradyn Week, 1997, The University of Wisconsin, Madison, WI.

### **Awards and Honors**

University of Maryland Graduate Fellowship, 1992.

G.E. Information Systems Scholarship, 1990.

### **References**

Available upon request.

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