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Matthew Carl Merten

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CAREER GOAL: A challenging role in state-of-the-art research and development in the fields of computer architecture and compiler technology, with emphasis on the interaction between the hardware and software.

EDUCATION: **University of Illinois at Urbana-Champaign** – *Advisor: Professor Wen-mei Hwu*
 Expected M.S. completion in August 1999, thesis title: "A Framework for Profile-Driven Optimization in the IMPACT Binary Reoptimization System"
 Pursuing Ph.D. in Electrical Engineering researching runtime optimization technologies
 3.97 / 4.0 Grade Point Average

Graduated in May 1996 w/ Highest Honors and as an Edmund J. James Scholar
 Bachelor of Science in Computer Engineering
 3.95 / 4.0 Grade Point Average

EMPLOYMENT: **University of Illinois at Urbana-Champaign**
 May 1996 - Present
Center for Reliable and High Performance Computing
IMPACT Compiler Research Group – *Research focus on runtime optimization technologies*

- Binary executable re-optimizer for x86 architecture applications
- Advanced code generator development for x86 architecture processors

Summer 1997
Hewlett-Packard – Cupertino, California
Intern in Software Migration Group

- Developed software object-file migration techniques for PA-RISC binaries
- Explored trace selection methods in PA-RISC binaries
- Developed an time and space efficient register allocator for tree-structured regions

Summer 1995
Unisys Corporation - Roseville, Minnesota
Intern in Unisys 2200/3800 Memory Storage Group

- Investigated and improved gate testability coverage in a mainframe second-level cache Application Specific Integrated Circuit (ASIC)
- Investigated effects of various of logic optimizations on the ASIC with the tool *synopsys*

Summer 1994
Intern in System Definition and Analysis, and Compiler Products

- Designed a multitasking C program to replay an I/O field sample. An individual project, with extensive documentation, completed at the end of the summer

Summer 1993

- Mainframe C compiler front-end debugging and development

HONORS and ACTIVITIES:

- *Eta Kappa Nu* Electrical and Computer Engineering Honor Society Officer: Course Review Guide Chair, Most Outstanding Officer Award
- Graduated with Highest Honors, Engineering James Scholar, Dean's List
- E. C. Jordan Award for Outstanding Scholarship and Research Potential
- Babcock and Wilcox Scholarship from the ECE Department
- Engineering Employment EXPO Scholarship from Electronic Data Systems
- NSF Graduate Fellowship Honorable Mention
- LEGObot/Microprocessor Project
- InterVarsity Christian Fellowship: Bible Study Leader

RELEVANT COURSE WORK:

- Advanced Computer Architecture, VLSI Design, Digital Systems, Logic Design, Fault Tolerant Computing
- Microcomputer Lab, Operating Systems, Algorithms Design, Chip Testability
- C++ Programming, Programming Language Design, Intel x86 Assembly

REFERENCES: Professor Wen-Mei Hwu: University of Illinois: 1308 West Main Street, Urbana, IL 61801
Elizabeth Sanville: Hewlett Packard: *details provided upon request*

- PUBLICATIONS:**
- "A Hardware-Driven Profiling Scheme for Identifying Program Hot Spots to Support Runtime Optimization," Matthew C. Merten, Andrew R. Trick, Christopher N. George, John C. Gyllenhaal, and Wen-mei W. Hwu, Proceedings of the 26th International Symposium on Computer Architecture, May, 1999
 - "Run-time Spatial Locality Detection and Optimization," Teresa L. Johnson, Matthew C. Merten, and Wen-mei W. Hwu, Proceedings of the 30th International Symposium on Microarchitecture, December, 1997.