Clayton Ferner

Department of Computer Science
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1 EDUCATION

Ph.D., Mathematics & Computer Science, University of Denver, 1997
High Performance Parallel Computing for Scientific Applications
Thesis: "Automatic Choice of Scheduling Heuristic for Parallel/Distributed Computing"

M.S., Computer Science, University of Denver, 1991
Thesis: "The Hyperbanyan Network"

B.S., Wake Forest University, 1987
Major: Business; Minor: Computer Science; Dean's List

2 PROFESSIONAL EXPERIENCE

2.1 Teaching Experience

Assistant Professor — **UNIVERSITY OF NORTH CAROLINA AT WILMINGTON** — **Wilmington, NC**
Department of Computer Science — **8/99 to present**
Non-Tenured / Tenure-Track Assistant Professor.

Courses Taught:
CSC 121 Introduction to Computer Science
CSC 342 Operating Systems
CSC 332 Data Structures

Teaching Honors and Achievements:
Named by one or more graduating students in December 2000 as the one person whose impact on them was significant.

Instructor/TA — **UNIVERSITY OF DENVER** — **Denver, CO**
Department of Mathematics and Computer Science — **1/90 to 11/94**

Summer Courses Taught:
COMP 3400 Advanced UNIX Tools
COMP 3705 Special Topics in Programming: Introduction to C Programming

Teaching Assistant:
MATC 0100-(1,2) Math Core Labs
COMP 1671 Introduction to Computer Science I
COMP 3361 Operating Systems I
COMP 4362 Operating Systems II
COMP 3351 Programming Languages
COMP 3381 Software Engineering I
MATH 1950 (1,2,3) Calculus
MATH 1955 (1,2,3) Honors Calculus

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2.2 Industry Experience

Member of Technical Staff — **LUCENT TECHNOLOGIES, INC.** — **Westminster, CO**
System Verification Department — **2/96 to 8/99**
Head of team to identify, locate, and analyze source of performance bottlenecks for telecommunication products, MMCX and ITS-SP. MMCX is multimedia teleconferencing and ITS-SP is voice over IP (VoIP). Also gather metrics on end-to-end response times to insure they meet performance requirements. Manage the development and maintenance of automated testing scripts which are used for stability, endurance, and regression testing. Accomplishments include: reducing one bottleneck by 45%; developing objective measures for audio quality including ITU-T Recommendation p.861, Fourier Transform, and dropped packet counts, which identified sources of audio degradation; analyzing impact on audio quality and network traffic of various audio encoding algorithms.

Programmer Consultant — **ARGONNE NATIONAL LABORATORY** — **Argonne, IL**
Department of Educational Programs — **6/93 to 7/94**
Provided support for an on-line education bulletin board called NEWTON. Provided additional features to BBS through new programs and by obtaining, installing, and modifying source code for public domain versions of programs such as telnet, ftp, and irc.

Winston-Salem, NC
Programmer Consultant — **COMCEPT SYSTEMS, INC.** — **9/88 to 12/88**
Enhanced and maintained retail point-of-sale inventory system written in BASIC. The system was used by Automotive Supply Stores and Paint Supply Stores.

Winston-Salem, NC
Programmer — **ALAN PROFESSIONAL COMPUTING, INC.** — **8/87 to 9/88**
Developed and maintained software applications for clients using IBM PC/AT, PS/2, and languages BASIC and C. Work also included identifying and correcting inefficient program code.

Fairfax, VA
Programmer/ Intern — **QUALITY SYSTEMS INCORPORATED** — **5/85 to 8/85**
Designed and implemented a graphics application using a multi-pen plotter to create presentation graphics. Developed Lotus 123 application used to perform cost analysis for projects. Produced cost and technological study of Local Area Networks for government proposal.

Winston-Salem, NC
Programmer Consultant — **VORWERK INC., USA** — **5/83 to 12/83**
Designed and coded customized database application to track customer orders, weekly sales, and product inventory. The system was used to monitor and adjust sales goals and provide reorder information.

Winston-Salem, NC
Service Technician — **COMPUTER TREE** — **5/86 to 12/86**
Performed diagnostics and repair of Apple Computer products. Work also included hardware and software installations, configuring networks, and setting up peripherals.

Student Assistant — **WAKE FOREST UNIVERSITY** — **Winston-Salem, NC**
Computer Center — **12/84 to 5/86**
Responsible for performing system backups of university databases on Hewlett Packard 3000. Assisted students with coding, running, and debugging applications on a PRIME 750 mini computer. Performed system diagnostics, servicing, and installation of IBM PC's, WANG PC's, and Apple Macintoshes.

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3 RESEARCH

3.1 Current Research Interests

My research interests are in the areas of Parallel and Distributed Computing and Parallel Compilers for Parallel and Distributed Computing. The project on which I am currently working is called the *Paraguin* Project. This project is attempting to adapt the SUIF Compiler from Stanford University to generate message-passing code for distributed systems and then to implement the technique called the Metaheuristic, which was developed as part of my thesis. We are using a Beowulf-class cluster of computers as the test-bed.

3.2 Publications

Journals

C.S. Ferner, R. Vetter. "An Integrated Framework for Implementing Quality of Network Concepts", submitted to *Journal of Network and Systems Management.*

C.S. Ferner and R. Babb, "Automatic Choice of scheduling heuristics for parallel/distributed computing," *Scientific Programming*, 7(1), 1999, 47—65.

Conferences

N.H. Martin, K.H. Nance,J.D. Brown, C.S. Ferner, and W.A. Randall, "Predicting Through-Space NMR Deshielding by Several Organic Functional Groups", submitted to *84th Canadian Society for Chemistry (CSC)Conference and Exhibition*, Montreal, Canada, May 26th, 2001.

C.S. Ferner and W.A. Randall, "Parallelizing Compilers for Distributed-Memory Systems", ACM Mid-Southeast Chapter Conference, Gatlinburg, TN, November 16-17, 2000.

C.S. Ferner and K.Y. Lee, "Hyperbanyan networks: a new class of networks for distributed-memory multiprocessors," in the *Proceedings of The Fourth Symposium on the Frontiers of Massively Parallel Computation*, McLean, VA, Oct. 1992, 254—261.

Invited Talks

"Measuring Audio Quality for PacketStar™ Internet Telephony Server," Chataugua Presentations, Lucent Technologies, Inc., May 20, 1999.

Thesis

C.S. Ferner and R. Babb, "Automatic Choice of Static Scheduling Heuristics for Parallel/Distributed Computing," Ph.D. Thesis, Department of Mathematics and Computer Science, University of Denver, 1997.

3.3 Grants

UNCW Faculty Summer Research Initiative, Proposal for $3000, awarded May/June 2000.

Co-investigator, "Incorporation of Additional New Algorithms into Existing Commercial Software for Redicting NMR Spectra," with Ned H. Martin and Allen. Randall, UNCW Information Technology Systems Division (ITSD), Proposal for $11,148, awarded September 2000.

4 SERVICE

4.1 Committees

Faculty Search Committee
Curriculum Committee (Chair)
Technology Committee
SACS Committee
Committee to Establish Minimal Competencies for CSC 242 (Chair)
Examining Committee for Shauna G. Turners' Honors Thesis

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4.2 Contributions

Introduced the use of an electronic whiteboard to the classroom
Introduced C programming to CSC 342 Operating Systems
Introduced Linux Kernel Projects to CSC 342 Operating Systems

5 AFFILIATIONS

Institute of Electrical and Electronics Engineers (IEEE)
IEEE Computer Society
The Association for Computing Machinery (ACM)
Audio Engineering Society (AES)
Pi Mu Epsilon – National Honorary Mathematics Society