

## Clayton S. Ferner, Ph.D.

Department of Computer Science  
601 S. College Rd  
UNC-Wilmington  
Wilmington, NC 28403

cferner@uncwil.edu  
+1-910-962-7129 (voice)  
+1-910-962-7457 (fax)

## 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

	UNIVERSITY OF NORTH CAROLINA AT WILMINGTON	Wilmington, NC
Professor	Department of Computer Science Tenured	7/2011 to present
Associate Professor	Tenured	7/2005 to 6/2011
Assistant Professor	Non-Tenured	8/99 to 6/2005

#### *Courses Taught:*

CSC 100 Orientation to Computer Science  
CSC 105 Introduction to Computing and Computer Applications  
CSC 110 Fluency in Computer Technology  
CSC 121 Introduction to Computer Science I  
CSC 332 Data Structures  
CSC 337 Parallel Computing  
CSC 342 Operating Systems  
CSC 344 Computer Networks  
CSC 437/537 Parallel Computing  
CSC 434 Programming Languages  
CSC 437/CSC 537 Parallel Computing  
CSC 457/CSC 592 Compiler Construction  
CSC 446/546 Grid Computing  
CSC 592 Topics in Computing: Amazon Cloud Services

#### *Students Advised:*

**Lyndon Kyle Holt**, M.S. Computer Science and Information systems. Masters Project: "Extending Shared-Memory Parallelism to a Distributed-Memory Parallelizing Compiler", December 2011.  
**Tammy Tran**, B.S. Computer Science with University Honors and Honors in Computer Science. Honor Project: "Development of an Electronic Medical Record System for the University of North Carolina Wilmington School of Nursing", May 2011.  
**Shun Jiang**, M.S. Computer Science and Information Systems. Masters Project: "Optimizing Join Query in Distributed Database", May 2011.  
**P. Jerry Martin**, M.S. Computer Science and Information Systems. Masters Project: "Suppressing Independent Loops in Packing/Unpacking Loop Nests to Reduce Message Size for Message-Passing Code", May 2010.

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Instructor/TA

**UNIVERSITY OF DENVER**  
**Department of Mathematics and Computer Science**

**Denver, CO**  
**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

## 2.2 Administrative Experience

Director

**UNIVERSITY OF NORTH CAROLINA AT WILMINGTON**  
**Master of Science in Computer Science and Information Systems**

**Wilmington, NC**  
**7/2012 to present**

## 2.3 Industry Experience

Member of  
Technical Staff System

**LUCENT TECHNOLOGIES, INC.**  
**Verification Department**

**Westminster, CO**  
**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**  
**Department of Educational Programs**

**Argonne, IL**  
**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.

## 3 RESEARCH

### 3.1 Research Interests

Parallel and Distributed Computing  
Parallel Compilers for Parallel and Distributed Computing  
Cloud Computing

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### 3.2 Selected Publications

#### 3.2.1 Journals

- C.S. Ferner, "Revisiting communication code generation algorithms for message-passing systems", *International Journal of Parallel, Emergent and Distributed Systems (JPEDS)*, 21(5):323--344, October 2006.
- J. Brown, C. Ferner, T. Hudson, A. Stapleton, R. Vetter, T. Carland, A. Martin, J. Martin, A. Rawls, W. Shipman, and M. Wood, "GridNexus: A grid services scientific workflow system", *International Journal of Computer & Information Science (IJCIS)*, 6(2):72--82, June 2005.
- M. Baker, A. Apon, C. Ferner, J. Brown, "Emerging grid standards", *IEEE Computer*, 38(4):43--50, April 2005
- C.S. Ferner and R. Vetter. "An integrated framework for implementing quality of network concepts," *Journal of Network and Systems Management*, 10(4):439--455, December 2002.
- C.S. Ferner and R.G. Babb, "Automatic choice of scheduling heuristics for parallel/distributed computing," *Scientific Programming*, 7(1):47--65, 1999.

#### 3.2.2 Conferences

- C. Ferner, B. Wilkinson, and B. Heath (2014), "Using Patterns to Teach Parallel Computing," Fourth NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-14), held in conjunction with the 28th IEEE International Parallel & Distributed Procession Symposium (IPDPS 2014), Phoenix, AR, May 19, 2014.
- C. Ferner, B. Wilkinson, B. Heath, "Toward using higher-level abstractions to teach Parallel Computing", in the proceedings of the Third NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-13), held in conjunction with the 27th IEEE International Parallel & Distributed Procession Symposium (IPDPS 2013), Boston, MA, May 20, 2013.
- B. Wilkinson, J. Villalobos, and C.S. Ferner, "Pattern programming approach for teaching parallel and distributed computing", in the proceedings of The 44th ACM Technical Symposium on Computer Science Education (SIGCSE2013), Denver, CO, March 8, 2013.
- Tammy Tran and Clayton Ferner, "Development of an Electronic Medical Record System for the University of North Carolina Wilmington School of Nursing", in The 2011 International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government (EEE'11), WORLDCOMP'11, Las Vegas, NV, June 18-21, 2011.
- P. Jerry Martin and C.S. Ferner, "Independent loop suppression to reduce message size for message-passing code", in The 2009 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'09), WORLDCOMP'09, Las Vegas, NV, June 13-16, 2009.

#### 3.2.3 Book Chapters

- B. Wilkinson and C.S. Ferner, "Chapter 151 Grid Computing Implementation and Applications", chapter in The Handbook of Computer Networks, H. Bidgolo, Editor-in-Chief, John Wiley & Sons, 2006.

### 3.3 Grants

- Co-Principal Investigator, "Collaborative Research: Teaching Multicore and Many-Core Programming at a Higher Level of Abstraction" with B. Wilkinson submitted to NSF TUES - Phase I, **awarded** \$94,469, August 2012 to July 2015.
- Lead Principal Investigator, "Collaborative Research: Enhancing Teaching of Grid Computing to Undergraduate Students by using a Workflow Editor" with B. Wilkinson, Y. Li submitted to NSF CCLI - Phase I, **awarded** \$149,924, June 2008 - June 2010.

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Co-Principal Investigator, "Fostering Undergraduate Research Partnerships through a Graphical User Environment for the North Carolina Computing Grid," with R. Vetter, J. Brown, T. Hudson, T. Janicki, N. Martin, A. Stapleton, B. Tyndall, B. Miller, D. Berman, R. Boston, L. Bartolotti, M. McClelland, J. Port, and A. Wilkinson, UNC Office of the President, **awarded** \$557,634, June 1, 2004 - June 30, 2006.

Co-Principal Investigator, "The UNCW Grid Computing Project," with R. Tyndall, B. Miller, S. Cowdrey, J. Brown, N. Martin, A. Stapleton, and R. Vetter, submitted to UNC Office of the President, **awarded** UNC OP: \$82,723; UNCW HPC: \$65,000; In-kind Support: \$59,097; Project total: \$206,820; March 17, 2003 - June 30, 2003.

Co-Principal Investigator, "The UNCW Grid Computing Project," with J. Brown and R. Vetter, UNCW Information Technology Award, **awarded** \$23,760, March 17, 2003 - October 31, 2003.

Co-Investigator, "Monograph and Phylogenetic Research on the Saprolegnials (Watermolds)," with David Padgett and Craig Baley, submitted to NSF Systematic Biology directorat, NSF Grant #DEB0328316, **awarded** \$742,000, Sep. 1 2003 - Aug. 31 2008.

### 3.4 Workshops

B. Wilkinson and C. Ferner, "Regional Workshop on Teaching an Undergraduate Parallel Programming Course with Pattern Programming", July 25, 2014, UNC Charlotte.

B. Wilkinson and C. Ferner, "NSF National Workshop on Teaching an Undergraduate Parallel Programming Course with Pattern Programming," SURA, Washington, DC, July 13, 2015.

## 4 SERVICE

### 4.1 Committees

Assessment Committee  
Faculty Search Committee  
Graduate Curriculum Committee (Chair)  
Undergraduate Curriculum Committee (Chair)  
Technology Committee  
SACS Committee  
Committee to Establish Minimal Competencies for CSC 242 (Chair)

## 5 AFFILIATIONS

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