

## Jennifer Parham-Mocello, Ph.D.

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Electrical Engineering & Computer Science

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### RESEARCH INTERESTS

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Computer science education, human factors, cognitive development, problem solving, scientific computing, parallel processing, high-performance computing, virtual classroom environments, Access Grid Node technology.

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### EDUCATION

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*Clemson University, Clemson, SC*

**Postdoctoral Researcher, Engineering and Science Education**

February - June 2011

NSF EEC Grant 0935163: "CU Thinking"

Advisor: Dr. Lisa Benson

*Clemson University, Clemson, SC*

**Doctor of Philosophy, Computer Science**

December 2009

Dissertation: "A Cognitive Model for Problem Solving in Computer Science"

Advisor: Dr. D. E. Stevenson

Honors: Upsilon Pi Epsilon, Honor Society for the Computing and Information Disciplines, 2007

*The University of Montana, Missoula, MT*

**Masters of Science, Computer Science**

December 2003

Thesis: "An Assessment and Evaluation of Computer Science Education"

Advisor: Dr. Don Morton

Awards: Arctic Region Supercomputing Center Faculty Camp Award, 2002

*Appalachian State University, Boone, NC*

**Bachelors of Science, Computer Science**

May 1999

Minor: Mathematics

Dean's List

Women in Computer Science

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### PROFESSIONAL EXPERIENCE

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*Oregon State University, Corvallis, OR*

September 2011 – Present

**Instructor**

- Honors: Professor of the Year 2013
- Teach 6-7 lower and upper division computer science courses per academic year, and manage up to 29 undergraduate and graduate TAs each quarter.
- Academic/MECOP advisor for approximately 110 students.
- Chair bi-weekly CS curriculum committee meetings.
- Participate in the University Honors College Thesis committees.

*ITT Technical Institute, Greenville, SC*

June 2011 – August 2011

**Instructor**

- Taught six different information technology, computer networking, and software development courses in the summer quarter.

*VailSoft Corporation, Vail, CO*

July 1999 – July 2000

**Web Designer**

- Designed new interactive web pages using Perl/CGI scripting for the Vail and Summit communities and other private corporations, <http://www.vailsoft.com>

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- Maintained existing VailSoft web pages.
- Sold advertisement web pages to restaurants, ski rental shops, and other retail shops.

*Cabletron Systems, Inc., Durham, NH*

May 1996 – December 1996

### **Quality Assurance – Co-Op**

- Tested Cabletron's network monitoring software (SPECTRUM)
- Developed and maintained shell scripts to do platform testing on various UNIX machines (HPUX, IRIX, AIX, SUN/SOLARIS, Windows NT)

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## TEACHING EXPERIENCE

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*Oregon State University, Corvallis, OR*

### **ENGR 407 – MECOP Seminar**

Fall 2012/Fall 2013

Facilitate student presentations from current MECOP participants for upcoming MECOP students.

### **CS 160 – Computer Science Orientation**

Fall 2012/Fall 2013

Taught an orientation class how to problem-solve and program in python 3.2.3, as well as computational thinking concepts. There is a "Virtual Day Out in Computing" held every Wednesday for the students to interact with a real computer scientist from industry and research to expose the students to various applications of computer science.

### **EECS/CS 161 – Introduction to Computer Science I**

Fall 2012-2014/Fall 2011

In fall 2012, began teaching the 161 course every quarter to ECE and CS students. The course uses C++, and new assignments, labs, and videos have been created for the class. Taught the Fall 2011 course using Java to just CS students, and created new assignments and labs for the class.

### **ECE/CS 151 – Introduction to Programming I w/ Embedded Control Lab**

Spring 2012

Taught CS and ECE undergraduates how to program in ANSI C with an embedded programming device for application in the 2<sup>nd</sup> half of the lab.

### **CS 162 – Introduction to Programming II**

Spring 2013-2014

Taught CS and ECE undergraduates how to program in C++ and ANSI C with an embedded programming device for application in the labs.

### **CS 480 – Translators**

Winter 2012-2014

Teaching the students the Fourth language and how to write a scaled-down compiler for the language using gforth as the example.

### **CS 440 – Database Management Systems**

Winter 2012

Teach relational database design, normalization, file structures, disk storage, query processing and optimization, team development of database applications.

*ITT Technical Institute, Greenville, SC*

### **CS 111 – Client-Side Web Scripting**

Summer 2011

Taught students how to add interactivity to a Web page using JavaScript.

### **CS 250 – Open Source Application Programming**

Summer 2011

Taught students how to implement open source server-side Web applications by analyzing the LAMP development model: Linux, Apache, MySQL, and PHP.

### **IT 219 – Programming in Java II**

Summer 2011

Taught advanced programming concepts critical to the development of enterprise applications, including working with collections, multithreading, serialization, database access, internationalization, and networking.

### **IT 250 – Linux Operating System**

Summer 2011

Taught students how to install, configure and manage a Linux operating system, as well as directory and file management, user account management and certain device management.

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**IS 317** – Hacker Techniques, Tools and Incident Handling Summer 2011  
Taught an introduction to hacking tools and incident handling using various tools and vulnerabilities of operating systems, software and networks used by hackers to access unauthorized information.

**GD 345** – C++ Programming for Game Developers Summer 2011  
Taught an introduction to computer programming framed in the technical aspects of game programming. Students applied the concepts of variables, control structures, functions, arrays, and data types as they built a series of games.

*Clemson University, Clemson, SC*

**Teaching Assistant** – CPSC 210 Labs Spring 2004  
Created, taught, and graded two-hour lab assignments for an Introduction to Java course to freshman and sophomore students, who were already familiar with programming.

**Teaching Assistant** – CPSC 120 Labs Fall 2004 – Spring 2005  
Created, taught, and graded lab assignments and exams on writing html web pages and Microsoft Word, Excel, Access, and Power Point for an Introduction to Windows course to freshman students.

**Teaching Assistant** – CPSC 428 Grader Spring 2004  
Graded homework assignments and project milestones for a senior-level, problem-based learning class on programming languages and compilers.

*The University of Montana, Missoula, MT*

**Teaching Assistant** – CS 101 Spring 2001  
Instructor for a freshman Visual Basic course and labs, as well as created and graded course assignments and exams.

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## COURSE DESIGN & OUTREACH

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*Oregon State University, Corvallis, OR*

### **Courses Developed for E-Campus Computer Science Degree**

CS 161 - Introduction to Computer Science I Spring 2012

- Designed the instructional material for the first online computer science class, which included recording lectures and programming demonstrations using Java and the Eclipse IDE.
- Design weekly interactive quizzes to keep online group participation and discussion at a maximum.

CS 275 - Introduction to Databases Summer 2012

- Designed the instructional material for the introduction to databases class, which included recording lectures, database demonstrations, and web-application development using MySQL and PHP.
- Design weekly interactive quizzes to keep online group participation and discussion at a maximum.

*Clemson University, Clemson, SC*

### **Courses Developed for Summer Science, Engineering, & Architecture Camp**

Introduction to Computational Science Summer 2009

- Designed and taught an intro course on computational science to middle and high school students.
- Taught the course using Java and HTML.
- Introduced students to computational programming concepts, web design, and java applets.

Advanced Computational Science Summer 2009

- Designed and taught an Advanced Computational Science course to middle and high school students with some computer programming experience.
- Taught the course using Java, C, C++, and HTML.
- Introduced students to computational programming concepts and numerical methods for finding the area under a curve, as well as design web pages and java applets.

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*The University of Montana, Missoula, MT*

### **Courses Developed**

CS 201 – Introduction to Computational Biology Spring 2003

- Designed and taught an Introduction to Computational Biology course for non-computer science and computer science majors, who wanted to learn programming applied to bioinformatics.
- Taught the Introduction to Computational Biology course using Perl.
- Introduced students to the Biology Workbench.

CS 195 – Introduction to Computational Science Spring 2002

- Designed and taught an Introduction to Computational Science course for non-computer science and computer science majors, who wanted to apply programming to the math and sciences.
- Taught the Introduction to Computational Science course using FORTRAN 90.
- Introduced students to programming concepts and numerical methods using derivatives, integrals, heat diffusion, and weather modeling.

CS 495 – High Performance Computing Fall 2001

- Assisted Dr. Don Morton at The University of Montana with team-teaching and grading the first, multi-institutional course on the Access Grid Node with The University of Alaska, Fairbanks and The University of New Mexico, Albuquerque.
- Introduced senior-level undergraduate students to parallel processing and high performance computing using supercomputers at the Montana Rockies Center for Computational Science, the Arctic Region Supercomputing Center, and the Albuquerque High Performance Computing Center.
- Taught the students to use MPI, OpenMP, High Performance Fortran, and parallel debuggers.

### **Courses Redesigned**

CS 580 – Graduate Level Parallel Computing Fall 2003

- Taught a graduate-level parallel processing course, as well as created and graded assignments, exams, and projects.
- Added a lab component to the classroom experience, where the students were asked to perform experiments and write reports on their findings.

CS 471 – Scientific Computing Fall 2002

- Helped Dr. Don Morton re-design and teach a senior-level scientific computing course by using climate modeling as an application and foundation for learning floating point arithmetic, differential equations, and principles of meta-data.

### **Workshops Created**

Idaho National Laboratory Fall 2003

- Taught a parallel computing workshop and conducted a live, hands-on training session over the Access Grid Node with scientists from the Idaho National Laboratory.

Montana State University and MSE, Incorporated Fall 2002

- Created and team-taught with Dr. Don Morton two full-day workshops for engineering and science faculty at Montana State University in Bozeman, Montana.
- Created and taught three full-day workshops on parallel computing for engineers at MSE, Incorporated in Butte, Montana.

*Colorado Mountain College, Silverthorne, CO*

### **Courses Developed**

CIS 123A Summer I 2000

- Designed and instructed a new Introduction to Windows 98 course for the college.

CIS 123 and ESL computer class Spring 2000

- Designed and instructed a new For Beginners Only! course for the college, and taught a new beginner computer class for English as a Second Language, ESL, students.

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### Grant Outreach

Fall 1999

- Designed a basic computer course for low-income women around Summit County, Colorado for a grant funded by the Colorado Women's Foundation.

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### JOURNAL AND CONFERENCE PUBLICATIONS

- Parham, J., Gugerty, L., and Stevenson, D. E. 2010. Empirical Evidence for the Existence and Uses of Metacognition in Computer Science Problem Solving. *SIGCSE* (March 2010), 1-5.
- Parham, J., Chinn, D., and Stevenson, D. E. 2009. Using Bloom's taxonomy to code verbal protocols of students solving a data structure problem. In *Proceedings of the 47th Annual Southeast Regional Conference* (March 2009), 1-6.
- Stevenson, D. E. and Parham, Jennifer. (2006). Problem-Based and Case-Based Methods in Computer Science. *The Creative College Teaching Journal*, 3(1), 53-66.
- Parham, J. (2003 December). An Assessment and Evaluation of Computer Science Education. *The Journal of Computing Sciences in Colleges*, 19(2), 115-127.

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### PRESENTATIONS AND POSTERS

- Link, D., Billman, D., Gugerty, L., and Parham-Mocello, J. (2012 March) Effects of domain knowledge in searching for internet health information. 2012 Symposium on Human Factors and Ergonomics in Health Care: Bridging the Gap. (poster accepted).
- J. Parham. (2004 May). *Bringing the Access Grid to Clemson*. Presentation given to the weekly College of Engineering and Science department chairpersons, Clemson University, Clemson, SC.
- D. Morton, J. Parham. (2004 April). *Engaging Students in Computational Sciences*. Paper presented at the 3rd annual Graduate Student and Faculty Conference in the College of Arts and Sciences (CAS), The University of Montana, Missoula, MT.
- J. Parham, D. Morton. (2003 September). *Montana Rockies Center for Computational Science*. Poster presented at DOE-EPSCoR Site Visit, Bozeman, MT.
- J. Parham, D. Morton. (2003 March). *Scientific Computing in Climate Modeling*. Paper presented at the Association of American Geographers 2003 Annual Meeting, New Orleans, LA.
- J. Shuckra, D. Morton, J. Parham, G. Robinson. (2002 November). *Pioneering Distance Education over AccessGrid*. Poster presented at SC 2002, Baltimore, MD.
- D. Morton, G. Robinson, J. Shuckra, J. Parham (presenter), T. Warburton. (2002 September). *Building and Maintaining Critical Mass for Research Programs in the Frontier Regions*. Paper presented at American Association for the Advancement of Science 53<sup>rd</sup> Arctic Science Conference, Fairbanks, AK.
- D. Morton, J. Parham, J. Sauer. (2002 June). *Montana Rockies Center for Computational Science*. Poster presented at DOE-EPSCoR Workshop at Pacific Northwest National Laboratory, Richland, WA.
- R. Edberg, G. Robinson, J. Parham, D. Morton, J. Shuckra, T. Warburton, F. Gilfeather, (2002 March). *Collaborative High Performance Computing Course Using The Access Grid*. Paper presented at Access Grid Retreat 2002, San Diego, CA.
- R. Edberg, F. Williams, F. Gilfeather, G. Robinson, D. Morton, J. Parham, T. Warburton, B. Smith, J. Shuckra. (2001 November). *Collaborative Course in Parallel Scientific Computing*. Panel discussion at SC Global 2001, Denver, CO.

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### GRANT WRITING EXPERIENCE (PENDING)

- National Science Foundation. *Emerging Leaders in Computing*. Program for S-STEM: Scholarships in Science, Technology, Engineering, and Math: proposal number 1356768. Applied for August 13, 2013. Total Requested: \$626,779.

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### GRANT WRITING EXPERIENCE (NOT FUNDED)

- National Science Foundation. *Emerging Leaders in Computing*. Program for S-STEM: Scholarships in Science, Technology, Engineering, and Math: proposal number 1259271. Applied for August 13, 2012. Total Requested: \$619,824.

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- National Science Foundation. *Type1: Teaching "K-12 Computational Thinking" Using Role-Playing Simulations in a Virtual, Scientific World*. Program for Computing Education for the 21<sup>st</sup> Century: proposal number 1138445. Applied for April 27, 2011. Total Requested: \$981,028.
- Clemson University. *Talking About Leaving Revisited*. Program for Internal Research. Applied for November 01, 2004. Total Requested: \$1,500.
- National Science Foundation. *Collaborative Research: Engaging Students in the Computational Sciences*. Program for Course, Curriculum, Laboratory, and Instruction: proposal number 0441988. Applied for June 15, 2004. Total Requested: \$73,903.
- National Science Foundation. *Collaborative Research: Learning in the Computational Sciences*. Program for Research On Learning and Education: proposal number 0440068. Applied for June 01, 2004. Total Requested: \$1,309,860.
- National Science Foundation. *The Access Grid and Four-tiered Approach to Reach Western Women in CS*. Program for Gender Diversity in Science, Technology, Engineering, and Mathematics: preliminary proposal number 0320147. Applied for September 01, 2003. Total Requested in Year 1: \$258, 952.

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### RESEARCH EXPERIENCE

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*Clemson University, Clemson, SC*

**Postdoctoral Researcher** – Engineering and Science Education Department February – June 2011

- Helped a team of researchers develop a vocabulary for analyzing the strategies used in students' written work from solving freshman engineering problems.
- Transcribed verbal protocols from freshman solving engineering problems.
- Helped a team of researchers achieve an 80% inter-rater reliability on coding the written work from students' solving freshman engineering problems.

**Research Assistant** – Psychology Department Summer 2009

- Transcribe verbal protocols of people searching the web for information to solve a diabetes problem.
- Help develop the coding system for analyzing verbal protocols of participants in diabetes study.
- Code and help analyze problem behavior differences in internet searching among participants with high diabetes knowledge and low diabetes knowledge.

**Administrative Assistant** – Grants Office Jun 2005 – Aug 2007

- Helped process grants for submission from the college of engineering and science.
- Sent out daily and weekly calls for participation from various private and public granting agencies.
- Collaborated and wrote end of the year reports for the National Science Foundation.
- Created and maintained an excel worksheet with college and departmental grant requests and funding.

*The University of Montana, Missoula, MT*

**Research Assistant** Summer 2003

- Prepare syllabus and material for a graduate-level course on parallel processing
- Create and prepare parallel programming workshops for the Idaho National Laboratory.

**Research Assistant** Summer 2002

- Began creating workshops for Fall 2002 high performance computing training.
- Spent three weeks doing research in Fairbanks, Alaska.
- Attended a faculty camp at the Arctic Region Supercomputing Center
- Created a website for the Western EPSCoR States Network (WESNet).

**Research Assistant** Summer 2001

- Began working on the education and outreach component for Dr. Don Morton's NSF grant.
- Designed the Montana Rockies Center for Computational Science website for our NSF project.
- Attended regular meetings to help design the itinerary for the first, multi-institutional access grid course in scientific computing.

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### SERVICE ACTIVITIES

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- Chair, Computer Science Curriculum Committee, 2012-2014.
- MECOP (Internship) Advisor for Computer Science Students, 2012-2014
- Manuscript Reviewer: Educational Research and Evaluation, 2013
- Honors Thesis Committee Member: Ashley Schneider, Spring 2012 -2013
- Honors Thesis Committee Member: Daniel Urbanski, Summer 2012
- Computer Science Curriculum Committee, 2011-2012.
- Academic Advisor for Pre-Computer Science Students, 2011-2012.
- Reviewed papers for the *ACMSE Conference*, 2010.
- Reviewed papers for the *International Conference of the Learning Sciences*, 2010.
- Reviewed papers for the *ACMSE Conference*, 2009.
- Installed and setup Personal Interfaces to the Grid for faculty. Clemson University. March 2005 – August 2005.
- Presided over a session. *Southeastern Consortium for Computing Sciences in Colleges* (CCSC04). Spartanburg, South Carolina. November 2004.
- Student Volunteer. *The International Conference for High Performance Computing and Communications* (SC03). Phoenix, Arizona. November 17 – 21, 2003.
- Judge. 48<sup>th</sup> annual Montana State Science Fair. The University of Montana. April 2003.
- Member. Faculty Hiring Committee. Department of Computer Science, The University of Montana. January 2003 – April 2003.
- Student Volunteer. *The International Conference for High Performance Computing and Communications* (SC02). Baltimore, Maryland. November 18 – 22, 2002.
- Volunteer. 47<sup>th</sup> annual Montana State Science Fair. The University of Montana. April 2002.
- Student Volunteer. *The International Conference for High Performance Computing and Communications* (SC01). Denver, Colorado. November 12 – 16, 2001.
- Volunteer. 46<sup>th</sup> annual Montana State Science Fair. The University of Montana. April 2001.

### SECURITY CLEARANCE

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| • National Agency Check (background security clearance for DoD supercomputers) | August 2002 |
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### MEMBERSHIPS

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- Association for Computing Machinery, ACM
- Community for OpenMP, Compunity
- American Association for Geographers, AAG
- American Association for the Advancement of Science, AAAS
- Consortium for Computing Sciences in Colleges, CCSC

**REFERENCES**

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Dr. Terri Fiez, Professor and Head  
School of Electrical Engineering and Computer Science  
Oregon State University  
1148 Kelley Engineering Center  
Corvallis, OR 97331  
terri@eecs.oregonstate.edu  
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Dr. D. E. Stevenson, Emeritus (Dissertation Advisor)  
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