

24th Annual CCSC Eastern Conference



Frederick, Maryland



Sponsored in cooperation with



CCSC-EASTERN CONFERENCE COMMITTEE**2008 Conference Co-Chairs**

- Elizabeth Chang, Hood College, MD
- Gary Gillard, Hood College, MD

Papers

- Lori Scarlatos, Chair, Stony Brook, NY
- Amruth Kumar, Ramapo College, NJ
- Steve Corbesero

Publication Chair

- George Benjamin, Muhlenberg College, PA

Workshops, Panels, Tutorials

- George Dimitoglou, Chair, Hood College, MD
- Jeff Martens, U of Maryland Baltimore County

Nifty Ideas and Lightning Talks Chair

- Mahmood Hossain, Chair, Fairmont State U, WV

Programming Competition

- Mas Kimura, Co-Chair, NLM/NIH/DHHS
- Sara Miner More, Co-Chair, McDaniel College, MD
- Michael Black, American University

Posters

- Joo Tan, Chair, Kutztown University, PA
- Oskars Rieksts, Kutztown University, PA

Registration

- Aijuan Dong, Chair, Hood College, MD
- Xinlian Liu, Hood College, MD

Local Arrangements

- Gary Gillard, Hood College, MD

Web Site

- Elizabeth Chang, Hood College, MD

CCSC-EASTERN STEERING COMMITTEE

Elizabeth Adams, James Madison University
 Steven Andrianoff, St. Bonaventure University
 Karen Anewalt, University of Mary Washington
 Jack Beidler, University of Scranton
 George Benjamin, Muhlenberg College
 Dorothy Deremer, Montclair State University
 Amruth Kumar, Ramapo College
 John Meinke, University of Maryland, University College
 Jennifer Polack-Wahl, University of Mary Washington
 James R. Sidbury, University of Scranton
 Onkar Sharma, Marist College
 Par Woodworth, Ithaca College
 S. Jane Fritz, St. Joseph's College

CCSC Eastern 2009 Conference

October 30-31, 2009

Villanova University, Villanova, PA

For more information contact:

Don Goelman (don.goelman@villanova.edu)

John Lewis (john.lewis@acm.org)

<http://ccsce09.villanova.edu>

ACKNOWLEDGMENTS

A conference like this is not the work of a few individuals, but rather the cooperative efforts of many people over time. Therefore, we thank all those whose efforts made this possible. We thank the Conference Committee and the Steering Committee. We are especially grateful to George Benjamin for editing and compiling the proceedings. We thank the paper authors and their reviewers, the presenters and judges. We are also grateful to S. Jane Fritz, the CCSCE 2007 chairperson, who had answers to all our questions, and to Liz Adams, the Eastern Region Steering Committee chair, without whom this Conference would not have become a reality.

We are also most grateful to the administration, faculty and staff of Hood College, for their support and assistance. We thank the Facilities Staff, Faculty Services and Conference Services for their support. We are especially grateful to the Graduate School and the Office of Marketing and Communications, which generously donated the tote bags, lanyards, pens and other attendee gifts. Finally, we thank our dedicated IT staff, for their hard work and technical expertise.

We are grateful to our exhibitors and corporate sponsors, especially to UPE (Upsilon Pi Epsilon), which provided the Student Poster Competition prizes.

We would like to thank the ACM Special Interest Group in Computer Science Education for providing support for Tom Murtagh to present his talk, "Enriching CS 1 with a Networking Theme", at noon on Saturday. This talk was originally presented as a workshop at SIGCSE 2008.

CCSCE National Partners

The consortium is very happy to have the following as National Partners. If you have the opportunity, please thank them for their support of computing in teaching institutions. As National Partners they are invited to participate in regional conferences. Visit their representatives and express your gratitude.

Epic Systems
Microsoft Corporation
Pearson Education

RidgeSoft
Turingscraft
John Wiley and Sons

Welcome to Hood College for the 24th Eastern Regional Conference of the Consortium for Computing Sciences in College. We are delighted to offer you a variety of sessions, which feature an outstanding collection of papers, tutorials, panels and workshops. Our keynote and banquet speakers will certainly be informative and engaging. Faculty and student research will be presented throughout Friday afternoon's Poster Session.

In addition to the enriching Conference sessions, Frederick also offers many cultural and enjoyable opportunities. Take time to meet new people, visit the historic places such as the Monocacy National Battlefield and the National Museum of Civil War Medicine, explore one of the many national, state, and regional, and local parks in the area, go antiquing in Frederick and surrounding towns. After the Conference, head up to the Catocin Colorfest, an Arts and Crafts show with over 350 juried exhibits in Thurmont. There's so much to do before, during and after the Conference. We hope you enjoy it as much as we enjoyed planning it.

KEYNOTE ADDRESS

Experimental Algorithmics for Undergraduates

Catherine C. McGeoch
Amherst College

As a general rule, the standard undergraduate curriculum in computer science gives short shrift to topics in experimental methodology. This is unfortunate because, besides the obvious need for more and better education in this area, experimental projects are interesting and fun. Experience suggests that students who have success with small experimental research projects - we call it research if the professor doesn't know beforehand what the outcome will be - become more interested in taking additional computer science courses and applying to graduate school. In her talk, Professor McGeoch will focus on ideas for incorporating student work in experimental algorithmics into the undergraduate curriculum.

Catherine C. McGeoch received her Ph.D. in Computer Science from Carnegie Mellon University in 1986. Since then, except for short stints as a visitor to AT & T Bell Labs and DIMACS (the center for Discrete Mathematics and Theoretical Computer Science), she has been on the faculty at Amherst College, where she is currently a full professor.

Professor McGeoch's research interests are in experimental analysis of algorithms. She recently completed a full term as the Editor in Chief of the ACM Journal of Experimental Algorithmics. She was a founding co-chair of the ALENEX workshop series, and of the DIMACS Implementation Challenges, both of which are intended to promote research in experimental analysis of algorithms. Her favorite course to teach is ... Algorithms.

She is married, with two teenage sons and a dog. She is quite possibly computer science's greatest hockey fan.

BANQUET ADDRESS

"Well, My Computing Teacher Sings To Us!": Making Music to Help Students Learn

John P. Dougherty, Haverford College

Music has been utilized by educators, particularly in elementary school, to help students remember terms, and to engage them. Yet, along the way music as teaching vehicle is replaced by more traditional, more serious, more accepted means. Our speaker will share a set of songs that he has used to complement conventional teaching approaches with undergraduate students to explore computing concepts via lyrics and music. Audience participation opportunities (i.e., "fun") will be provided.

John P. Dougherty, or "J.D.", is presently a computer science professor at Haverford College. He studied computer science and math at LaSalle College (BA 1982) and Drexel University (MS 1985). He then was a visiting assistant professor at Philadelphia College of Textiles & Science (now Philadelphia University) while completing graduate work at Temple University (PhD 1998). He has also taught at Villanova University, Beaver College (now Arcadia University), and Bryn Mawr College.

Professor Dougherty primarily investigates computer science education issues, including the composition of the introductory course for undergraduates, outreach to secondary programs in computing, as well as materials in computing for non-computing undergraduates. He also studies parallel scientific computing and data intensive scalable computing, including dependability/performance issues. Finally, he is working to establish connections between information technology and society, especially accessible computing. Academy of Arts and Sciences and of the International Engineering Consortium.

Friday, October 10th, 2008

8:00- 5:00 Registration, Hodson Science & Technology Center (HT), First Floor Atrium

10:00-5:45 Vendors, HT Second Floor Atrium

9:00- 12:00 Pre-Conference Workshops

- Workshop 1: *Java Assembly Language for the JVM*, HT 319
- Workshop 2: *Student Outcomes Assessment: What Is It? How Do You Make IT Work for You?* HT 113

11:30-12:30 Vendor Session HT 206

- Instructor Focus Group Peer to Peer Discussion, Amy Jollymore, acquisitions editor for computer science books with Course Technology. Lunch provided, space limited.

12:00- 12:45 Lunch on your own

- HC Blazer Express (Whitaker Campus Center), Coblenz Dining Hall, or off-campus. See list of local restaurants included in your packet.

12:45-2:00 Welcome to CCSC Eastern 2008 - Auditorium, Rosenstock Hall

- **Opening Remarks:** Elizabeth Chang & Gary Gillard, CCSCE Co-Chairpersons
- **Welcome:** Ron Volpe, President of Hood College
- **Keynote Speaker:** Catherine McGeoch, Amherst College, "*Experimental Algorithmics for Undergraduates*"

2:00-2:45 Break/Vendors – HT Second Floor Atrium

2:15- 5:45 Faculty and Student Poster Session – HT First Floor Atrium

Posters will be judged from 2:15 until approximately 3:45. Posters will remain available for viewing throughout the afternoon and during the Social.

Faculty Posters

"Survey of K-12 Computer Science Outreach Efforts" Elizabeth Adams, James Madison University

"Computer Science and Community Colleges: A Missing Piece of the Puzzle" Donna Hiestand-Tupper & Barbara Leitherer, Community College of Baltimore County

"Teaching IEEE 754 Floating Point Representation: A Programming Based Approach". Weidong Liao, Shepherd University

"The CS Academy: Increasing CS Content in High School and CS Interest in Middle School" Andrea F. Lobo, Rowan University

"Leveraging Knowledge Management during Software Product Development" Susan M. Mitchell, UMBC
Sreedevi Sampath, UMBC; Viviane Malheiros, University of São Paulo

Interoperating Applications to Simulate a Self-Contained Real-World Economy for Security Training. Nazli Mollah-Hardy, Dan Baker, Trevor Scheitrum, Justin Kunder, & Pasan Perera, Millersville University

Learning Object Repository Searching Patterns. Loreen M. Powell, Bloomsburg University

Just the Necessary Facts: Algorithm Visualization for Artificial Intelligence. Laurie White, Mercer University

Viewpoints from the doorstep: Pre-major interest in and perceptions of computer science. K. Yasuhara, University of Washington

Graduate Student Posters

"Parallel Text Searching with a Distributed Database Using MPI", Bob Book, Hood College

Undergraduate Student Posters

"How Spammers Get Your E-mail Address: Address Harvesting in 2008", Damian Bailey, Longwood University.

"Interactive Google Map Application to Mark Species Distribution on Campus", Mathew D. Barr, Millersville University.

"A Novel Photon Query Reordering Algorithm", Elijah Bowen, Bucknell University.

"An Assessment of Small Business Infrastructure and Disaster Recovery Plan", John Brittingham, Joseph Crostarosa, Shawn Lively, & Joy Springer.

"Women in Computing", Kimberly Chiffens, Widener University.

"The 'Ultimate' Bad Day For Windows Vista: A Cross-Platform Analysis Of Sorting Algorithms across Linux and Windows Platforms", Patrick Donley, Brian Frey, Juniata College.

"Exploring Steganography with Java", Ben Ferenchak, Widener University.

"Image Steganography", Kyle Huyser, Mark Porter & Eric Walton, Hood College.

"A Survey of Path Planning Algorithms for Autonomous Robotics", Kristopher W. Reese, Hood College.

"Exploring Artificial Intelligence with the Game of Nim", Trevor Sheehan, Widener University.

"Cyber Security & Computer Forensics Challenges in the 21st Century", Allyn D. Stott, Brett R. Kaplan, Dina Zotkina, Cipriano Lopez, & Jim Benson.

Concurrent Sessions – in Hodson Science & Technology Center (HT)**2:45-4:00 Concurrent Session 1**

Session 1A- Paper Session: CS Curriculum, Room HT 131

Session Chair: Karen Anewalt

- "The Pervasive Applications Of Computer Science In Biomedicine", Igor Balsim, Elie Feder, Sarwar Jahangir, Kingsborough Community College, CUNY; Ronald Eckhardt, Gabriel Yarmish, Brooklyn College, CUNY
- "A Survey Of Portable Software", Robert Montante, Bloomsburg University of Pennsylvania
- "Implementing The Academic Discipline Of Information Technology To Be Inclusive Of Computer Science", Diane Murphy, Marymount University

Session 1B- Paper Session: Computer Systems, HT 236

Session Chair: Mohsen Chitsaz

- "Building A Computer From Scratch: A Hardware Lab Sequence For Computer Science Students", Michael Black, American University
- "Blur The Boundary Between The Virtual And The Real", Chengcheng Li, Lee Toderick, Peng Li, Tijani Mohammed, Philip Lunsford, East Carolina University
- "Teaching Computer Organization And Architecture At Small Colleges: A Programming/Simulation Based Approach", Weidong Liao, Shepherd University

Session 1C- Tutorial Session: Discrete Mathematics, (Computer Lab) HT 113

- "Experience the Ways in Which ProofBuilder Helps Students Construct Proofs", Hugh McGuire, Grand Valley State University

4:00- 4:40 Break/Vendors – HT Atrium Second Level

4:30-5:45 Concurrent Session 2

Session 2A- Paper Session: Robotics & Advanced Topics, HT 131

Session Chair: Weidong Liao

- "Combining Aima And Lego Mindstorms In An Artificial Intelligence Course To Build Real World Robots", Paul Talaga, Syracuse University
- "Utilizing Microsoft Robotics Studio In Undergraduate Robotics", Kevin Workman, Stephanie Elzer, Millersville University
- "Web Applications: A Test Bed For Advanced Topics", Michael Olan, Richard Stockton College

Session 2B- Tutorial Session: Scientific Computing, HT 319

- "Scientific Computing and Applications in Informatics", Xinlian Liu, Hood College; Sarangan Ravichandran, National Cancer Institute, SAIC/Frederick

Session 2C- Vendor Tutorial Session, HT 113

- "Programming Concepts with Xbox", Cy Khormae, Microsoft Corporation

5:45-9:00 Social, Dinner, and Banquet Speaker

5:45- 6:30 Social – HT Atrium First Level

6:30- 8:00 Banquet – Whitaker Campus Center Commons

8 PM Banquet Speaker: John Dougherty, "Well, My Computing Teacher Sings To Us!": Making Music to Help Students Learn – Whitaker Campus Center Commons (Programming Competition team members who do not have banquet tickets are invited to attend after dinner and enjoy the speaker – there is additional seating on the second floor balcony.)

Saturday, October 11th, 2008

7:30- 12:00 Registration, HT Atrium First Level

7:30– 9:00 Continental Breakfast, HT Atrium Second Level

7:30-8:30 Vendor Session HT 206

- Instructor Focus Group, Amy Jollymore, Course Technology, space limited.

8:00am-1:00pm Programming Competition

8:00- 9:00 Programming Competition Registration & Orientation, HT 131

9:00-9:45 Programming Competition Practice Session

9:45- 12:45 Programming Competition,

8:30-9:45 Concurrent Session 3

Session 3A- Paper Session: **Networks**, HT 236

Session Chair: George Dimitoglou

- "Open Source Virtual Private Network Experience In Classroom", Veeramuthu Rajaravivarma, SUNY Farmingdale
- "A Survey On Jamming Avoidance In Ad-Hoc Sensory Networks", Kristopher W. Reese, Ahmed Salem, Hood College
- "Building A Repository Of Network Traffic Captures For Information Assurance Education", Peng Li, ChengCheng Li, East Carolina University

Session 3B- Tutorial: **Curriculum**, HT 114

- "Organizing and Delivering 'Real Projects for Real Clients' Courses", David Klappholz, Stevens Institute of Technology

Session 3C- Panel, **Interdisciplinary Curriculum** HT 235

- "Building a campus wide computation initiative", Valerie Barr, Eshragh Motahar, Union College; Chun Wai Liew, Hannah Stewart-Gambino, Lafayette College

9:45-10:15 Break/Vendors

10:15-11:30 Concurrent Session 4

Session 4A- Paper Session: Computing in K-12, HT 131

Session Chair: K. Yasuhara

- "Computer Labs For Pre-Service Teachers", Melanie Butler, Mount Saint Mary's University
- "Computer Science Outreach In An Elementary School", Lynn Lambert, Heather Guiffre, Christopher Newport University
- "Developing Computing Identity As A Model For Prioritizing Dynamic K-12 Computing Curricular Standards", Kera Bell-Watkins, Georgia Southern University; Tiffany Barnes, UNC Charlotte; Nathan Thomas, University of South Florida

Session 4B- Tutorial Session: Pedagogy, HT 236

- "Integrating Gaming Methodology for Learning into Computer Science Curriculum", James P. Lawler, Pace University

Session 4C- Tutorial Session: Interdisciplinary Curriculum, HT 114

- "Bioinformatics Applications for Introductory Computer Science", Karen Anewalt, University of Mary Washington

•

Session 4D- Nifty Ideas & Lightning Talks, Room HT 235

Session Chair: Elizabeth Adams

- Nifty Idea: "Introducing Networking Concepts using Active Learning", Robert Marmorstein, Longwood University
- Lightning Talk: "Holistic Learning through Social Networks", Cy Khormae, Microsoft Corporation
- Lightning Talk: "Object Oriented Programming and the Discipline of Computer Science", Mohsen Chitsaz, Frostburg State University

12:00-1:15 Concurrent Session 5

Session 5A - Paper Session: Graphics and Games, HT 236

Session Chair: Lori Scarlatos

- "Using Alice 2.0 As A First Language", Paul Mullins, Deborah Whitfield, Michael Conlon, Slippery Rock University
- "Digispired: Digital Inspiration For Interactive Game Design And Programming", Giti Javidi, Ehsan Sheybani, Virginia State University
- "Using Terminal Window Graphics In CS1", David Hovemeyer, David S. Babcock, York College of Pennsylvania

Session 5B- Tutorial Session: CS Unplugged, HT 235

- "Computer Science Unplugged", Peter Henderson, Butler University

Session 5C- Invited SIGCSE Presentation Room HT 131

- "Enriching CS 1 with a Networking Theme", Thomas Murtagh, Williams College

Session 5D- Panel: CS Enrollment, HT 114

- "Reasons for CS Enrollment Decline: Preliminary Evidence", V. J. Benokraitis, R.D. Shelton, WTEC; Richard Brown, Loyola College; Jeff Martens, UMBC; Betsy Bizot, CRA

1:30 -2:30 Conference Luncheon and Awards

Whitaker Campus Center Commons

2:45- 3:45 CCSC Eastern Board Meeting, HT 226

2:45- 5:45 Post Conference Workshops

- **Workshop 3:** "Teaching with the Advanced Placement GridWorld Case Study", Laura White, Robert Allen, Mercer University, HT 237
- **Workshop 4:** "Real Programmers Use Alice", Paul M. Mullins, Michael Conlon, Slippery Rock University, HT 113

Workshop Descriptions: Friday, 9:00-12:00

Workshop 1: Java Assembly Language Programming for the JVM

Presenter: H. Paul Haiduk, West Texas A&M University

This tutorial/workshop is based on the assumption that the participant is looking for an alternative or supplement to the Intel Pentium or the Power PC real architectures for a computer organization and assembly language course in a CS curriculum. The tutorial/workshop is designed to prepare the participant to develop an insight into assembly language programming for the Java Virtual Machine and to be able to understand how to use the jasmin assembler to teach such important concepts as stack architecture, postfix expression evaluation and parameter passing constrained by a pass-by-value constraint. Should time permit, code produced by jasmin will be compared with assembly code produced for the Intel platform by the GNU C and Java compilers.

Workshop 2: Student Outcomes Assessment: What Is It? How Do You Make It Work for You

Presenters: Frances Bailie, Iona College; Adel Abunawass, U of West Georgia; Deborah Whitfield, Slippery Rock U. Outcomes-based assessment is a process all computer science programs must address. In this workshop the entire assessment cycle - developing goals (program outcomes) and measurable student learning objectives, choosing methods to measure the objectives, developing rubrics and benchmarks, analyzing the data, synthesizing the results and deciding what to do with them (feedback loop)?will be presented. Participants, working in groups, will get practice in developing selected aspects of an assessment plan. There will also be a discussion of the implications of ABET's new standards/requirements. The emphasis will be on practical suggestions and the message will be: Keep it simple and manageable.

Workshop Descriptions: Saturday, 2:45-5:45

Workshop 3: Teaching with the Advanced Placement GridWorld Case Study

Presenters: Laura White, Robert Allen, Mercer University

Case studies expose students to large programs, enabling them to understand the importance of design and good programming style while encouraging teamwork and active learning. The AP Computer Science curriculum has used case studies since 1995. Beginning in 2008, the APCS curriculum includes the GridWorld Case Study. The first portion of the workshop will introduce the participants to the GridWorld environment allowing them to explore GridWorld through a series of guided activities which demonstrate inheritance and class interaction. During the second portion of the workshop participants will be shown examples of how GridWorld can be used in a typical CS-1 course.

Workshop 4: Real Programmers Use Alice

Presenters: Paul M. Mullins, Michael Conlon, Slippery Rock University

This workshop will address the issues in using Alice V2.0 for a full-semester, introductory programming course first in a CS101o, 102o, 103o sequence. Participants will explore syllabi for two implementations, and an extensive set of classroom examples, exploratory learning tutorials, lab assignments, programming projects, examinations and assessment tools developed during a two-year experimental implementation of the sequence described. Discussion will include design of a programming principles course suitable for liberal studies, as well as CS/IS/IT majors. Participants will complete and assess an exercise focusing on specific programming principles. Discussion will include key indicators of success and plans for future implementations.

We are grateful to our Exhibitors and our Participating National Partners. Please thank them for their contributions to computing education.

