Welcome to SIGCSE 2005 in St. Louis

Welcome to St. Louis for the 36th year of the SIGCSE Technical Symposium on Computer Science Education. We are excited about SIGCSE 2005 and we hope you have as much fun as we have had in planning this event. There is much to see and do with a record number of paper presentations, panels, special sessions, and workshops. We also suggest you take the time to relax and stroll along the Mississippi to visit the famous Gateway to the West arch. Or enjoy a reunion with old friends, find an experienced colleague and discuss topics of common interest over dinner, make plans for collaboration, or meet new friends in the inviting renaissance environment of the conference setting.

We are pleased to announce the winners of the two annual SIGCSE awards: Kim Bruce for Outstanding Contributions to Computer Science Education and Andrew McGettrick for Lifetime Service. Kim will give the opening keynote talk on Thursday morning. Other invited speakers for the Symposium are Mordechai (Moti) Ben-Ari and Maria Klawe. You may recall that Moti was the SIGCSE 2004 outstanding contributions award winner but was unable to make his presentation at the symposium in 2004. We are delighted that Moti will be joining us to present his keynote talk on Friday morning. We are also honored that Maria Klawe will present the final keynote address at the luncheon on Saturday.

We are most grateful to the many volunteers who make this conference possible. First, we’d like to thank our committee – Doug, Paul, Myles, Susan, Cary, Larry, Frank, Bonnie, Don, Todd, Mark, Scott, Dennis, Guido, Henry, John, Pam, Constance, Cathy, Rich and J.D. – you’ve been a terrific team. We are grateful to all the authors, reviewers, and session chairs. Thank you to Ann Sobel for continuing the ACM research competition at SIGCSE and to Todd Stevens and Mark Guzdial for leading the Doctoral Consortium. Thanks to the people at ACM headquarters for their assistance, especially Erin Dolan. It’s been a pleasure working with our exhibit managers, Matthew Campagni and Tom D’Auria, of Information Methods Incorporated, and with our conference manager Tracy Pendleton and his staff, and the folks at the Renaissance hotel in St. Louis. We are most grateful for the editorial contributions provided by Lisa Tolles at Sheridan Printing. Thanks to St. Louis University for providing lab facilities and to our home institutions for their support: Ithaca College and the University of Wisconsin – Oshkosh.

Wanda Dann and Tom Naps  
SIGCSE 2005 Symposium Chairs
General Schedule Notes

Registration will be open:
- Wednesday: 3:00 PM - 9:30 PM
- Thursday: 7:30 AM - 5:00 PM
- Friday: 7:30 AM - 5:00 PM
- Saturday: 7:30 AM - 4:00 PM

Exhibits will be open:
- Thursday: 10:00 AM - 5:00 PM
- Friday: 9:30 AM - 5:00 PM
- Saturday: 9:30 AM - 12:00 PM

Posters will be on display in the Majestic Ballroom exhibit hall at various times throughout the conference. See the detailed schedule for the times the posters will be “presented”.

CCSC Meetings will be held Wednesday at 6:00 PM and Friday at 6:15 PM.

NSF CCLI Project Showcase presentations will take place in the Majestic Ballroom exhibit hall Thursday from 10:00 to noon, Friday from 10:00 to noon and from 2:00 to 4:00, and Saturday 10:00 to noon.

The SIGCSE Luncheon is on Saturday.

Free 802.11b Wireless Access
Provided in the Exhibit Hall, Exhibit Hall Foyer and Registration Area

Instructions
1. Enable DHCP/Obtain IP Address Automatically
2. SSID is Broadcast Select or enter:
   - SIGCSEA (Exhibit Hall)
   - SIGCSEB (Exhibit Foyer)
   - SIGCSEC (Registration)
3. Wireless Mode: Infrastructure

SIGCSE Wireless Access Courtesy of

[Thomson Learning Course Technology Logo]
## Symposium at a Glance

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<td>CCSC Meetings</td>
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<td>7:00-10:00</td>
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<td>Welcome Address</td>
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<td>11:45-2:00</td>
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<td>5:45-6:30</td>
<td>Birds of a Feather: Session I</td>
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<td>6:45-7:30</td>
<td>Birds of a Feather: Session II</td>
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<td>7:30-9:30</td>
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<td>Landmark Ballroom</td>
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<td>9:45-10:30</td>
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<td>12:00-2:00</td>
<td>Lunch Break</td>
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<td>3:15-5:15</td>
<td>Faculty Posters Session II</td>
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<td>5:30-6:15</td>
<td>SIGCSE Business Meeting</td>
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<td>6:15-7:00</td>
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<td>Student Research Competition Presentations</td>
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<td>1:00-2:30</td>
<td>SIGCSE Luncheon</td>
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<td>Workshops 27-37</td>
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**SIGCSE 2005**

would like to thank our Corporate Supporters

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  * University of Maryland University College *
36th SIGCSE Technical Symposium
on Computer Science Education

Wednesday Evening, 7:00 p.m. to 10:00 p.m.

Workshops 1 - 12 Various Locations

Descriptions and locations of workshops are listed in the Workshops section on page 40 of this program.

Thursday Morning, 8:30 a.m. to 10:00 a.m.

SIGCSE Opening Ceremonies and Keynote Address Landmark Ballroom
8:30 Welcome
Wanda Dann, Symposium Chair, Ithaca College
Tom Naps, Symposium Chair, University of Wisconsin-Oshkosh

Keynote Address: Using Abstractions to Make Concepts Concrete
Kim B. Bruce, Williams College

Thursday Morning, 10:00 a.m. to 10:30 a.m.

Coffee Break & Exhibits Majestic Ballroom

Thursday Morning, 10:00 a.m. to 12:00 p.m.

NSF Showcase Majestic Ballroom

Thursday Morning, 10:30 a.m. to 11:45 a.m.

PAPERS Compiler Technology Thu. 10:30-11:45
Chair: Sei-Jong Chung, Northeastern Illinois University Landmark 1
10:30 Building an XQuery Interpreter in a Compiler Construction Course
Sara Miner More, Tim Pevzner, Alin Deutsch, Scott Baden, and Paul Kube, University of California, San Diego

10:55 Teaching Compiler Construction Using a Domain Specific Language
Tyson Henry, California State University, Chico

11:20 Hide and Show - Using Real Compiler Code for Teaching
Elizabeth White, George Mason University, Ranjan Sen, Microsoft Corp., and Nina Stewart, George Mason University
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<th>Session</th>
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<td>10:30</td>
<td>PAPERS Accessibility</td>
<td>Brian Rosmaita, Hamilton College</td>
<td>Landmark 2</td>
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<tr>
<td></td>
<td><strong>Accessibility in Introductory Computer Science</strong></td>
<td>Robert F. Cohen, V. Fairley, David Gerry, and Gustavo R. Lima, University of Massachusetts Boston</td>
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<tr>
<td>10:55</td>
<td>Opening the Eyes of Those Who Can See to the World of Those Who Can't: A Case Study</td>
<td>Susan Harrison, University of Wisconsin-Eau Claire</td>
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<td>11:20</td>
<td>Students with Asperger's Syndrome in the CS Classroom</td>
<td>Mary Anne Egan, Siena College</td>
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<td>PAPERS Teaching Experimentation</td>
<td>Joan Krone, Denison University</td>
<td>Landmark 3</td>
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<td><strong>Integrating Science and Research in a HCI Design Course</strong></td>
<td>Robert Pastel, Michigan Technology University</td>
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<td>10:55</td>
<td>Interpreting Java Program Runtimes</td>
<td>Stuart Hansen, University of Wisconsin - Parkside</td>
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<tr>
<td>11:20</td>
<td>Teaching Empirical Skills and Concepts in Computer Science using Random Walks</td>
<td>Grant Braught, Dickinson College</td>
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<td></td>
<td>SPECIAL SESSION The ACM Java Task:</td>
<td>Eric Roberts, Stanford University</td>
<td>Landmark 4</td>
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<td></td>
<td><strong>Force: Status Report</strong></td>
<td>Kim Bruce, Williams College, James H. Cross II, Auburn University, Scott Grissom, Grand Valley State University, Karl Klee, Alfred State College, Susan Rodger, Duke University, Fran Trees, Drew University, Ian Utting, University of Kent, and Frank Yellin, Sun Microsystems</td>
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<td></td>
<td>PAPERS Databases</td>
<td>Mohamad Neilforoshan, Stockton College</td>
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<td>10:30</td>
<td><strong>Design Patterns for Database Pedagogy - A Proposal</strong></td>
<td>James W. Benham, Montclair State University, Thomas J. Marlowe, Seton Hall University, Cyril S. Ku, William Paterson University, and James W. Benham, Montclair State University</td>
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<td>10:55</td>
<td>Exploring XML for Data Exchange in the Context of an Undergraduate Database Curriculum</td>
<td>Suzanne Dietrich, Susan Urban, Hua Ma, Yang Xiao, and Shama Patel, Arizona State University</td>
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<td>11:20</td>
<td>Automated Tutoring for a Database Skills Training Environment</td>
<td>Claire Kenny and Claus Puhl, Dublin City University</td>
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**PANEL**

**Contrasting Women’s Experiences in Computer Science at Different Institutions**

Thur. 10:30 – 11:45

**Moderator:** Mark Guzdial, Georgia Institute of Technology

**Panelists:** Ela Zur, The Open University of Israel, Lecia Barker, ATLAS Evaluation and Research, U. Colorado, and Lilly Irani, Stanford University

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**SPECIAL SESSION A Synthesis and Ontology of All of Computing**

Thur. 10:30 – 11:45

**Organizer:** Lillian (Boots) Cassel, Villanova University

**Participants:** Robert H. Sloan, University of Illinois at Chicago, and Russell Shackelford, ACM Education Board

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**VENDOR SESSION**

**Using Mac OS X to Teach Undergraduate Computer Science**

Thur. 10:30 – 11:45

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**Thursday Morning / Afternoon, 11:45 a.m. to 2:00 p.m.**

- **Lunch Break**
  
  *On your own.*

- **First Timers’ Lunch**
  
  Crystal Ballroom (20th floor)

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**Thursday Afternoon, 1:00 p.m. to 5:00 p.m.**

- **Student Research Poster Session**
  
  Majestic Ballroom

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**Thursday Afternoon, 2:00 p.m. to 3:15 p.m.**

- **PAPERS**
  
  **Networks**
  
  Thru. 2:00 – 3:15
  
  **Chair:** Bina Ramamurthy, SUNY at Buffalo
  
  - **2:00** Using SeSFJava in Teaching Introductory Network Courses
    
    Tamer Elsharnouby and A. Udaya Shankar, University of Maryland
  
  - **2:25** A Pattern-based Development Tool for Mobile Agents
    
    Vishal Modak, David Langan and Thomas Hain, University of South Alabama
  
  - **2:50** The Virtual Network System
    
    Martin Casado and Nick McKeown, Stanford University
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<th>Capstone Projects</th>
<th>Thur. 2:00 – 3:15</th>
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<tr>
<td>Chair:</td>
<td>Chang Liu, <em>Ohio University</em></td>
<td>Landmark 2</td>
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<td>2:00</td>
<td><em>The Course Scheduling Problem as a Source of Student Projects</em></td>
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<td>Tim Wahls, William Combs, Robert Hawkins, Thomas Pore, Arik Schechet and Louis Ziantz, <em>Dickinson College</em></td>
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<td>2:25</td>
<td><em>A Real-Time Information Warfare Exercise on a Virtual Network</em></td>
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<td>James Walden, <em>University of Toledo</em></td>
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<td>2:50</td>
<td><em>Experience With an Industry-Driven Capstone Course on Game Programming</em></td>
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<td>Ian Parberry, Timothy Roden, and Max Kazemzadeh, <em>University of North Texas</em></td>
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<td>Timothy Stanley, <em>Brigham Young University-Hawaii</em></td>
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<td>2:00</td>
<td><em>CAMERA: Introducing Memory Concepts via Visualization</em></td>
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<td>2:25</td>
<td><em>Computer Architecture and Mental Models</em></td>
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<td>Cecile Yehezkel, Mordechai Ben-Ari, <em>Weizmann Institute of Science</em>, and Tommy Dreyfus, <em>Tel Aviv University</em></td>
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<td>2:50</td>
<td><em>SPIMbot: An Engaging, Problem-based Approach to Teaching Assembly Language Programming</em></td>
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<td>Craig Zilles, University of Illinois at Urbana-Champaign</td>
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<td><em>Using Asynchronous Discussions to Enhance Student Participation in CS Courses</em></td>
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<td>B. Bhagyavati, Stan Kurkovsky and Christopher Whitehead, <em>Columbus State University</em></td>
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<td>2:25</td>
<td><em>Ubiquitous Presenter: Increasing Student Access and Control in a Digital Lecturing Environment</em></td>
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<td>Beth Simon, Michelle Wilkerson, <em>University of San Diego</em>, and William G. Griswold, <em>University of California, San Diego</em></td>
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<td>2:50</td>
<td><em>Research to Classroom: Experiences from a multi-institutional course in smart home technologies</em></td>
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THURSDAY

PANEL  Using History of Computing to Address Problems and Opportunities in Computer Science Education for Undergraduates  Thur. 2:00 – 3:15

Moderator: Orit Hazzan, Technion – Israel Institute of Technology
Panelists: John Impagliazzo, Hofstra University
           Raymond Lister, University of Technology, Sydney
           Shimon Schocken, The Interdisciplinary Center Herzliya (IDC)

SPECIAL SESSION  The Voice of Experience: National Science Foundation Funded Projects  Thur. 2:00 – 3:15

Organizer: Steve Cunningham, Division of Undergraduate Education, NSF

SPECIAL SESSION  Agile Development in Computer Science Education: Practices & Prognosis  Thur. 2:00 – 3:15

Organizer: Clifton Kussmaul, Muhlenberg College
Panelists: Joseph Bergin, Pace University
           James Caristi, Valparaiso University
           Gary Pollice, Worcester Polytechnic Institute
           Thomas Reichlmayr, Rochester Institute of Technology

Thursday Afternoon, 3:15 p.m. to 4:00 p.m.

Coffee Break & Exhibits  Majestic Ballroom

Thursday Afternoon, 4:00 p.m. to 5:15 p.m.

PAPERS  Software Engineering Projects  Thur. 4:00 – 5:15

Chair: Fernando Naveda, Rochester Institute of Technology

4:00  A Company-based Framework for a Software Engineering Course

        Thomas Way, Villanova University

4:25  Large Team Projects in Software Engineering Courses

        David Coppit, The College of William and Mary, and Jennifer Haddox-Schatz,
        Daniel H. Wagner Associates, Inc.

4:50  AlgorithmA Project: The Ten-Week Mock Software Company

        Arturo Concepcion, Marc Bernstein, California State University, San Bernardino,
        Kelly FitzGerald, Symantec, and James Macdonell, California State University, San Bernardino

THURSDAY THURSDAY THURSDAY THURSDAY THURSDAY THURSDAY
PAPERS  Computer Security  Thur. 4:00 – 5:15
Chair: Gary Skuse, Rochester Institute of Technology  Landmark 2
4:00  Computer Forensics Programs in Higher Education: A Preliminary Survey
       Larry Gottschalk, Jigang Liu, Brahma Dathan, Sue Fitzgerald and Michael Stein, Metropolitan State University
4:25  Viruses 101
       John Aycock and Ken Barker, University of Calgary
4:50  Teaching Students to Hack: Curriculum Issues in Information Security
       Patricia Logan, Marshall University, and Allen Clarkson

PAPERS  Algorithms and Data Structures  Thur. 4:00 – 5:15
Chair: Yana Kortsarts, Widener University  Landmark 3
4:00  Alternatives to Two Classic Data Structures
       Chris Okasaki, United States Military Academy
4:25  Experiments with Balanced-Sample Binary Trees
       John Noga, G. Michael Barnes, California State University Northridge, Peter Smith, California State University Channel Islands, and Jeff Wiegley, California State University Northridge
4:50  Analyze That: Puzzles and Analysis of Algorithms
       Anany Levitin, Villanova University

PAPERS  The First Year: New Ways to Teach Programming  Thur. 4:00 – 5:15
Chair: Joseph Oldham, Centre College  Landmark 4
4:00  RAPTOR: A Visual Programming Environment for Teaching Algorithmic Problem Solving
       Martin Carlisle, US Air Force Academy, Terry Wilson, Wright Patterson AFB, Jeffrey Humphries and Steven Hadfield, US Air Force Academy
       Mark Bailey, Hamilton College
4:50  Revealing the Programming Process
       Michael Caspersen, University of Aarhus, and Jens Bennedsen, IT University West

PANEL  Challenges to Computer Science Education Research  Thur. 4:00 – 5:15
Moderator: Orit Hazzan, Technion – Israel Institute of Technology
Panelists: Vicki L. Almstrum, The University of Texas at Austin
          Mark Guzdial, Georgia Institute of Technology
          Marian Petre, The Open University

THURSDAY THURSDAY THURSDAY THURSDAY THURSDAY THURSDAY
SPECIAL SESSION  Taking Advantage of National Science Foundation Funding Opportunities  Thur. 4:00 – 5:15
Moderator:  Steve Cunningham, Division of Undergraduate Education, NSF
Panelists:  Diana Gant, Division of Undergraduate Education, NSF, and Harriet Taylor, Division of Experimental and Integrative Activities, NSF
Landmark 6

SPECIAL SESSION  Status Report on the SIGCSE Committee on the Implementation of a Discrete Mathematics Course  Thur. 4:00 – 5:15
Organizer:  Bill Marion, Valparaiso University
Landmark 7

VENDOR SESSION  From Soup to Nuts – Curriculum Innovation and Microsoft Research Curriculum Repository  Thur. 4:00 – 5:15
Kingsbury

Thursday Evening, 5:45 p.m. to 6:30 p.m.

Birds of a Feather: Session I
Descriptions of these sessions can be found on page 30 of this program.

Working Effectively with Underprepared Potential Majors  Westmoreland
Marcia Schlafmitz, New Jersey City University and Lonnie Fairchild, SUNY - Plattsburgh

It's a Small World: International High Schools  Pershing
Jenka Guevara, American School Foundation, Mexico City

Curriculum Issues: Coping with Offshore Software Development Outsourcing  Flora
Anthony Duben and Ken Surendran, Southeast Missouri State University, and John Impagliazzo, Hofstra University

Incorporating Service Learning into a Capstone Course  Kingsbury
Roger Ferguson, Grand Valley State University and Mary Last, University of Mary Hardin-Baylor

Big Brother or “Oh, Brother”: Course Management Systems in Computer Science  Hawthorne
Jeffrey Popyack, Drexel University

Deciding on Objectives and Outcomes  Lucas
Doris Lidtke, ABET, Inc. and Gayle Yaverbaum, Penn State University at Harrisburg

Peer Review of Team Projects and Term Papers  Benton
Edward Gehring, North Carolina State University
Thursday Evening, 6:45 p.m. to 7:30 p.m.

Birds of a Feather: Session II
Descriptions of these sessions can be found on page 30 of this program.

jGRASP: Improving Usability for Novices
James Cross, Dean Hendrix and David Umphress, Auburn University
Westmoreland

Professional Certifications in CS Undergraduate Programs
Ariel Ortiz Ramirez, ITESM Campus Estado de México
Pershing

Wall Posters for Computer Science
Ken Vollmar, Southwest Missouri State University
Flora

Both Sides Now: Transition from Graduate Student to Faculty Member
Peter DePasquale, The College of New Jersey and
Tracy Lewis, Radford University
Kingsbury

Increasing Retention in CS101 and CS102
Deborah Whitfield and Paul Mullins, Slippery Rock University
Hawthorne

Recruiting and Retaining Underrepresented Groups in CS Programs
Bridget Baird, Connecticut College
Lucas

ACM Programming Contests: Building a Team and Attending a Contest
Howard Whitston, Albion College
Benton

Teaching the History of Computing
David Hemmendinger, Union College and
John Impagliazzo, Hofstra University
Parkview
Laboratories in CIS: Pedagogic (and Practical) Issues
Frank Friedman, Temple University; Richard Enbody,
Michigan State University; Gayle Yaverbaum, Penn State University
at Harrisburg, and Michael Feldman, George Washington University

BlueJ Users’ Forum
Michael Kölling and Ian Utting, University of Kent

Mathematical Reasoning in Computer Science
Peter Henderson, Butler University and
Judith Gersting, University of Hawaii at Hilo

Thursday Evening, 7:30 p.m. to 9:30 p.m.

SIGCSE Reception – Hot Hors d’oeuvres
and Beverages
Thur. 7:30 – 9:30
Landmark Ballroom
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
</table>
| Friday Morning, 8:30 a.m. to 9:45 a.m. | SIGCSE Keynote Address  
  *The Concorde Doesn't Fly Anymore*  
  Mordechai Ben-Ari, Weizmann Institute of Science |
| Friday Morning, 9:45 a.m. to 10:30 a.m. | Coffee Break & Exhibits  
  Majestic Ballroom |
| Friday Morning, 9:45 a.m. to 11:45 a.m. | Faculty Posters Session I  
  Information about posters can be found on page 35 of this program.  
  Majestic Ballroom |
| Friday Morning, 10:00 a.m. to 12:00 p.m. | NSF Showcase  
  Majestic Ballroom |
| Friday Morning, 10:30 a.m. to 11:45 a.m. | PAPERS  
  **Software and Techniques for Upper Level Courses**  
  Fri. 10:30 – 11:45  
  Landmark 1  
  Chair: Libby Shoop, Macalester College  
  10:30  
  *An Introductory VR course for undergraduates incorporating foundation, experience and capstone*  
  Sharon Stansfield, Ithaca College  
  10:55  
  *Photon Mapping Made Easy*  
  Ching-Kuang Shene, Tin-Tin Yu, and John Lowther, Michigan Technological University  
  11:20  
  *A Geographically-Distributed, Assignment-Structured Undergraduate Grid Computing Course*  
  Mark A. Holliday, Barry Wilkinson, Jeffrey House, Samir Daoud, Western Carolina University, and Clayton Ferner, University of North Carolina at Wilmington |
PAPERS  Online Instruction  Fri. 10:30 – 11:45  
Chair: Martha Kosa, Tennessee Technological University  Landmark 2  
10:30  The Grader in ProgrammingLand  
Curt Hill, Valley City State University, Brian M. Slator and Lisa M. Daniels, NDSU  
10:55  Results from the Evaluation of the Effectiveness of an Online Tutor on Expression Evaluation  
Amruth Kumar, Ramapo College of New Jersey  
11:20  PL-Detective: Experiences and Results  
Amer Diwan, Michele Jackson, William Waite, and Jacob Dickerson, University of Colorado
PANEL  IT Offshore Outsourcing: Impact on CS/IS Curriculum
Fri. 10:30 – 11:45
Landmark 6
Moderator: Wing Huen, University of Wisconsin Oshkosh
Panelists: Ernest Ferguson, Northwest Missouri State University, Peter B. Henderson, Butler University, and Clifton Kussmaul, Muhlenberg College

PANEL  Outcomes-Based Computer Science Education
Fri. 10:30 – 11:45
Landmark 7
Moderator: Stephen Cooper, Saint Joseph’s University
Panelists: Lillian Cassel, Villanova University, Steve Cunningham, Oregon State University and the NSF, and Barbara Moskal, Colorado School of Mines

VENDOR SESSION  Mac OS X: The Ultimate OS for Computer Science Education
Fri. 10:30 – 11:45
Portland & Benton
Mezzanine

VENDOR SESSION  The Pen is Mightier than the Mouse: Curriculum Innovations with the Tablet PC
Fri. 10:30 – 11:45
Westmoreland and Kingsbury

Friday Morning/Afternoon, 11:45 a.m. to 2:00 p.m.

Lunch Break

Research Groups and Vendors have scheduled meetings for this open session. At the time of this printing, the following meetings are planned:
- College of Charleston, HCI Research Group (Portland & Benton, mezzanine)
- Alice Tea Party, an open reception to all attendees, (Hawthorne, Lucas, Flora 21st floor)
- O'Reilly Safari Information session (Landmark I)
- Addison-Wesley Reception (Parkview)
- Carnegie Mellon Qatar Project (Aubert)

Friday Afternoon, 2:00 a.m. to 4:00 p.m.

NSF Showcase

Friday Afternoon, 2:00 p.m. to 3:15 p.m.

PAPERS  Courseware
Fri. 2:00 – 3:15
Landmark 1
Chair: Lynda Thomas, University of Wales
2:00  Supporting Workflow in a Course Management System
Chavdar Botev, Hubert Chao, Theodore Chao, Yim Cheng, Raymond Doyle, Sergey Grankin, Jon Guarino, Saikat Guha, Pei-Chen Lee, Daniel Perry,
Christopher Re, Ilya Rifkin, Tingyan Yuan, Dora Abdullah, Kathy Carpenter, David Gries, Dexter Kozen, Andrew Myers, David Schwartz, and Jayavel Shanmugasundaram, Cornell University

2:25 **Automated Use of a Wiki for Collaborative Lecture Notes**
Melissa O’Neill, Harvey Mudd College

2:50 **Learning by Doing: Introducing Version Control as a Way to Manage Student Assignments**
Karen Reid and Gregory Wilson, University of Toronto

---

**PAPERS**  Programming with Images  Fri. 2:00 – 3:15
Chair: Larry Griffith, Westfield State College  Landmark 2

2:00 **Steganography and Cartography: Interesting Assignments that reinforce Machine Representation, Bit Manipulation, and Discrete Structures Concepts**
Michael Wick, Daniel Stevenson and Steven Ratering, University of Wisconsin - Eau Claire

2:25 **A Java Framework for Experimentation with Steganography**
Kenny Hunt, University of Wisconsin - La Crosse

2:50 **Using Image Processing Projects to Teach CS1 Topics**
Tia Newhall and Richard Wicentowski, Swarthmore College

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**PAPERS**  Active and Lab-based Learning  Fri. 2:00 – 3:15
Chair: Graciela Gonzalez, Sam Houston State University  Landmark 3

2:00 **The Impact of Virtual Classroom Laboratories in CSE**
Matt Bower and Debbie Richards, Macquarie University

2:25 **Closed Laboratories with Embedded Instructional Re-search Design for CS1**
Leen-Kiat Soh, Ashok Samal, Suzette Person, Gwen Nugent, and Jeff Lang, University of Nebraska-Lincoln

2:50 **An Introductory Software Engineering Course that Facilitates Active Learning**
Thomas Reichlmayr, Stephanie Ludi and Swaminathan Natarajan, Rochester Institute of Technology

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**PAPERS**  The First Year: Breadth First Approaches  Fri. 2:00 – 3:15
Chair: Rhys Price Jones, Rochester Institute of Technology  Landmark 4

2:00 **Teaching Entering Students to Think Like Computer Scientists**
Elise H. Turner and Roy M. Turner, University of Maine

2:25 **The New Science Students in Too Much, Too Soon: An Abbreviated, Accelerated, Constructivist, Collaborative, Introductory Experience in CS**
Samuel Rebelsky, Grinnell College
Experiences with a CS0 Course Targeted for CS1 Success
Charles Dierbach, Blair Taylor, Harry Zhou, and Iliana Zimand, Towson University

PANEL Using Peer Review in Teaching Computing
Moderator: Edward F. Gehringer, North Carolina State University
Panelists: Donald D. Chinn, University of Washington at Tacoma, Mark A. Ardis, Rose-Hulman Institute of Technology, and Manuel A. Pérez-Quíñones, Virginia Tech

SPECIAL SESSION The Year in Review. Changes and Lessons Learned in the Design and Implementation of AP CS Exam in Java
Moderator: Reg Hahne, Atholton High School
Participants: Scot Drysdale, Dartmouth College, Judith Hromcik, Arlington High School, and David Reed, Creighton University

PANEL Teaching Hands-on Computer and Information Systems Security Despite Limited Resources
Organizer: Bhagyavati, Columbus State University
Participants: Stephen O. Agyei-Mensah, Clarion University of Pennsylvania, Rose Shumba, Indiana University of Pennsylvania, and Iretta B. C. Kearse, Spelman College

VENDOR SESSION Open Source Software Development
Fri. 2:00 – 3:15
Westmoreland and Kingsbury

Friday Afternoon, 3:15 p.m. to 4:00 p.m.
Coffee Break & Exhibits
Majestic Ballroom

Friday Afternoon, 3:15 p.m. to 5:15 p.m.
Faculty Poster Session II
Information about posters can be found on page 35 of this program.
## Friday Afternoon, 4:00 p.m. to 5:15 p.m.

<table>
<thead>
<tr>
<th>PAPERS</th>
<th>Issues in Secondary Education and Introductory Programming</th>
<th>Fri. 4:00 – 5:15</th>
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</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Troy Vasiga, University of Waterloo</td>
<td>Landmark 1</td>
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<tr>
<td>4:00</td>
<td><strong>Taming Java for the Classroom</strong></td>
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<td></td>
<td>Robert Cartwright, James Hsia, Elspeth Simpson and Daniel Smith, Rice University</td>
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<tr>
<td>4:25</td>
<td><strong>A Model for Improving Secondary CS Education</strong></td>
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<td></td>
<td>Barbara Ericson, Mark Guzdial and Maureen Biggers, Georgia Institute of Technology</td>
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<tr>
<td>4:50</td>
<td><strong>A 'Secondary' Look at Digital Image Processing</strong></td>
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<td></td>
<td>Alasdair McAndrew and Anne Venables, Victoria University of Technology</td>
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<tr>
<th>PAPERS</th>
<th>Ethics and Computing</th>
<th>Fri. 4:00 – 5:15</th>
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<tbody>
<tr>
<td>Chair</td>
<td>James Huggins, Kettering University</td>
<td>Landmark 2</td>
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<tr>
<td>4:00</td>
<td><strong>Teaching and Learning Ethics in Computer Science: Walking the Walk</strong></td>
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<td></td>
<td>Richard J. Botting, California State University, San Bernardino</td>
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<td>4:25</td>
<td><strong>Effective Incorporation of Ethics into Courses that Focus on Programming</strong></td>
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<td>Mary Elaine Califf and Mary Goodwin, Illinois State University</td>
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<tr>
<td>4:50</td>
<td><strong>A Discussion Format for Computer Ethics</strong></td>
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<td>Alton Sanders, Miami University</td>
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<thead>
<tr>
<th>PAPERS</th>
<th>Non-Majors Courses</th>
<th>Fri. 4:00 – 5:15</th>
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<tbody>
<tr>
<td>Chair</td>
<td>Mark Jones, Kutztown University</td>
<td>Landmark 3</td>
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<tr>
<td>4:00</td>
<td><strong>Computer Literacy: What Students Know and From Whom They Learned It</strong></td>
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<td></td>
<td>Mark Hoffman and David Vance, Quinnipiac University</td>
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<tr>
<td>4:25</td>
<td><strong>Design Process for a Non-Majors Computing Course</strong></td>
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<tr>
<td></td>
<td>Mark Guzdial and Andrea Forte, Georgia Institute of Technology</td>
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<tr>
<td>4:50</td>
<td><strong>Just-in-Time Teaching for CS0</strong></td>
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<td></td>
<td>Jeffrey Forbes and Tammy Bailey, Duke University</td>
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<thead>
<tr>
<th>SPECIAL SESSION</th>
<th>Nifty Assignments</th>
<th>Fri. 4:00 – 5:15</th>
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<tbody>
<tr>
<td>Moderator</td>
<td>Nick Parlante, Stanford University</td>
<td>Landmark 4</td>
</tr>
<tr>
<td>Participants</td>
<td>David Levine, Steven Andrianoff, St. Bonaventure University, Alyce Brady and Pamela Cutter, Kalamazoo College, Paul Kube, Jefferson Ng, University of California, San Diego, Richard E. Pattis, Carnegie Mellon University, Aaron J. Gordon, Fort Lewis College, and Stefan Brandle, Jonathan Geisler, Taylor University</td>
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<tr>
<td>Time</td>
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</tbody>
</table>
| 4:00  | **Intention-Based Scoring: An Approach to Measuring Success at Solving the Composition Problem**  
H. Chad Lane, University of Southern California, and Kurt VanLehn, University of Pittsburgh | Landmark 5     |
| 4:25  | **In-Person Grading: An Evaluative Experiment**  
J. Philip East and J. Ben Schafer, University of Northern Iowa | Landmark 5     |
| 4:50  | **Patterns of Plagiarism**  
Charlie Daly and Jane Horgan, Dublin City University | Landmark 5     |
| 4:00  | **SPECIAL SESSION Developing Resources to Support a National Computer Science Curriculum for K-12**  
Organizer: Anita Verno, Bergen Community College  
Participants: Debbie Carter, Lancaster County Day School, Robb Cutler, The Harker School, Michelle Hutton, The Girls' Middle School, and Lenny Pitt, University of Illinois at Urbana-Champaign | Landmark 6     |
| 4:00  | **SPECIAL SESSION Objects Early Tools - A Demonstration**  
Participants: Joe Bergin, Pace University, Kim Bruce, Williams College, and Michael Kölling, University of Southern Denmark | Landmark 7     |
| 4:00  | **VENDOR SESSION Building Global Web Applications**  
Westmoreland and Kingsbury | Various Locations |

**Friday Evening, 5:30 p.m. to 6:15 p.m.**

SIGCSE Business Meeting  
Landmark 4

**Friday Evening, 6:15 p.m. to 7:00 p.m.**

CCSC Business Meeting  
Landmark 4

**Friday Evening, 7:00 p.m. to 10:00 p.m.**

Workshops 13 - 25  
Various Locations

Descriptions and locations of workshops are listed in the Workshops section on page 40 of this program.
### Saturday Morning, 8:30 a.m. to 10:10 a.m.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td><strong>Changes in CS Students' Attitudes towards CS over Time: An Examination of Gender Differences</strong></td>
<td>Sylvia Beyer, Michelle DeKeuster, Kathleen Walter, Michelle Colar and Christina Holcomb</td>
</tr>
<tr>
<td>8:55</td>
<td><strong>Diversifying the Images of Computer Science: Undergraduate Women take on the Challenge!</strong></td>
<td>Carol Frieze, Carnegie Mellon University</td>
</tr>
<tr>
<td>9:20</td>
<td><strong>Climbing Onto the Shoulders of Giants</strong></td>
<td>Antonio Lopez, Lisa Schulte and Marguerite Giguette, Xavier University of Louisiana</td>
</tr>
<tr>
<td>9:45</td>
<td><strong>Factors Influencing the Shrinking Pipeline in High Schools: A Sector-Based Analysis of the Israeli High School System</strong></td>
<td>Larisa Eidelman and Orit Hazzan, Technion - Israel Institute of Technology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td><strong>Programming: Factors that influence success</strong></td>
<td>Susan Bergin and Ronan Reilly, National University of Ireland, Maynooth</td>
</tr>
<tr>
<td>8:55</td>
<td><strong>Tracking an Innovation in Introductory CS Education from a Research University to a Two-Year College</strong></td>
<td>Allison Elliott Tew, Georgia Institute of Technology, Charles Fowler, Gainesville College, and Mark Guzdial, Georgia Institute of Technology</td>
</tr>
<tr>
<td>9:20</td>
<td><strong>What Can Computer Science Learn from a Fine Arts Approach to Teaching</strong></td>
<td>Lecia Barker and Kathy Garvin-Doxas, University of Colorado, and Eric Roberts, Stanford University</td>
</tr>
<tr>
<td>9:45</td>
<td><strong>The Effects of Individual Differences on CS2 Course Performance Across Universities</strong></td>
<td>Tracy Lewis and J.D. Chase, Radford University, Manuel Perez-Quinones, Virginia Tech, and Mary Beth Rosson, Pennsylvania State University</td>
</tr>
</tbody>
</table>
### PAPERS  Robotics  Sat. 8:30 – 10:10

**Chair:** Lisa Kaczmareczyk, *University of Texas at Austin*  Landmark 3

**8:30**  
*Towards Concrete Concurrency: occam-pi on the LEGO Mindstorms*  
Matthew Jadud and Christian Jacobsen, *University of Kent*

**8:55**  
*Efficient Use of Robots in the Undergraduate Curriculum*  
Judith Challengier, *California State University, Chico*

**9:20**  
*Creating Emergent Behavior: Two Robotics Labs that Combine Reactive Behaviors*  
Robert Harlan, *St. Bonaventure University*, and Shelley McClarigan, *Dresser Rand Company*

**9:45**  
*Multidisciplinary Teamwork in a Robotics Course*  
Jerry Weinberg, William White, Cem Karacal, George Engel and Ai-Ping Hu, *Southern Illinois University Edwardsville*

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### SPECIAL SESSION  Resolved: Objects Early Has Failed  Sat. 8:30 – 10:10

**Organizer:** Owen Astrachan, *Duke University*  Landmark 4

**Participants:** Kim Bruce, *Williams College*, Elliot Koffman, *Temple University*, Michael Kölling, *University of Kent*, and Stuart Reges, *University of Washington*

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### PANEL  Emerging Areas in Computer Science Education  Sat. 8:30 – 10:10

**Moderator:** Amruth N. Kumar, *Ramapo College of New Jersey*  Landmark 5


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### PAPERS  Student Teams  Sat. 8:30 – 10:10

**Chair:** Sue Fitzgerald, *Metropolitan State University*  Landmark 6

**8:30**  
*A Design for Team Peer Code Review*  
Deborah Trytten, *University of Oklahoma*

**8:55**  
*Enhancing Team Knowledge: Instruction vs. Experience*  
Debra Smarkusky, Richard Dempsey, Joan Ludka and Frouke de Quillettes, *Penn State University*

**9:20**  
*Affective Assessment of Team Skills in Agile CS1 Labs: The Good, the Bad, and the Ugly*  
Dawn McKinney and Leo Denton, *University of South Alabama*

**9:45**  
*Cooperative Learning Techniques in CS1: Design and Experimental Evaluation*  
Leland Beck, Alexander Chizhik and Amy McElroy, *San Diego State University*
SPECIAL SESSION

SIGCSE Special Projects Showcase  Sat. 8:30 – 10:10
Organizer: Sally Fincher, University of Kent
Participants: Charles Ashbacher, Mount Mercy College, Charles Dierbach, Towson University, Chris McDonald, University of Western Australia, Rose Shumba, Indiana University of Pennsylvania, Charles Boisvert, City College Norwich, UK, and Justus Randolph, University of Joensuu, Finland

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Saturday Morning, 8:30 a.m. to 10:10 a.m.

Student Research Presentations  Westmoreland and Kingsbury

Saturday Morning, 10:10 a.m. to 11:00 a.m.

Coffee Break & Exhibits  Majestic Ballroom

Saturday Morning, 10:10 a.m. to 12:00 p.m.

NSF Showcase  Majestic Ballroom

Saturday Morning/Afternoon, 11:00 a.m. to 12:40 p.m.

**PAPERS: Design Patterns**  Sat. 11:00 – 12:40
Chair: Ken Surendran, Southeast Missouri State University  Landmark 1

11:00  **Design Patterns for Parsing**
Stephen Wong, Dung Nguyen and Mathias Ricken, Rice University

11:25  **Teaching Inter-Object Design Patterns to Freshmen**
Prasun Dewan, University of North Carolina-Chapel Hill

11:50  **Teaching Design Patterns in CS1: a Closed Laboratory Sequence based on the Game of Life**
Michael Wick, University of Wisconsin - Eau Claire

12:15  **Teaching Design Patterns by Stealth**
Stephen Weiss, University of North Carolina at Chapel Hill

---

**PAPERS: Assessing Student Learning**  Sat. 11:00 – 12:40
Chair: Susan Dean, UMUC - Maryland in Europe  Landmark 2

11:00  **Design Patterns for Parsing**
Des Traynor and J. Paul Gibson, National University of Ireland, Maynooth

11:25  **Using a Pre-Assessment Exam to Construct an Effective Concept-Based Genetic Program for Predicting Course Success**
Gary Boetticher, Wei Ding, Charles Moen and Kwok-Bun Yue, University of Houston - Clear Lake
11:50  Designing, Implementing, and Analyzing a Placement Test for Introductory CS Courses
Leen-Kiat Soh, Ashok Samal, Suzette Person, Gwen Nugent and Jeff Lang, University of Nebraska-Lincoln

12:15  A Multi-Institutional Investigation of Computer Science Seniors' Knowledge of Programming Concepts
Laurie Murphy, Pacific Lutheran University, Renee McCauley, College of Charleston, Suzanne Westbrook, University of Arizona, Timothy Fossum and Susan Haller, University of Wisconsin Parkside, Briana Morrison, Southern Polytechnic State University, Brad Richards, Vassar College, Kate Sanders, Rhode Island College, Carol Zander, University of Washington, Bothell, and Ruth E. Anderson, University of Virginia

PAPERS  Systems-Level Programming  Sat. 11:00 – 12:40
Chair: Alvaro Monge, California State University Long Beach  Landmark 3

11:00  An Address Translation Simulator
Steven Robbins, University of Texas at San Antonio

11:25  Experiences Teaching Operating Systems Using Virtual Platforms and Linux
Christopher Vaill and Jason Nieh, Columbia University

11:50  Configuring a Multi-Course Lab for System-Level Projects
Joel Adams and David Laverell, Calvin College

12:15  We've Been Working on the Railroad: A Laboratory for Real-Time Embedded Systems
John McCormick, University of Northern Iowa

PAPERS  New Curricular Directions  Sat. 11:00 – 12:40
Chair: Michael Goldwasser, Saint Louis University  Landmark 4

11:00  Fostering a Creative Interest in Computer Science
Gary Lewandowski, Elizabeth Johnson and Michael Goldweber, Xavier University

11:25  Intra-Curriculum Software Engineering Education
James Fenwick and Barry Kurtz, Appalachian State University

11:50  A Game Design & Programming Concentration Within The Computer Science Curriculum
Ron Coleman, Mary Kremsb, Alan Labouseur and Jim Weir, Marist College

12:15  Informatics: A Focus On Computer Science In Context
Andre van der Hoek, David Kay and Debra Richardson, University of California, Irvine
### SPECIAL SESSION Randomness and Probability
**in the Early CS Courses**
Sat. 11:00 – 12:40
Landmark 5

**Organizer:** David Ginat, Tel-Aviv University

**Participants:** Richard Anderson, University of Washington, Daniel D. Garcia, University of California, Berkeley, and Richard Rasala, Northeastern University

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### PANEL
**The Many Facets of Diversity**
Sat. 11:00 – 12:40
Landmark 6

**Moderator:** Jack Beidler, University of Scranton

**Panelists:** Hilary Holz, California State University, Hayward, Ken Yasuhara, University of Washington, and Evans J. Adams, Fort Lewis College

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### SPECIAL SESSION Computing Accreditation:
**A New Criteria Structure and New Flexibility**
Sat. 11:00 – 12:40
Landmark 7

**Participants:** Stu Zweben, The Ohio State University, Han Reichgelt, Georgia Southern University, and Gayle Yaverbaum, Penn State University

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### Saturday Afternoon, 1:00 p.m. to 2:30 p.m.

**SIGCSE Luncheon and Concluding Address**
America’s Center

*Increasing the Number of Women Majoring in Computer Science: What Works?*

Maria Klawe, Princeton University

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### Saturday Afternoon, 2:45 p.m. to 4:00 p.m.

**SIGCSE Wrap-up Session**
America's Center

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### Saturday Afternoon/Evening, 4:00 p.m. to 7:00 p.m.

**Workshops 26 - 37**
Various Locations

*Descriptions and locations of workshops are listed in the Workshops section on page 40 of this program.*
### Thursday, February 24

<table>
<thead>
<tr>
<th>Time</th>
<th>8:30</th>
<th>10:00</th>
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<th>11:45</th>
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<td>Landmark Ballroom</td>
<td><strong>Keynote</strong></td>
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<tr>
<td>Landmark 1</td>
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<td>Compilers</td>
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<td>Networks</td>
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<td>Landmark 2</td>
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<td>Accessibility</td>
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<td>Capstones</td>
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<td>Landmark 3</td>
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<td>Experimentation</td>
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<td>Computer Organization</td>
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<td>Landmark 4</td>
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<td>ACM Java Task Force</td>
<td>Lunch on your own</td>
<td>Instructional Technologies</td>
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<tr>
<td>Landmark 5</td>
<td></td>
<td>Databases</td>
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<td>History of Computing</td>
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<tr>
<td>Landmark 6</td>
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<td>Women’s Experiences</td>
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<td>NSF Projects</td>
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<tr>
<td>Landmark 7</td>
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<td>All of Computing</td>
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<td>Agile SW &amp; Education</td>
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<tr>
<td>Majestic</td>
<td>Break/Exhibits</td>
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<tr>
<td>Crystal</td>
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<td>1st Timers’ Lunch</td>
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<tr>
<td>Westmoreland &amp; Kingsbury</td>
<td>Vendor (Mac OSX)</td>
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### Friday, February 25

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<td>Westmoreland &amp; Kingsbury</td>
<td>Vendor (Tablet PC)</td>
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## PROGRAM-AT-A-GLANCE

### Thursday, February 24

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**Reception**
(Landmark Ballroom)

### Friday, February 25

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**Workshops**
## PROGRAM-AT-A-GLANCE

### Saturday, February 26

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### Saturday, February 26

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*Workshops*

| | Keynote | Wrap-up |
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SIGCSE 2005 Vendor Sessions

Through the SIGCSE 2005 Symposium, exhibitors have the opportunity to schedule sessions on topics of their choice. The following sessions have been coordinated with the SIGCSE 2005 Committee. The SIGCSE 2005 Committee and SIGCSE appreciate the interest of these companies in computer science education and their willingness to work with the SIGCSE 2005 committee to coordinate these events.

Using Mac OS X to Teach Undergraduate Computer Science
Thursday, 10:30 – 11:45 Westmoreland and Kingsbury

From Soup to Nuts – Curriculum Innovation / Microsoft Research Curriculum Repository
Thursday 4-5:15 Westmoreland and Kingsbury

Mac OS X: The Ultimate OS for Computer Science Education
Friday, 10:20 – 11:45 Portland & Benton Room, Mezzanine

The Pen is Mightier than the Mouse – Curriculum Innovations with the Tablet PC
Friday, 10:20 – 11:45 Westmoreland and Kingsbury

Open Source Software Development
Friday 2:00-3:15 Westmoreland and Kingsbury

Building Global Web Applications
Friday 4-5:15 Westmoreland and Kingsbury
The SIGCSE 2005 Doctoral Consortium
Wednesday, February 23, 2004, 8:30 AM - 5:30 PM
Landmark 1

Coordinators
Todd Stevens, Radford University
Mark Guzdial, Georgia Institute of Technology

Description
The SIGCSE Doctoral Consortium is held on Wednesday, February 23, 2005, the day before the regular sessions of the SIGCSE Technical Symposium begin. The aims of the Doctoral Consortium are:

• To offer a friendly forum for students to discuss their work and receive constructive feedback
• To offer relevant information on issues important to doctoral candidates
• To nurture a community of researchers

The Consortium is designed primarily for students currently enrolled in a Ph.D. program at any stage of study. Students in any area of computing are welcome to apply. The Consortium allows participants to interact with established researchers and with other students. It is a forum to discuss the process of research and life in academia. Each participant will give a short, critiqued research presentation.

Discussants
J. Philip East, University of Northern Iowa
Marian Petre, The Open University, UK
Orit Hazzan, Technion – Israel Institute of Technology
Ann Fleury, Aurora University
Mike Clancy, UC Berkeley
Zachary Kurmas, Grand Valley State University

Participants
Rebecca Grasser, Lakeland Community College
Kate Deibel, University of Washington
Titus Winters, University of California, Riverside
Adrienne Decker, University at Buffalo, SUNY
Marjahan Begum, The University of Nottingham
Anna Eckerdal, Uppsala University, Sweden
Haitham S. Hamza, University of Nebraska-Lincoln
Matt Bower, Macquarie University, Sydney
Becky Blackshaw, Unitec Institute of Technology, New Zealand
Ken Yasuhara, University of Washington
Jaime Spacco, University of Maryland
I-Ju Liao, University of Illinois at Urbana-Champaign
Tony Clear, Auckland University of Technology, New Zealand
SIGCSE 2005 Birds of a Feather

These sessions are informal gatherings for attendees who share a common interest.

Session I: Thursday, February 24, 5:45 p.m. to 6:30 p.m.

Working Effectively with Underprepared Potential Majors  Westmoreland
Marcia Schlafmizt, New Jersey City University and
Lonnie Fairchild, SUNY - Plattsburgh
Many institutions enroll potentially talented students who want to major in computer science but are academically unprepared. We will share strategies for identifying these students and helping them “catch up.” Possible topics: How are students underprepared: skills in math? abstract thinking? lack of computer experience? Can a CS0 course develop necessary skills? What teaching techniques help: collaborative approaches? reflective journal writing? What else can help; how the CS curriculum is organized? mentoring? how/when math concepts are taught?

It’s a Small World: International High Schools  Pershing
Jenka Guevara, American School Foundation, Mexico City
At this session, school teachers from international schools will describe and share their positive and negative experiences. Naturally, non-high school and non-international people are also welcome.

Curriculum Issues: Coping with Offshore Software Development Outsourcing  Flora 21st floor
Anthony Duben and Ken Surendran, Southeast Missouri State University, and John Impagliazzo, Hofstra University
Recent studies project a trend of continued loss of entry-level programming jobs - usually taken up by Computer Science graduates - due to offshore software development outsourcing. The purpose of this session is to identify curriculum-related strategies for addressing issues such as coping with reduced enrollments in CS programs, preparing the graduates adequately for higher-level jobs without the usual on-the-job training in entry-level positions, and other academic issues resulting from this trend.

Incorporating Service Learning into a Capstone Course  Kingsbury
Roger Ferguson, Grand Valley State University and
Mary Last, University of Mary Hardin-Baylor
Service learning has become part of the curriculum of many post-secondary institutions. The incorporation of service-learning in capstone courses was advocated by Lazar and Liddke in Managing IT/Community Partnerships in the 21st Century (2002). This session will focus on how CS/IS educators can incorporate service learning in capstone courses. The intent is for participants to share their experiences with others having a similar interest. Ideas exchanged during the session will be recorded and sent to interested participants.
Big Brother or “Oh, Brother”: Course Management Systems in Computer Science

Hawthorne
21st floor

Jeffrey Popack, Drexel University

This discussion will focus on the use of course management systems (WebCT, Blackboard, TopClass, et al.) by computer science educators to administer their courses. The typical CMS is usable by a wide audience of educators, not only those with sophisticated computing expertise. However, our experience has been that computer scientists have specialized needs and perspectives on CMS use that differ from those of the typical academic users. Come share success stories, “war stories”, workarounds, advice, and the like.

Deciding on Objectives and Outcomes

Lucas

Doris Lidke, ABET, Inc and
Gayle Yaverbaum, Penn State University at Harrisburg

21st floor

This session will enhance the computing community’s consciousness of assessment by discussing the first step of the process: deciding on objectives and outcomes. Attendees are encouraged to bring their own educational objectives and student outcomes so that the group can discuss their strengths and weaknesses. Additionally, attendees will be given some model materials, which they can modify with their own constituencies to suit their own program environment. As time permits, measurement of outcomes will be discussed.

Peer Review of Team Projects and Term Papers

Benton

Edward Gehringer, North Carolina State University

Mezzanine

Peer review is frequently used in a classroom setting to give students greater feedback on their work than the instructor and/or TA’s can provide. As collaborative learning and team projects play an increasing role in computing education, peer review within teams and/or among teams offers an effective way to improve learning and assessment. In this session participants will discuss effective strategies for peer review of team projects and term papers. These include the organization of peer-review sessions, when they should occur, and how much they should count, as well as the development of rubric questions for students to evaluate their peers’ work.

CS1 for the Non-major: Challenges, Opportunities and Best Practices

Parkview

Mezzanine

Jeffrey Stone and Tricia Clark, Penn State University at Schuylkill

As introductory computing becomes an increasingly ingrained aspect of many college majors, a larger number of non-CS majors are enrolling in CS1 courses in order to satisfy general education or program requirements. In this session we will discuss the challenges facing those CS1 faculty who teach sections involving a significant number of non-majors. Opportunities for pedagogical innovation will be explored, and “best practices” employed to address the interests of non-major students will be considered.

Town Meeting: SIGCSE Committee on Expanding the Women-in-Computing Community

Aubert

Mezzanine

Gloria Townsend, DePauw University

At SIGCSE 2004 we launched a SIGCSE committee to identify “best practices” for increasing the population of high school girls and college women enrolled in computing classes. The goals of this Birds-of-a-Feather session are to increase membership in our committee – and thereby increase our viewpoints and results; to report and evaluate 2004 committee progress; and to identify new committee goals for 2005. See www.sigcse.org/topics-committees.shtml to join our listserv.
Can One Database Course Fit All? CS and IS in a Single Course
Catherine Ricardo, Iona College and
Mary Granger, George Washington University
Because of small enrollments, many institutions cannot support two different introductory database courses and are forced to put computer science and information science students together. CC2001 and IS2002 both include database courses, but the objectives do not match. Surveys on the database curricula actually taught also showed significant differences between CS and IS departments. This session is an opportunity for those who teach database to discuss the issues they face in trying to meet the needs of both audiences.

Concepts-Based Teaching of Programming: Lessons for Concurrency
Peter Van Roy, Université Catholique de Louvain
We propose to teach computer programming in terms of programming concepts, not programming languages or paradigms. We start with a small set of concepts and add concepts exactly when they are needed. We end up covering most concepts used in programming today. We have taught with this approach since 2001. We’ll concentrate on the topic of concurrency in this session.

Session II: Thursday, February 24, 2004, 6:45 p.m. to 7:30 p.m.

jGRASP: Improving Usability forNovices
James Cross, Dean Hendrix and David Umphress, Auburn University
jGRASP is a freely available integrated development environment, which generates visualizations to improve the comprehensibility of the software. These visualizations include Control Structure Diagrams, UML Class Diagrams, Object Viewers, and a highly visual debugger. As jGRASP enters a new phase of development and refinement, it is important to balance usability with functionality. This session will focus on how the usability of jGRASP can be significantly improved, especially for first-time users, while adding important functionality.

Professional Certifications in CS Undergraduate Programs
Ariel Ortiz Ramirez, ITESM Campus Estado de México
As CS educators we know the importance of education over professional training. Yet we cannot ignore that employers commonly affirm that recently graduated students have a lack of practical skills required in “real world” situations. Important IT companies, such as Sun Microsystems, CISCO and Microsoft, have academic programs that allow students to get certified in their specific technologies before they graduate. This session will discuss the merits and drawbacks of incorporating professional certification training into CS programs.

Wall Posters for Computer Science
Ken Vollmar, Southwest Missouri State University
There are evidently no widely distributed or currently available wall-mounted posters with Computer Science educational topics! We need ideas on poster themes and presentation styles in anticipation of printing and distribution. Suggestions will probably include themes and topics such as achievements of “well-known” and “unknown” people; artistic/graphic representations of concepts, algorithms, and solutions; and introductory topics for elementary school levels. In exchange for your input, take home a piece of artwork (*subject to production by the artistic co-“PI”).
Both Sides Now: Transition from Graduate Student to Faculty Member

Peter DePasquale, The College of New Jersey and
Tracy Lewis, Radford University

This session seeks to bring together recent Ph.D. graduates who are now in faculty positions and soon-to-be graduates in order to facilitate a discussion of transition “lessons learned” (both professionally and socially) from graduate student to new faculty member. Discussion points will include the following: how other (more established) faculty members perceive and treat you; the politics of academia; great ways of launching research and obtaining funding; social life (within and outside the department); ethical issues; top things to do to get your new career on the right foot; “if only someone had told me this when I started out...”; gender specific barriers (e.g., what to do when you teach all males); age specific barriers (e.g., what happens when your students are older than you); mentor/mentee relationships; academic preparedness to teach; the perfect departmental fit.

Increasing Retention in CS101 and CS102

Deborah Whitfield and Paul Mullins, Slippery Rock University 21st floor

Regardless of the language used in the ACM defined CS101 and CS102, teaching structured programming and problem solving at an introductory level is a challenge. The leaders will describe techniques they have used for increasing student learning in CS101 and CS102 and present preliminary retention data. Participants will be asked to identify themselves, their institutions, the CS101 - CS102 sequence they teach, the type of students that take the courses and techniques they have used.

Recruiting and Retaining Underrepresented Groups in CS Programs

Bridget Baird, Connecticut College 21st floor

Computer science programs generally have low numbers of women and domestic students of color. This session will focus on strategies to address this problem, particularly in the CS1 course. How can we induce more underrepresented students to enroll in the CS1 course, and how can we keep their interest so that they consider majoring in CS? Some of these strategies include introducing a broader range of applications, mentoring, training TA’s, offering scholarships and creating a gathering place.

ACM Programming Contests: Building a Team and Attending a Contest

Howard Whitston, Albion College Mezzanine

This session will explore ways of building a team that works well together to solve at least one problem and overcoming administrative resistance. It could be the ultimate group project – limited time and resources, unlimited creativity with bragging rights for the next year. Practices, on-line resources, non-ACM sponsored contests, and your suggestions for getting less competitive students involved will also be discussed.

Teaching the History of Computing

David Hemmendinger, Union College and
John Impagliazzo, Hofstra University

Computer history can be woven into computer science courses or can be the subject of an entire course. One of us teaches an NSF-supported survey course that uses computer history as a vehicle for introducing computing topics; the other teaches a course on the history of computing for CS majors and non-majors. We propose to exchange ideas about the two approaches, the kinds of audience for which they are appropriate and the resources available for them.
Laboratories in CIS: Pedagogic (and Practical) Issues
Aubert
Frank Friedman, Temple University, Richard Enbody, Mezzanine
Michigan State University, Gayle Yaverbaum, Penn State University
at Harrisburg, and Michael Feldman, George Washington University

We intend to discuss the pros and cons of the laboratory experience in CIS, including staffing, grading, the pedagogic importance of labs, and the differences between labs for non-majors and various levels of upper division majors.

BlueJ Users’ Forum
Portland
Michael Kölling and Ian Utting, University of Kent, Mezzanine

This is a forum for teachers using the BlueJ IDE to share their experiences and to discuss recent and future developments with members of the BlueJ team.

Mathematical Reasoning in Computer Science
Landmark 7
Peter Henderson, Butler University and
Judith Gersting, University of Hawaii at Hilo

Mathematics and mathematical reasoning are central to computer science, and mathematical concepts should become an integral part of the entire CS curriculum. This bird-of-a-feather session will be a forum for educators to discuss the role of mathematics in computer science curricula.

The 2005 ACM International Student Research Contest
Thursday, Feb. 24, 1:00 – 5:00, Majestic Ballroom
Saturday, Feb. 26, 8:35 – 10:10, Westmoreland & Kingsbury

The Student Research Competition (SRC) sponsored by Microsoft Research awards prizes to the top three graduate and undergraduate students as determined by conference attendee evaluations of their research projects. Initially, students use the interactive nature of a visual presentation to highlight different aspects of their research to individual evaluators. These presentations are evaluated on their quality, the significance of the work, and the clarity of the informal discussion. The semi-finalists, the top five students in each category, present their contributions using the standard forum of conference presentation during two conference sessions. This venue provides selected audience attendees with another platform for evaluation, the student with experience in formal presentations, and conference participants with the opportunity to learn of ongoing, current research in computer science.

The first round of competition takes place in the Majestic Ballroom exhibits area from 1:00–5:00 p.m. on Thursday and the semi-finalists give their conference presentations in Westmoreland (undergraduate) and Kingsbury(graduate) from 8:30 - 10:10 a.m. on Saturday. The ACM SIGCSE SRC winners will receive their awards during Saturday’s luncheon.
SIGCSE 2005 Faculty Poster Sessions

Posters present work-in-progress and other topics for which dialog with Symposium attendees is particularly appropriate. Posters are on display Friday morning and afternoon, and authors will be available for discussion during these sessions.

Session I: Friday, Feb. 25, 9:45 – 11:45, Majestic Ballroom

Guild-based Group Learning for Computer Science Courses
    Rebecca A. Bates, Minnesota State University, Mankato

Instructional Multimedia for Mathematics, Science and Technology Educators
    Andrew Beiderman, Donna Tupper, and Sylvia Sorkin,
    The Community College of Baltimore County

Visualising Software Development: eL-CID Evaluation
    Charles Boisvert, Norwich City College

A Quasi-Experimental Research Methodology to Evaluate a Pedagogical Change in
System Administration
    Charles Border, Rochester Institute of Technology

Undergraduate Science Informatics at Montclair State University
    Dorothy Deremer, Montclair State University

A Research Robot at Lego Prices: Pushing the Limits of Evolution’s ERI
    Zachary Dodds, Harvey Mudd College

S2C Student Service in Computing
    Roger Ferguson, Grand Valley State University
    Mary Z. Last, University of Mary Hardin-Baylor

Apprenticeship-based Software Engineering Educational Project
    Bruria Haberman, Holon Institute of Technology and Weizmann Institute of
    Science, and Cecile Yehezkel, Weizmann Institute of Science

A Lab Component for an Advanced Databases Course
    Orlando Karam and Kai Qian, Southern Polytechnic State University

Teaching Database Backward: A Mini-Projects Approach
    Kirby McMaster, Dona Bilyeu-Dittman, and Ashley Blake, Weber State
    University

A Model for a Liberal Arts Project-Based Capstone Experience
    David R. Musicant and Jeff Ondich, Carleton College

Architectural Styles Laboratory for Software Architecture and Design
    Kai Qian and Orlando Karam, Southern Polytechnic State University
    Jigang Liu, Metropolitan State University
Simulators for Experimentation in Operating Systems  
Steven Robbins, *University of Texas at San Antonio*

Accessibility First: Teaching Web Design "Backwards"  
Brian J. Rosmaita, *Hamilton College*

.NET in a Programming Paradigms Course  
Christelle Scharff, Dennis Anderson, and Viktor Geller, *Pace University*

Teaching Client-Server Software Development by Example  
Evelyn Stiller and Cathie LeBlanc, *Plymouth State University*

Centrally Stored and Delivered Virtual Machines in the Networking Lab  
Mark Stockman and John Nyland, *University of Cincinnati*

Using a Virtual Laboratory to Teach Online Information Assurance Courses  
Wayne C. Summers, *Columbus State University*

International Curriculum Design for Undergraduate Computer Science  
Carol Taylor and Slava Popovsky, *University of Idaho*
Barbara Endicott-Popovsky, *Seattle University*

An Undergraduate Level Course on Cryptography  
Soe Than, *Virginia Military Institute*

Creating a League of Our Own: Grace Hopper’s Scholars Program For Attracting Women to Computer Related Fields  
Donna Tupper and Barbara Leitherer, *The Community College of Baltimore County*

Are There Gender Differences in the Way People Program?  
Linda Werner, *University of California, Santa Cruz*
Jill Denner, *ETR Associates*

Talking about Entering: Why Women and Men Choose/Reject the Computer Science Major  
Ken Yasuhara and Richard Anderson, *University of Washington*

Session II: Friday, Feb. 25, 3:15 - 5:00, Majestic Ballroom

The Effect of Paired-Programming and Instructional Design on Student Performance and Satisfaction in a Beginning Programming Course  
Terence C. Ahern, *California State University at Monterey Bay*

Fun Yet Rigorous Laboratories for a Java-Based CS2  
Mark A. Boshart and Martha J. Kosa, *Tennessee Technological University*

The JVMViewer: An Interactive Interpreter for Java Bytecodes  
Carl Bredlau, *Montclair State University*
Introduction to Informatics - A First Course Designed to Introduce the Discipline of Informatics  
John P. Buerck, Saint Louis University

Activities of the ACM Two-Year College Education Committee  
Robert Campbell, Rock Valley College  
Elizabeth K. Hawthorne, Union County College  
Karl J. Klee, Alfred State College

Fibonacci Numbers in Computer Science  
Darrah Chavey, Beloit College

Objects and Algorithms using Visual Logic Puzzles  
John Cigas, Rockhurst University  
Wen Hsin, Park University

RoundHeads: An Introductory Lab Experience with Objects in CS1  
Blase B. Cindric, Mount Union College

Implementing a Video Game as a Final Student Project in Computer Science  
Gabriel J. Ferrer and W. Dwayne Collins, Hendrix College

Linked Lists Animation Using Macromedia Flash  
Ahmad Ghafarian, North Georgia College & State University

Computer Science ≠ Computer Programming  
Charles R. Hardnett and Iretta C. Kearse, Spelman College

Greenfoot - A Development Environment Supporting Object Interaction and Visualization  
Poul Henriksen and Michael Kölling, The Maersk Mc-Kinney Moller Institute for Production Technology

How is Everyone Doing? Automatic Project Feedback and Monitoring for Programming Courses  
David Hovemeyer, Bill Pugh, and Jaime Spacco, University of Maryland

Programming with Python for Non-Majors -- Innovative Teaching Approach  
Yana Kortsarts and Jeffrey Rufinus, Widener University

Significant Findings Regarding Computer Science Major Retention When Pair Programming Is Used in Introductory Programming Courses for Both Women and Men  
Charlie McDowell and Linda L. Werner, University California, Santa Cruz

Discrete Math as a Programming Course  
Kirby McMaster, Brian Rague, and Trevor McMaster, Weber State University

MARS: An IDE for MIPS Assembly Language Programming  
Pete Sanderson, Otterbein College, and Ken Vollmar, Southwest Missouri State University
Problem Solving, Programming, and Process: A CS Course for High School Students
Linda B. Sherrell, Allen Thomas, & Larissa Klimple, University of Memphis

Incorporation of a 3D Interactive Graphics Programming Language into an Introductory Engineering Course
Jason S. Snook, Vinod Lohani, Jenny Lo, and Hayden Griffin, Virginia Polytechnic Institute and State University

Demonstrating the Use of Logic Emulation to Bring Computer Organization and Architecture Concepts to Life
Timothy Daryl Stanley, Brigham Young University Hawaii

New Beginnings for CS1: The Experience of Introducing a Socially Focussed Pre-term Group Activity for Computing Undergraduates
Su White, University of Southampton

Instructional Calculators for Numeric Representations in Computers
James B. Wilkinson, The College of Charleston

Unifying the Undergraduate Applied CS Curriculum Around a Simplified Microprocessor Architecture
David Wonnacott, Haverford College

NSF CCLI Project Showcase
The NSF CCLI showcase participants are recipients of National Science Foundation Division of Undergraduate Education Course, Curriculum & Laboratory Improvement Program (NSF DUE CCLI) grants. All showcase sessions focus on educational issues: effective ways to present particular concepts in a classroom, using and evaluating new teaching techniques, anticipating future directions in the curriculum, and a host of other ideas directly applicable to college faculty. Showcase participants are faculty members from small liberal arts colleges to research-oriented universities.

Thursday, 10:00 a.m. – 12:00 noon
Friday, 10:00 a.m. – 12:00 noon, and 2:00 p.m. – 4:00 p.m.
Saturday, 10:00 a.m. – 12:00 noon
Booth 403, Majestic Ballroom

Visualization: Program Visualization Using Virtual Worlds
Stephen Cooper, St. Joseph’s University

AI: Machine Learning Laboratory Experience for Introducing Undergraduates to AI
Ingrid Russell, University of Hartford

Teaching and OO Programming: A radical approach to teaching object-oriented programming
Katherine E. Sanders, Rhode Island College
Non-majors and CS1: *Media Computation as a Motivation and Structure for a non-majors CS1 class: “Data-First” Computing*
Mark Guzdial, *Georgia Institute of Technology*

Computational Science, Visualization, Modeling: *Enhancing Computation in the Sciences*
Angela B. Shiflet, *Wofford College*

Algorithm Visualization, Algorithms, Laboratory Exercises: *Integrating Algorithm Visualization into Computer Science Education*

Bioinformatics: *Bioinformatics Computing: An Exportable Curriculum*
Gary Skuse, *Rochester Institute of Technology*

Robots and Multimedia: *Using Robots and Multimedia in Introductory Course*
Nieves McCulty and Madeleine Schep, *Columbia College*

Web-based tutors: *Web-based tutors on C++/Java Programming for Computer Science I*
Amruth N. Kumar, *Ramapo College of New Jersey*

Visualization: *Adaptive Explanatory Visualization for Learning Programming Concepts*
Peter L. Brusilovksy, *University of Pittsburgh*

Robotics, CC2001: *Robotics as a Unifying Theme for Computing Curriculum 2001*
Frank I. Klassner, *Villanova University*

Database, Courseware: *Database Courseware: Examples, Lab Exercises, Tests, and Animation*
Mario Guimaraes, *Kennesaw State University*

Architecture, Simulators: *Implementing and Simulating Hardware in Computer Architecture Classes*
Michael J. Jipping, *Hope College*
SIGCSE 2005 Workshops

The following workshops are available to attendees at a nominal fee. Workshops listed as HANDS ON, OFF_SITE workshops will be held at St. Louis University. A free shuttle to St. Louis University will depart from the Washington Avenue entrance near the Landmark Ballroom of the Renaissance Grand Hotel. The shuttle will return participants to the Renaissance Grand Hotel after the session. Shuttle departure times are Wednesday at 6:15 pm, Friday at 6:00 pm, and Saturday at 3:15 pm.

**Wednesday Workshops, 7:00 p.m. to 10:00 p.m.**

1. **Microsoft .NET Programming: Building Applications with C#, J#, C++ and VB.NET**  
   Joe Hummel, Lake Forest College  
   Landmark 1  
   Microsoft .NET is an exciting new framework for programming not only on Windows platforms, but Linux and FreeBSD as well. This workshop will introduce attendees to .NET programming, in particular with regards to building console-based, GUI, and database-driven applications. Both command-line tools (free) and Visual Studio .NET will be demonstrated. The purpose of this workshop is to introduce .NET, allowing attendees to evaluate its use in a CS or IS curriculum. PowerPoint presentations will be example-based, and suitable for introducing .NET to students; attendees will have access to electronic copies of all materials used in the workshop.

2. **Taking the Hard Edge off Technical Education: Strategies for Integrating Soft Skills in the CS Classroom**  
   Elizabeth Howard, Miami University  
   Martha Petrone, Miami University  
   Landmark 2  
   In reports from employers, computer science graduates receive stellar marks for their technical knowledge. At the same time, employers express concern about underlying abilities, such as listening, interpersonal effectiveness, intercultural sensitivity, and teamwork in their entry level employees. In this workshop, participants will learn specific pedagogical strategies to help students develop these fundamental soft skills that will better prepare them for success in the computer science field. Using a model for increasing intercultural awareness and a series of activities, participants will experience for themselves the exercises that they can use in their own classrooms.

3. **From Nand to Tetris in 12 Steps**  
   Shimon Schocken, IDC Herzliya  
   Nisan Noam, Hebrew University of Jerusalem  
   Landmark 3  
   As CS and EE courses become increasingly more specialized, students are increasingly unable to grasp major ideas that cut across traditional course lines. This workshop presents an approach that restores the big picture by covering architecture, compilers, and OS topics in one course, requiring only programming as a pre-requisite. Using a modular series of 12 projects, students are guided through the gradual construction of a complete working computer system. Starting with elementary logic gates, they build a general-purpose hardware platform and a modern software hierarchy, yielding a simple but surprisingly powerful computer system. This is achieved in a one-semester course by virtue of extreme focus and modular design. The course is completely self-contained, requiring no special equipment or software beyond what is given in the course web site, and is accompanied by a new MIT Press textbook. For more details see www.idc.ac.il/tetc.
4. More Nifty Examples in Discrete Mathematics
William Marion, Valparaiso University
Peter Henderson, Butler University
Susanna Epp, DePaul University
Portland (Mezzanine)

Good examples are powerful tools for enhancing student understanding of the important connections between topics in discrete mathematics and fundamental ideas in computer science. This follow up to the SIGCSE 2004 “Nifty Examples in Discrete Mathematics” workshop will illustrate examples for use in the classroom or as assignments covering a broad spectrum of discrete mathematics topics. These include: analyzing and building a geodesic dome, mathematics of the Josephus problem, penny pile problems, reverse binary tree traversal, keys and locks, two color argument, and many more. Some of these were developed by participants in the NSF-funded summer 2004 workshop on discrete mathematics under the auspices of the MAA’s Professional Enhancement Program. Participants will work in groups on additional examples. All materials presented will be posted on a workshop web page and will feed into the work of the SIGCSE Committee on the Implementation of a Discrete Mathematics Course.

5. Incorporating User-Centered Design Methods in a Human-Computer Interaction Course
Jerry Weinberg, Southern Illinois University Edwardsville
Mary Stephen, Saint Louis University
Charlotte Schwindeman, Perficient, Inc.
Joe Haschert, Edward Jones
Westmoreland

Creating usable software means taking into consideration who is using the system, what they are using it for, and how it fits within their overall workflow. It is important to educate students in the techniques of user requirements gathering, analysis and design that embrace human activity as an integral component of the process. This workshop will introduce User-Centered Design (UCD) techniques and present course material for teaching these methods in an HCI class. Industry leaders from St. Louis-based companies will discuss how UCD methods are used in their business practices and the skill sets they look for when hiring.

6. How to Run a Programming Contest
Lee Wittenberg, Kean University
Benton (Mezzanine)

Programming contests, most notably the ACM’s International Collegiate Programming Contest, have become quite popular. Unfortunately, there is very little help available for those who wish to run such a contest, and there are many technical obstacles to overcome. Participants will learn how to overcome these obstacles and run a successful programming contest: setting up a server, configuring clients, and using the popular PC^2 software package to manage program submission and evaluation during the contest. Particular attention will be paid to the tools and steps necessary to create bootable CD-ROM’s providing a common working environment for contestants.

Instructors
David G. Kay, University of California, Irvine
Parkview (Mezzanine)

An introduction to the basics of intellectual property law (patents, copyrights, trade secrets, trademarks) designed to give computer science instructors a framework for answering student questions, debunking misconceptions, and understanding how the law and computing interact.
8. Constructing QuickTime Movies Programmatically
   Jay Martin Anderson, Franklin and Marshall College
   SLU Shannon Hall
   I will present the “model – view – controller” paradigm for the construction of animations as QuickTime movies, and apply this to some simple examples using Objective-C. The major exercise will be to construct an animation of a simple algorithm or other visualization. The workshop will be illustrated with examples from computer science, computational mathematics, and computational geometry (HANDS-ON, OFF-SITE).

9. Teaching Introductory Computer Science with JPie
   Kenneth Goldman, Washington University in St. Louis
   SLU McDonnell Douglas Hall 1003
   JPie is a tightly integrated visual programming environment that supports live construction and modification of Java applications through direct manipulation of graphical representations of program constructs. JPie enables a concepts-first introduction to computer science by simplifying the programming process and supporting experimentation through modification of running programs. This hands-on workshop will provide experience using JPie in the context of a variety of course projects that have been used in a concepts-first curriculum to introduce object-oriented design and fundamental software concepts to college students without computer science background. Additional information about JPie is available at http://JPie.cse.wustl.edu (HANDS-ON, OFF-SITE).

10. Quick Web Application Development using JavaServer Pages and the JSP Standard Tag Library
    Ariel Ortiz, Tecnologico de Monterrey, Campus Estado de Mexico
    SLU McDonnell Douglas Hall 1066
    The JavaServer Pages (JSP) technology allows mixing regular, static HTML with dynamically generated content. The new version 2.0 of JSP allows developers and designers to use this technology without needing to learn how to write Java scriptlets. In this workshop, participants will be introduced to the core elements of JSP 2.0, including its new expression language and the JavaServer Pages Standard Tag Library 1.1 (JSTL). Using the Model-View-Controller design pattern, a modular and extensible simple on-line Web game application will be designed, implemented and deployed. Attendees should be familiar with HTML; prior basic Java knowledge is desirable (HANDS-ON, OFF-SITE).

11. Introducing Embedded Systems in the Digital Logic Laboratory
    Robert Pilgrim, Murray State University
    SLU McDonnell Douglas Hall 2030
    In this hands-on workshop participants learn to integrate microcontrollers into an undergraduate digital logic and computer architecture course. The workshop introduces a laboratory that combines theory, simulation and real hardware using low cost microcontrollers. Through a series of experiments participants begin using preprogrammed microcontrollers to design and test digital logic circuits and then write their own microcontroller programs for embedded systems applications. All laboratory hardware, software and documentation is provided. No previous electronics experience is required. Participants should have knowledge of a high-level programming language (HANDS-ON, OFF-SITE).
12. **Experimenting with Formal Languages**  
   Allen Stoughton, Kansas State University  
   SLU McDonnell Douglas Hall 2001  
   Many of the results of formal language theory are proved using algorithms. In typical courses on the subject, students apply these algorithms to toy examples by hand, but aren’t able to experiment with them on a larger scale. To enable such experimentation, the presenter has developed the Forlan computer toolset and is writing an introductory textbook based on Forlan. Both the toolset and textbook are open source and are available at www.cis.ksu.edu/~allen/forlan/. Participants will learn how to use Forlan in their teaching. We will focus on ways of synthesizing automata using algorithms for combining and transforming automata and regular expressions (HANDS-ON, OFF-SITE).

### Friday Workshops, 7:00 p.m. to 10:00 p.m.

13. **Using BlueJ to Start an OO Intro Course**  
   Michael Kölling, University of Southern Denmark  
   Landmark 1  
   Getting started is one of the hardest parts in an object-oriented introductory programming course. BlueJ is designed to help with these problems. Knowing the technical capabilities of BlueJ, however, does not make it obvious how to use it to achieve good results. In this workshop, we will discuss pedagogical principles and give concrete advice on starting an objects-first style-programming course. Examples are presented that can immediately be used in class. The presenter is one of the principle BlueJ developers, and co-author of a successful textbook: Barnes/Kölling: *Objects First With Java*. In this workshop, the important principles underlying the BlueJ design and the textbook pedagogy are presented.

14. **Kinesthetic Learning in the Classroom**  
   Andrew Begel, University of California, Berkeley  
   Daniel Garcia, University of California, Berkeley  
   Steven Wolfman, University of British Columbia  
   Landmark 2  
   This workshop will focus on kinesthetic learning activities, i.e., physically engaging classroom exercises. These might, for example, teach recursion by simulating the Towers of Hanoi with students instead of disks, or highlight the difference between pipelined and non-pipelined execution using a human assembly line. The workshop will begin with a brief kinesthetic learning activity to motivate the value of these activities. We will follow with a variety of examples, and discuss how to deploy these in a classroom. Most of the workshop will be devoted to facilitated group work to help the participants design and test their own activities.

15. **Active and Cooperative Learning Techniques for Computer Science Education**  
   Jeffrey McConnell, Canisius College  
   Westmoreland  
   Active and cooperative learning provides a powerful mechanism to enhance depth of learning and increase material retention. Active and cooperative learning gets students involved with the material rather than passively listening to a lecture. This workshop will use introductory material on active and cooperative learning for a number of activities that will give participants direct experience with and the chance to observe these techniques in action. There will also be opportunities for open discussion of situations that participants may have already encountered.
16. **Teaching Ethics Using Structured Controversy**
   James Bohy, *Simpson College*  
   Portland (Mezzanine)
Instruction related to ethical, social, and moral material in computer science must have as a key component some form of active engagement with the issue at hand. Structured controversy is a cooperative learning technique first proposed in science education in the late 1970s. The activity engages students and instructors in a process of presenting both sides of a given issue and arriving at a consensus solution. This workshop focuses on instructor responsibilities for setting up and running a structured controversy in his/her classroom, culminating in some of the participants actually walking through the activity.

17. **Computer Security Essentials, Part 1 — System Footprinting and Vulnerability Assessment**
   Paul Wagner, *University of Wisconsin - Eau Claire*
   Andrew Phillips, *University of Wisconsin - Eau Claire*
   Daren Bauer, *University of Wisconsin - Eau Claire*
   Tom Paine, *University of Wisconsin - Eau Claire*
   Jason Wudi, *University of Wisconsin - Eau Claire*  
   Landmark 3
This is the first of two hands-on workshops for CS educators seeking to develop curricula in computer security. We provide guided hands-on instruction on various Windows and Linux based tools commonly used for gathering information about, and assessing the vulnerability of, other systems. Participants will experiment with these tools as the presenters guide them through typical tool use scenarios. The session concludes with an information gathering exercise on an isolated network. Participants will use laptops running both Windows and Linux images preconfigured with common security “holes” so that they may experience first-hand the process of information gathering and vulnerability detection (HANDS-ON).

18. **Writing Computer Books**
   Barry Burd, *Drew University*
   Rick Decker, *Hamilton College*  
   Benton (Mezzanine)
This workshop covers the computer book-writing process from start to finish. It covers both textbooks and books for the general public. Workshop topics include choosing a subject, writing a proposal, submitting sample chapters, finding a publisher, contacting an agent, reading a contract, meeting deadlines, working with coauthors, reviewing copy edited material, responding to technical reviews, creating ancillary materials, and marketing your book. The presenters are computer science professors so (naturally) the discussion will be honest, informative, and unbiased.

19. **Quick and Easy GUIs for 2D Array Assignments**
   Alyce Brady, *Kalamazoo College*
   Pamela Cutter, *Kalamazoo College*
   Kathleen Larson, *Kingston High School*  
   Parkview (Mezzanine)
Many introductory programming assignments such as games, mazes, and various types of simulations, involve objects in a two-dimensional data structure. These projects lend themselves to graphical representations, but the overhead involved in implementing graphical user interfaces, especially interfaces that support user interaction, and is non-trivial. The Grid Package provides a set of simple Java classes for modeling objects in a two-dimensional grid, and provides a library of other classes that make it easy to create interactive, graphical user interfaces to control and display 2D array applications. This workshop will introduce the Grid Package and how to use it in assignments in introductory courses.
20. **Learning to Program with Alice.**  
Stephen Cooper, *Saint Joseph’s University*  
SLU McDonnell Douglas Hall 2001  
This workshop will offer a hands-on introduction to programming with Alice. Alice is a powerful program visualization tool that enables students to “see” objects and work with object-oriented programming. Participants will learn how to use Alice to build virtual worlds and how to use this approach in introductory-level computing courses (introductory programming for majors, programming for non-majors, computer literacy, etc.). Participants will receive a CD containing the latest version of the software and curricular materials (lectures, closed laboratory assignments, take-home assignments, and sample exams) developed as part of NSF-0126833 and NSF-0339734 (HANDS-ON, OFF-SITE).

21. **Teaching Mobile and Ad-hoc Networking using Simulation**  
Chris McDonald, *The University of Western Australia*  
SLU McDonnell Douglas Hall 1032  
This workshop will demonstrate that students’ understanding of mobile and ad-hoc wireless networking can best be developed and assessed through quality interactive simulation tools. Classroom-tested material will demonstrate detection and recovery from data corruption and loss, collision detection and avoidance, data-link protocols, table-driven and on-demand routing algorithms, and the security of mobile and ad-hoc wireless networks. The workshop draws on our 13 years’ teaching experience with the simulation of wide-area, local-area, and mobile and ad-hoc wireless environments, in undergraduate courses of up to 180 students each year. Faculty will be introduced to exercises and assessments suitable for undergraduate open- and closed-laboratory sessions, and even capstone projects (HANDS-ON, OFF-SITE).

22. **Using Software Testing to Improve Programming Assignments and Grading**  
Stephen Edwards, *Virginia Tech*  
SLU McDonnell Douglas Hall 2030  
This workshop provides a practical, hands-on introduction to how one can incorporate software testing activities as a regular part of programming assignments. It presents five different models for how one can incorporate testing into assignments, provides examples of each technique, and discusses the corresponding advantages and disadvantages. Approaches to assessment—using testing to assess student code, assessing tests that students write, and automated grading—are all discussed. Advice for writing “testable” assignments is given. Hands-on examples are used throughout to illustrate the techniques (HANDS-ON, OFF-SITE).

23. **Introductory Lego MindStorms for Introductory Computer Science**  
Frank Klassner, *Villanova University*  
SLU McDonnell Douglas Hall 1066  
This workshop will explore how to use LEGO MindStorms as an active-learning platform for teaching topics ranging in the CS 0 - CS 1 - CS 2 portion of the typical computer science curriculum. We will identify common problems first-timers may face in adopting the platform, and describe approaches to overcome them. Participants will work with pre-built robots and learn how to use Java to program and control the robots. C++ support material will be available upon request. This workshop is strictly for instructors who have not previously used MindStorms in their classroom. (HANDS-ON, OFF-SITE).
24. **Bioinformatics Basics for Computer Scientists**  
Debra Burhans, *Canisius College*, and Gary Skuse, *Rochester Institute of Technology*  
**SLU McDonnell Douglas Hall 1003**  
This workshop is designed to introduce computer scientists to the emerging field of bioinformatics. The workshop will include an overview of basic biological concepts, including fundamental structures such as cells, genes, chromosomes and proteins along with higher-level concepts such as genomes, proteomes and bibliomes. Some important algorithms for bioinformatics analysis will be introduced, in particular those related to sequence assembly and gene prediction. Hands-on experience with Perl programming for bioinformatics will be incorporated into the workshop. An exploration of bioinformatics resources for educators, including software, databases, course and laboratory materials, exercises, and on-line teaching tools, will conclude the workshop (HANDS-ON, OFF-SITE).

25. **Teaching Pre-AP with HTML and Javascript**  
Richard Kic, *Hinsdale Central High School*  
**SLU McDonnell Douglas Hall 2101**  
The Advanced Placement Computer Science curriculum has evolved from a procedural based curriculum, to the current object oriented curriculum. A significant understanding of object oriented concepts and techniques is essential in order for students to find success in AP CS courses. This workshop will provide teachers with hands-on experiences in using HTML and Javascript to introduce the object concept to pre-AP students. In particular, tools for creating and viewing HTML and Javascript documents will be presented and discussed. A large number of web documents and Javascript code examples will be presented and electronically distributed to participants (HANDS-ON, OFF-SITE).

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**Saturday Workshops, 4:00 p.m. to 7:00 p.m.**

27. **Multimedia Projects for CS1 and CS2**  
Mark Guzdial, *Georgia Institute of Technology*  
Barbara Ericson, *Georgia Institute of Technology*  
**Landmark 2**  
Constructing and manipulating media is a motivating context for students in CS1 and CS2. Modern computers are capable of interesting media effects in reasonable running time, using simple and obvious algorithms that fit within the constraints of introductory courses’ curricula. In this workshop, we will present algorithms (mostly in Python) and working code (in Java) for the creation and manipulation of sound, image, and video data. Example techniques will include sound splicing and reversing, chromakey (“blue screen”) image effects, animation, and Photoshop-like image filters.

Paul Wagner, *University of Wisconsin - Eau Claire*  
Andrew Phillips, *University of Wisconsin - Eau Claire*  
Daren Bauer, *University of Wisconsin - Eau Claire*  
Tom Paine, *University of Wisconsin - Eau Claire*  
Jason Wudi, *University of Wisconsin - Eau Claire*  
**Landmark 3**  
This is the second of two workshops for CS educators developing curricula in computer security. Participation in workshop part one is recommended as a prerequisite. We provide guided hands-on instruction and experimentation on both defensive techniques and the understanding of exploits for the purpose of better defending systems. The session
concludes with a hands-on exercise giving the participants an opportunity to participate in a carefully constructed and monitored cyberwar scenario; i.e. the participants will harden their systems, identify potential exploits and threats, and work to understand the mindset of the attacker by identifying weaknesses in all systems on the network (HANDS-ON).

29. Facilitating Student Written Operating Systems in the Undergraduate OS Course
Michael Goldweber, Xavier University
Renzo Davoli, University of Bologna
Westmoreland
Ideally, the most meaningful learning experience for students in an undergraduate OS course would be to develop fully functional OS’s on their own. This can be accomplished using µMPS, a hardware simulator for a pedagogically undergraduate-appropriate architecture, along with Kaya, a specification for a multi-layer OS supporting multiprocessing, VM, thread synchronization and external devices; disks, terminals, tape and printers. Attendees will not only learn all that is necessary to begin using µMPS/Kaya but will receive all the curricular materials (Student Guide and Instructor’s Guide) needed to make immediate (i.e. “out-of-the box”) and effective use of this courseware system.

30. Assigning Team Projects: Problems, pitfalls, and solutions
Joanna Wolfe, University of Louisville
Timothy Hardin, University of Louisville
Portland (Mezzanine)
This workshop draws on the presenters’ experiences observing, videotaping, and interviewing members of over 15 student teams. We will analyze short videotapes illustrating common problems in student teams and discuss practical ways to avoid these problems. Topics will include evaluating team projects, managing student teams, assigning discrete roles to team members, and avoiding gender bias. We will also review examples of successful team assignments, grading guidelines, and software for managing team projects. All participants will receive a CD and handouts containing instructor supplements, including videos that can be used to discuss teamwork. NSF support is gratefully acknowledged.

31. Advanced Lego MindStorms for the Advanced CS Curriculum
Frank Klassner, Villanova University
Benton (Mezzanine)
This workshop will explore how to use LEGO Mindstorms as an active-learning platform for teaching advanced CS topics ranging from Computer Architecture to Operating Systems to Wireless Networking to Artificial Intelligence. In this workshop, COMPUTER SCIENCE is emphasized over robot-building. Participants will receive material on how to use Java, C/C++, and Lisp to control and program Mindstorms. This workshop assumes participants have already used Mindstorms for at least one semester.

32. Model-Driven Programming Education
Jens Bennedsen, IT University West
Michael Caspersen, University of Aarhus
Parkview (Mezzanine)
Motivated students, efficient learning, and a 90% pass rate are the results of applying a model driven approach to introductory object-oriented programming. We explore a CS1 course based upon a model-driven approach to programming focusing on systematic techniques for program construction. Exercises and assignments take a class model as starting point, and progression in the course is based upon complexity of class models rather than syntactical structures of a programming language. After the workshop attendees knows how to adopt the model-driven approach; a wealth of material supporting the approach is provided. Working knowledge of Java or C++ is required.
33. **The Polymorphism Challenge**  
Joseph Bergin, *Pace University*  
Eugene Wallingford, *University of Northern Iowa*  
Facility with polymorphic programming is a valuable skill for a programmer or an instructor. This hands-on workshop will give you ideas and practice with the techniques required to program with dynamic polymorphism. As a participant you will practice the polymorphism etude with a partner under direction of the workshop leaders. You will re-write simple but complete programs that normally use if statements, to completely remove all selection structures in favor of polymorphism. This will give you important design experience and improve your skill as an object-oriented programmer and as a teacher. The workshop will stress techniques applicable to CS1 (HANDS-ON, OFF-SITE).

34. **Fostering Classroom Engagement with DyKnow Vision and Tablet PCs or other Pen-based Computing Devices**  
Dave Berque, *DePauw University*  
Scott M. Thede, *DePauw University*  
SLU McDonnell Douglas Hall 2001  
Pen-based computing devices ranging from Tablet PCs to inexpensive graphics tablets (costing less than $100) are being used increasingly in the computer science classroom. Participants will learn how effective pedagogies can be fostered using such devices in conjunction with a software system named DyKnow VISION (www.dyknow.com, patent-pending). After a brief introduction to pen-based hardware, participants will learn how to use DyKnow VISION in (freely available) presentation mode. Participants will then experience how the full power of the licensed version of DyKnow VISION can support numerous interactive pedagogies that center on allowing students and teachers to share and annotate classroom materials (HANDS-ON, OFF-SITE).

35. **Using Eclipse to Teach Java Programming**  
Barry Burd, *Drew University*  
SLU McDonnell Douglas Hall 2030  
The Eclipse development environment is great for both large and small classroom projects. Eclipse is an industrial strength IDE, but it can be customized and simplified for use by novice programmers. Eclipse’s smart Java editor compiles code as you write. It provides hierarchical views of the class/method structure, and comes with optional plug-ins for UML diagramming and visual drag-and-drop programming. Eclipse’s refactoring operations encourage good program structure. Over 40% of all professional Java developers use Eclipse. Best of all, Eclipse is being developed by the open source community. It’s free to use, and free to modify (HANDS-ON, OFF-SITE).

36. **Taming Java in CS1 Using Language Levels**  
Robert Cartwright, *Rice University*  
Zung Nguyen, *Rice University*  
Stephen Wong, *Rice University*  
SLU McDonnell Douglas Hall 1066  
Java is the canonical language for teaching introductory programming, but its complex syntax and abundance of constructs are difficult for beginners to learn. This workshop will show how Java programming can be made more accessible to beginners through the use of language levels, a hierarchy of progressively richer subsets of Java. This approach to teaching Java minimizes the clerical burden involved in learning to write Java programs and reinforces the specific programming abstractions taught at each language level. The workshop will focus on providing hands-on experience using DrJava, an open source-programming environment supporting language levels (HANDS-ON, OFF-SITE).
37. Advanced Graphics Application Development with OpenGL
   Dan Cliburn, Hanover College
   SLU McDonnell Douglas Hall 1003
Do you want to make your graphics course a little more entertaining for your students? This
workshop is designed to introduce advanced graphics topics that can be incorporated into an
undergraduate level graphics course that teaches OpenGL. Specifically, participants will
learn how to add lighting, textures, fog, picking, billboards, sound (using DirectX), and
joystick input (using GLUT) to their OpenGL applications. Each participant will develop a
“dungeon crawl” game during the workshop that illustrates these concepts. Some prior C++
and OpenGL experience is required (HANDS-ON, OFF-SITE).

SIGCSE 2005 Symposium Statistics

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<td>326</td>
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<td>Special Sessions</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>Workshops</td>
<td>37</td>
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</table>

Number of reviewers: 538
Number of reviews received: 1624
Number of reviews assigned to each paper: at least 6
Number of papers with 6 or more reviews: 264
Number of papers with exactly 5 reviews: 60
Number of papers with exactly 4 reviews: 2

SIGCSE 2005 Award Winners

SIGCSE Award for Outstanding Contribution to Computer Science Education
   Kim Bruce, Williams College

SIGCSE Award for Lifetime Service
   Andrew McGettrick, University of Strathclyde
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Ithaca College

Paul Tymann, Program Co-Chair
Rochester Institute of Technology

John Dougherty, Publications
Haverford College

Myles McNally, Workshops
Alma College

Ann Sobel, ACM Student Research Competition
Miami University, OH

K. Todd Stevens, Doctoral Consortium
Radford University

Cary Laxer, Registration
Rose-Hulman Institute of Technology

Frank Young, Registration
Rose-Hulman Institute of Technology

Pam Lawhead, Student Volunteers
University of Mississippi

Henry Walker, Database Administrator
Grinnell College

Cathy Bareiss, Evaluations
Olivet Nazarene University

Dennis Bouvier, Local Arrangements
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Susan Rodger, Special Sessions & Panels
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Don Goelman, Birds-of-a-Feather
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Georgia Institute of Technology

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