Consortium for Computing Sciences in Colleges
30th Annual Eastern Conference

Conference Program

November 14th–15th, 2014
York College of Pennsylvania

Schedule

Friday, November 14th

12:00 PM–1:00 PM	Registration Willman Business Administration Building Lobby

1:00 PM–2:00 PM	Keynote address Dr. Daniel Russell, Google Mindtools: What Does It Mean to be Literate in the Age of Google? Weinstock Lecture Hall, Willman Business Administration Building

2:10 PM–2:20 PM	Snack break, East Lobby (Near KEC 117)		
2:20 PM–3:45 PM	Paper Session 1 Special Topics KEC 123	Workshop 1 Python Graphics for the Classroom (Part 1) KEC 124	Panel 1 Recruiting, Retaining, and Completing as a Team KEC 119
3:45 PM–3:50 PM	Snack break, East Lobby (Near KEC 117)		
3:50 PM–5:15 PM	Paper Session 2 CS 1 KEC 123	Workshop 1 Python Graphics for the Classroom (Part 2) KEC 124	

5:25 PM–6:25 PM	Reception, Poster Presentations Yorkview Hall, Willman Business Administration Building
6:30 PM–8:30 PM	Banquet Dr. Gary McGraw, Cigital, Inc. Software Security and the Building Security in Maturity Model (BSIMM) Yorkview Hall, Willman Business Administration Building

Saturday, November 15th

7:30 AM–8:30 AM	Programming Contest Registration and Breakfast KEC Canteen Area
8:30 AM–9:15 AM	Programming Contest Orientation KEC 125
9:15 AM–12:45 PM	Programming Contest KEC 126, 128

7:30 AM–8:30 AM	Continental Breakfast East Lobby (Near KEC 117)

Saturday, November 15th (continued)

8:30 AM–9:55 AM	Paper Session 3 Alternative Approaches KEC 123	Workshop 2 Teaching Robotics Using ROS (Part 1) KEC 124	Nifty/Lightning Talks KEC 119
9:55 AM–10:00 AM	Snack break, East Lobby (Near KEC 117)		
10:00 AM–11:25 AM	Paper Session 4 Curriculum KEC 123	Workshop 2 Teaching Robotics Using ROS (Part 2) KEC 124	Tutorial 1 Strategically Recruiting Women Students into Your Undergraduate Computing Major KEC 119
11:25 AM–11:30 AM	Snack break, East Lobby (Near KEC 117)		
11:30 AM–12:55 PM	Paper Session 5 Teaching Tools KEC 123	Panel 2 Connecting Academic and Professional Computer Science: Strategies and Experiences KEC 124	Tutorial 2 Setting up and Running Emerging Scholars Workshops for CS1 KEC 119

1:00 PM–2:30 PM	Luncheon, Awards Ceremony Yorkview Hall, Willman Business Administration Building

2:45 PM–5:45 PM	Workshop 2 Teaching Robotics using ROS KEC 124

Session Details

Paper Session 1: Special Topics

ITS Debug: Practical Results
    Elizabeth Carter, *Lehigh University*

An Approach to the Fairy Tale Card Game: A Rotating Sets Competitive Knapsack Problem with Strongly Stochastic Rewards and Item Availability
    Candice Schumann, Timothy Highley, and Howard Stickley, *LaSalle University*

Testing the Security Vulnerabilities of OpenEMR 4.1.1: A Case Study
    Francis Akowuah, Jerrisa Lake, Xiaohong Yuan, Emmanuel Nuakoh, Huiming Yu, *North Carolina A&T State University*

Paper Session 2: CS 1

Pedagogical Possibilities for the 2048 Puzzle Game
  Todd W. Neller, *Gettysburg College*

Experience with a Hybrid CS1 for Non-Majors
  Jeffrey A. Stone, Tricia K. Clark, *Penn State University*

Predicting Student Success using Fine Grain Clicker Data (Invited Talk)[1]
  Leo Porter, *UC San Diego*

Paper Session 3: Alternative Approaches

Teaching Chi-Square Test for Independence Using Simulation in Excel and R
  Leslie Chandrakantha, *John Jay College of Criminal Justice of CUNY*

A Top Down Approach to an Introductory Database Systems Course Using Web Applications
  Adam H. Villa, *Providence College*

Engaging Students in Scientific Thinking: Eye Tracking Methods as a Gen-Ed
  Amanda M. Holland-Minkley, *Washington & Jefferson College*

Paper Session 4: Curriculum

A Place for Node.js in the Computer Science Curriculum
  Scott Frees, *Ramapo College of New Jersey*

Developing Concentrations in Big Data Analytics and Software Development at a Small Liberal Arts University
  Aparna Mahadev, Karl R. Wurst, *Worcester State University*

A Failing Grade for Faculty: Comparing Faculty Perception of Student Expectations and Reality
  Karl R.B. Schmitt, *Valparaiso University*, Abdel-Hameed A. Badawy, *Arkansas Tech University*, Sabrina S. Kramer, Elise A. Larsen, Artesha C. Taylor, Andrea A. Andrew, Breanne Roberston, Alexis Y. Williams, *University of Maryland, College Park*, Katie Hrapczynski, *Towson University*, Mara Doughtery, *American University*, Matthew W. Miller, *Auburn University*, Spencer S. Benson, *University of Macau*

Paper Session 5: Teaching Tools

ZeusLite: A Tool for Botnet Analysis in the Classroom
  Kyle Hannah and Steven Gianvecchio, *Christopher Newport University*

Teaching Semaphores Using...Semaphores
  Robert Marmorstein, *Longwood University*

Designing an Interactive Personal Assistant Web Application System
  Joo Tan, David Day, Kyle Wamsley, *Kutztown University of Pennsylvania*

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[1]We would like to thank the ACM Special Interest Group in Computer Science Education for providing support for Leo's travel. This paper was originally presented at ICER 2014.

Workshop 1: Python Graphics for the Classroom

Rance Necaise, *Randolph-Macon College*
> The benefits of using graphics and image processing to help illustrate and reinforce basic programming concepts in introductory courses is well known. But with the increasing popularity of using Python in the introductory courses, instructors may find the standard Python graphics package is too complex and difficult for beginning students. This workshop will introduce and provide hands-on experience in using a new Python graphics module that was designed with an emphasis on its use in the classroom. Participants will work through a variety of exercises from very basic shape drawing and image processing to more advanced animation examples.

Workshop 2: Teaching Robotics Using ROS

Nathan Sprague, *James Madison University*
> The Robot Operating System (ROS) has had a dramatic impact on the field of robotics over the last several years. ROS is an open-source software framework for developing robotics applications. It has become a standard platform with a wide range of supported robots and a vibrant software ecosystem.
>
> This workshop will provide a hands-on introduction to ROS. Participants will have the opportunity to write ROS-based Python programs to control a Turtlebot educational robot. We will discuss the benefits and challenges of using ROS in an undergraduate robotics course.
>
> *Note*: This workshop will be offered twice, both during the conference on Saturday morning, and after the conference on Saturday afternoon.

Tutorial 1: Strategically Recruiting Women Students into Your Undergraduate Computing Major

Robert Beck, *Villanova University*
> As we witness tremendous growth in computing occupations' size and influence over our lives, economy, and security, women continue to be deeply underrepresented. Research on technology organizations demonstrates that gender-diverse teams are more likely to stay on schedule and under budget and have improved employee performance overall. This tutorial will show faculty can contribute to increasing women's participation in computing by developing a comprehensive strategy for recruiting undergraduate computer science students using a "high yield in the short term." This approach encompasses strategies to maximize return with the least efforts for faculty.

Tutorial 2: Setting up and Running Emerging Scholars Workshops for CS1

Lindsay H. Jamieson, Alan C. Jamieson, *St. Mary's College of Maryland*
> One of the greatest challenges in computer science education is the recruitment and retention of students in underrepresented groups. In this workshop, we present a model for a successful enrichment program targeting and supporting students from these groups, used in tandem with CS1 at St. Marys College of Maryland.

Panel 1: Recruiting, Retaining, and Completing as a Team

Darlene Cross, Miguel Fernandez, Brenasia Ward-Caldwell, Duke Ewing, Nick Watts, *Community College of Baltimore County*
> It has been said that students are their own best resource. This session will show how to engage students so that they will engage themselves. When students are teamed, they become responsible for one another and provide one another with incentive to succeed. This session is about student success via team building.

Panel 2: Connecting Academic and Professional Computer Science: Strategies and Experiences

Karen Anewalt Cockrell, Jennifer Polack, *University of Mary Washington, Rance Necaise, Randolph-Macon College*
> In an effort to improve enrollments and enhance student learning, computer science programs are continually trying new educational experiences and instructional techniques. One item that has been noted as important to student engagement is students' ability to connect academic work to their own experiences. The panelists' presentations will describe experiences with various mechanisms designed to connect typical academic concepts with skills and issues relevant to professional computer scientists. The primary objectives of this panel are to discuss strategies for engaging students and making connections between academic work and their future lives as professional computer scientists.

Nifty and Lightning Talks

Monty-Monte-Monty: A (Monty) Python, Monte Carlo Simulation of the Monty Hall Problem
> Robert Montante, *Bloomsburg University of Pennsylvania*

Independent Language Learning in a Programming Languages Class
> Nancy Tinkham, *Rowan University*

Using the Scrum Methodology to Foster Collaboration, Growth, and Communication
> Susan Ceklosky, *Chestnut Hill College*

Using Oracle Enterprise Manager (OEM) for Teaching Database Administration Functions in a Database Course
> Zahira Khan, *Bloomsburg University of Pennsylvania*

Student Posters

Eyes on the Prize: Using Eye Tracking to Understand Cross-racial and Biracial Face Perception, Kadie Clancy, Natalie Smith, *Washington & Jefferson College* (Faculty advisor: Amanda Holland-Minkley)

This project uses eye-tracking to determine how individuals identify race and if individuals identify mixed race individuals differently than single raced individuals. We also aim to identify specific facial features that individuals use to identify mixed and single raced individuals. Based on the literature, we hypothesize that people use certain stereotypical facial features to assess the race of a person. When assessing race, people will fixate longer on individuals of a different race than their own. They will also fixate longer on those who identify with two races rather than a single race. This project represents an application of eye-tracking techniques and analyses from computing fields to an interesting problem in sociology.

Examples in Game Development: A Computer Science Approach, Examples in Game Development: A Computer Science Approach, *Edinboro University of Pennsylvania* (Faculty advisor: Daniel Bennett)

This research focuses on highlighting the use of computer science concepts through student game development projects. The objectives are to highlight the design and development process for a gaming application, cover uses of computer science topics in video games, and develop an empirical analysis of game programming algorithms used in student projects. Actual gaming projects employing subjects ranging from object oriented project design to programming with threads, will be presented. Special attention will be given to projects incorporating hardware components such as bluetooth communication and the Oculus Rift virtual environment. Both group assignments and personal projects will be employed demonstrate the importance of a deep understanding of computer science to the game developer.

Encouraging Student Privacy by Design Concepts During Software Development, Mark Rowan, *Towson University* (Faculty advisor: Josh Dehlinger)

Anecdotal evidence indicates that many students learning software development are not developing privacy policies for their applications. Further, it has been reported that new developers create original natural language privacy policies, use existing privacy policies for different applications as templates or an external agency (i.e., a legal counsel). This poster presents an overview of the privacy Policy Auto-Generation in Eclipse (PAGE), a work-in-progress that seeks to integrate privacy planning capabilities into the Eclipse integrated development environment (IDE), enabling mobile application developers to create privacy policies as development occurs. This should support privacy by design concepts, enhance team communication through reusability, as well as reduce costs due to errors or extra time in external activities.

The Design and Development of a Web-based Constellation Finder Game, Nicole Sickafoose, *Edinboro University of Pennsylvania* (Faculty Advisor: Patricia Hillman)

At this point in the studies of a student following the Game and Virtual World Development Track at Edinboro University, the student should be able to design and create relatively simple games. This project served the purpose both of testing this assumption and going beyond it. This project enhanced the skills the student needed to interact with a client in the real world, provided an example of how learning video game design may be used, and taught the student to create a web based game.

Mobile Teacher — a platform for interactive education beyond the classroom, Jal Irani, *Towson University*, Kyle Nisson, *University of Maryland* (Faculty advisors: Yevgeniy Cole, Sandro Fouché, *Towson University*, Adam Porter, *University of Maryland*)

Technology has begun to reshape the way we think about education in general and the classroom in particular. With the prevalence of mobile devices it is now possible to push the boundaries of teaching far beyond the confines of the classroom itself.
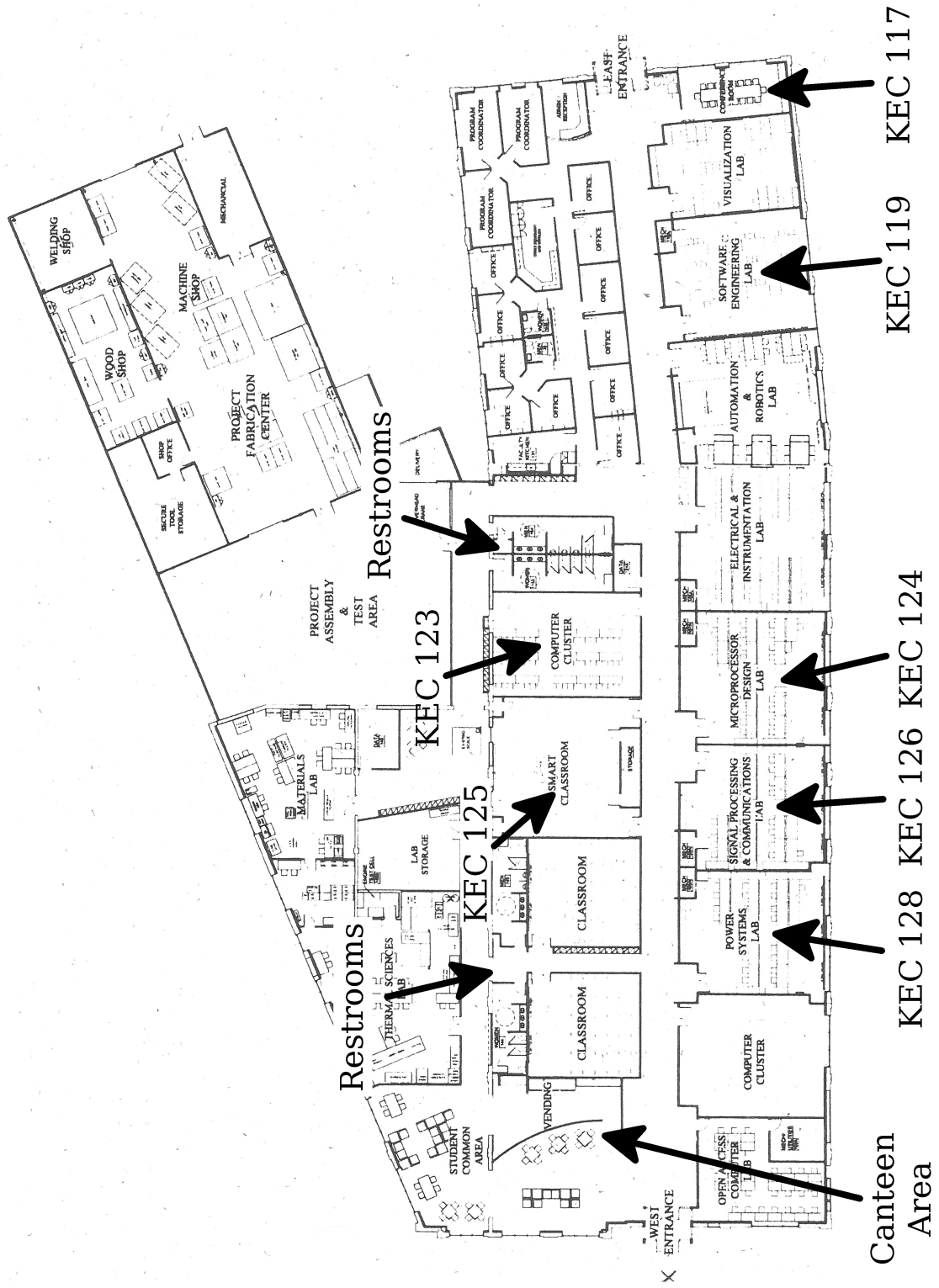Mobile Teacher is a client-server platform that enables location-specific student engagement. By allowing for the creation of location-aware tasks, the platform enables users to interact with instructional materials in a context that can add insight or context. Users are only able to complete specific tasks when physically present in a specific location. Mobile Teacher users are encouraged to interact through the use text, images, audio or even video in both the instructional materials presented and the user responses. Additionally, the system provides a web user interface for task creation and response review and assessment.
The current version of the system is running on Android mobile devices and is hosted on Google App Engine. This poster presents an overview of Mobile Teacher, including screenshots and examples from our pilot study on understanding environmental context in smartphone development.

PhysiCloud: A Cloud Computing Platform for Cyber-Physical Systems, Paul Glotfelter, *York College of Pennsylvania* (Faculty advisor: Patrick Martin)

We present the research and development of a software framework, PhysiCloud, that facilitates the programming of cyberphysical systems (CPS), which are physical entities with tightly coupled computation and communication components. CPS are becoming ubiquitous throughout applications such as unmanned surveillance, building monitoring, and agriculture. As a result, the need for electrical engineering, computer engineering, and computer science students to understand and control these systems is quickly growing. However, interacting with these autonomous entities is excessively complex for beginning students who are unfamiliar with network communication protocols and have limited programming experience. PhysiCloud utilizes modern advances in cloudcomputing and datastream processing to make a generalized architecture that eliminates networking complexities and allows students with little experience to straightforwardly map their academic studies onto CPS, letting them observe the physical impact of their coursework.

Map of Kinsley Engineering Center

Campus Map

Willman Business Center

Kinsley Engineering Center

CCSCE Parking

Grantley Road

Parking
A. Admissions Parking
V. Visitor Parking

To Conference Parking

Points of Interest

MAIN ENTRANCE

Country Club Road

1. Admissions Welcome Center
2. Appell Life Sciences Building
3. Arnold House
4. Beard Hall
5. Bookstore
6. Brockie Commons
7. Brougher Chapel
8. Campbell Hall
9. Codorus Hall

10. Country Club Manor Apartments
11. Curry House
12. Diehl Hall
13. Evelyn and Earle Wolf Hall
14. Evergreen Hall
15. Grantley Hall
16. Grumbacher Sport and Fitness Center
17. Humanities Center
18. Iosue Student Union

19. Kieffer House
20. Kings Mill Depot
21. Kinsley Engineering Center
22. Laurel Hall
23. Little Run Lodge
24. Manor Hall East
25. Manor Hall North
26. Manor Hall Northeast
27. Manor Hall South

28. Manor Hall West
29. Miller Administration Building
30. Naylor Ecological Sciences Ctr.
31. Newberry House
32. Northside Commons
33. Nursing Education Center
34. Penn Hall
35. Pershing House
36. President's Home

37. Richland Hall
38. Schmidt Library
39. Shipley Education Center
40. Spring Garden Apts.
41. Springdale Hall
42. Springettsbury Hall
43. Susquehanna Hall
44. Tyler Run Apartments I

45. Tyler Run Apartments II
46. Tyler Run Apartments III
47. Waldner Performing Arts Center
48. Wenger House
49. West Campus Community Center
50. Willman Business Center
51. Willow Hall