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SIGCSE News in Brief

Is it April already? Oh wait, it's May! Don't let the timing of this Bulletin confuse you and please accept our apologies for its lateness.

Speaking of deadlines, don't forget to vote in the SIGCSE Board election. Barbara Boucher Owens' articles on page 2 review the candidate slate and the election process. Voting ends June 14. For more not-to-be-missed deadlines, see the *Deadline SIGCSE* column on page 8. And speaking of Barbara Boucher Owens, she is our featured member in this month's *Member Spotlight* on page 3.

In curricular news, Mehran Sahami and Steve Roach bring us news of the recently released Computer Science Curricula 2013 draft on page 5, and Henry Walker brings us news of a study group formed by the Mathematical Association of America's Committee on the Undergraduate Program in Mathematics (CUPM). You can read more about this group's activities and observations about the relationship between mathematics and CS curriculum on page 7.

In conference news, Janet Carter, Ian Utting and Alison Clear bring us a preview of ITiCSE 2013 on page 8, and we wrap up this quarter's Bulletin with three articles highlighting the recent SIGCSE Symposium. It was a great conference indeed!

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- Contributors: Christine Alvarado, Janet Carter, Alison Clear, Barbara Boucher Owens, Steve Roach, Mehran Sahami, Ian Utting, Henry Walker
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SIGCSE Board Elections Underway!

by Barbara Boucher Owens, former Chair of the SIGCSE Board

SIGCSE BOARD Election Slate	
Chair	Thomas J. Cortina
	Susan H. Rodger
Vice Chair	Robert McCartney
	Paul Tymann
Secretary	Annemieke Craig
	Judy Sheard
Treasurer	Amber Settle
	Ellen L. Walker
At-Large Member	Tiffany Barnes
	Allison Clear
	Mats Daniels
	Sue Fitzgerald
	James Heliotis
	James D. Kiper
	Amruth N. Kumar
	Colleen M. Lewis
	Jose Miro-Julio
	Viera Krnanova Proulx

Electronic voting for the SIGCSE Board is underway and will remain so until June 14th. SIGCSE members were emailed or snail-mailed information on the current election with instructions on voting and links to biographical sketches for the candidates. The result of the election will be announced on July 1st when the new Board takes office.

The SIGCSE Board has the responsibility for overseeing SIG activities including budget planning, approving locations and leadership for the three SIGCSE annual conferences, deciding on member benefits, reporting to ACM, administering the SIGCSE awards program (Outstanding Educator and Lifetime Service) etc. The Board holds several conference call meetings during each year and meets face to face twice. ACM provides assistance through an ACM SIG advisor.

SIGCSE Board Election Process

by Barbara Boucher Owens, former Chair of the SIGCSE Board

Every three years ACM SIGCSE elects a new board. And it is that time again! The SIGCSE Chair (Renée McCauley) appointed me as chair of the nominating committee. I put together a nominating committee in consultation with Renée. My goal was to include a broad representation of the SIGCSE community on the nominating committee. Beyond myself, the nominating committee included:

- James Carisiti, Valparaiso University, USA
- Catherine Lang, Swinburne University of Technology, Australia
- Gary Lewandowski, Xavier University, USA
- Mehran Sahami, Stanford University, USA
- Kathryn Sanders, Rhode Island College, USA
- Renée McCauley, College of Charleston, USA Ex-officio SIGCSE Chair

Our charge was to produce a balanced slate as well. The nominating committee corresponded via email, and the entire committee was able to finalize the slate via a conference phone call at which all members were in attendance. After the work of the nominating committee finished, there was an open time for others to petition to be on the ballot. None did, so the slate remained as it was produced by the nominating committee.

I want to thank the members of the committee for all their work in putting together this slate.

We firmly believe that no matter who is elected, SIGCSE will be in good hands. So fire up your computer and VOTE!

MEMBER SPOTLIGHT

In this feature of the Bulletin, we highlight recent accomplishments of our members. For this issue, Bulletin co-editor Christine Alvarado interviewed Barbara Boucher Owens, Southwestern University. Barbara is leaving the SIGCSE Board this year after 16 years as a Board Member.

CA: How did you first get involved with SIGCSE?



*Barbara Boucher Owens at SIGCSE 2013
Photo credit: Rich LeBlanc*

BO: I think I joined ACM in 1968 when I attended a Joint Computer Conference in San Francisco. I was working for IBM in Los Gatos at the time. I was deeply involved in Computer Assisted Instruction (CAI). I am not sure when I actually joined SIGCSE, though. In 1970, I left IBM and began my career in higher education, starting at Brooklyn College, teaching a graduate course in psychology on computer simulation of human behavior. After a year, a new Computer Science department was formed at Brooklyn and I joined that fledgling department.

[My] deepest involvement in computer science education groups began in the early 80's when I was part of the formation of the Eastern Small College Computing Conference. [I was] in a small department [at the time, at Mercy College in Dobbs Ferry, New York]. I felt a strong need to have a cohort, and that conference gave me that set of colleagues. I soon was part of the group that founded the Greater New York Computing Consortium.

I began regularly attending the SIGCSE Symposium in the early 80's. When I moved to Texas in 1988, Nell Dale immediately took me under her wing and I was hooked. SIGCSE has been my surrogate family ever since.

Looking back: I have attended 22 SIGCSE Symposia, 12 ITiCSE Conferences and 5 ICER workshops!

CA: What motivated you to join the Board?

BO: Again, it was Nell Dale who encouraged me to run for the SIGCSE Board. SIGCSE was growing rapidly at the time, and I was thrilled to be part of an international organization.

CA: Tell me about your time as Board chair. What issues were particularly important to you for the Board to focus on? What were the most important activities of the Board during that time?

BO: My platform as chair included an emphasis on cooperation with the CSTA to focus on the relationship between the K-12 community and the higher education community. I also worked hard to make the work of the board more transparent and open. The Board moved to paperless meetings and began meeting throughout the year via conference call.

CA: What do you think are the most important issues in computer science education that we face today?

BO: All of higher education is under threat from rising costs and concomitant rising expectations for the granting of faculty tenure. Computer science educators need to keep up in a rapidly changing field while dealing with the overall pressures that all faculty face. A further stress is placed on faculty who concentrate on computing education research as they often must justify why this is a legitimate area of scholarly inquiry.

The decreasing presence of computer science in high school and the increasing pervasiveness of computing in everyone's lives has led to a dearth of students who understand what computer science is and a disconnect with the college courses. Further, the decreasing number of women entering and staying in the field is problematic. However, I am encouraged by recent events and efforts to combat this problem and am hopeful for a sea change.

This year's big issue is MOOCs. What is the role of the teacher, what is the role of online learning and open education?

I am also convinced that we as educators must take into account the overriding importance of sustainable computing, both in terms of always taking into account the human and environmental impact of both our software and hardware, as well as the avoidance of what Vint Cerf calls "bit rot".

CA: Tell me a little about the Computing Educators Oral History Project.
(<http://ceohp.org/>)

BO: The idea for the project came at the 2003 SIGCSE Symposium in Reno, Nevada, when Eric Roberts, who won the Outstanding Educator award, gave a keynote address and Jane Margolis and [Allan] Fisher gave a luncheon talk highlighting their book, *Unlocking the Clubhouse*.

Several conversations (many in the ladies' restroom) centered around the urgent need to capture the stories from early female computing educators, some of whom had very rough times convincing male colleagues that women could be solid computer scientists. The urgency sprang from the fact that many of these women were soon to retire. Computing, at that point, had lost very few to retirement or death because it had been a very young field. But our pioneers were now aging.

At present we have 28 approved interviews [with both women and men], and 3 in process. Vicki Almstrum has been a mainstay in this project and remains my rock.

CA: I've always been impressed (as I know many people are) by your seemingly boundless energy. What keeps you going?

I suffer from the Imposter Syndrome and I think I am always afraid I will be found out. That my husband has been a willing ally and has worked hard to keep home and family going while I pursued my CS Ed activities is undoubtedly where I get my extra energy. This is my first academic year as a retired person.

CA: Any final words?

BO: I am grateful to SIGCSE for opening up opportunities for sharing my passion for computing and for education. These have also afforded me the wonderful experiences to travel, stay with friends, and share stories about the oral history project and about computing education on five continents!

CA: As a final surprise, I asked Board members who have worked with you over the years to contribute comments and stories about you. A couple of stories in particular sum up your passion as well as your sense of humor.

Susan Roger, Duke University, writes:

"Barbara Owens is one of the most passionate members of SIGCSE, and convinces everyone she meets what a great family SIGCSE is and that they should become a part of that family. I have a story about Barbara from ITiCSE 2010. ITiCSE 2010 was in Turkey. A group of about 6 of us, including Barbara, were on a tour the day before ITiCSE to see the city

center in Ankara. After the tour ended, the mini-bus driver started driving us back to the conference center. However, Barbara had other plans for all of us. She talked the driver into stopping the bus by the side of the road to look for a particular geocache. He didn't really understand what we were looking for, but she had him and everyone on the tour walking around looking for it. I don't think we ever found it."

Henry Walker, Grinnell College, writes:

"One element of being SIGCSE Chair (or past Chair) is that one must be ready for almost anything—often without warning.



*Barb (with Henry Walker) as "Queen" at ITiCSE 2011
Photo credit : Terry Walker*

As an example, the ITiCSE 2011 conference dinner in Darmstadt, Germany, included entertainments that involved various skits. The final skit was substantially longer and more involved than the others. It turned out that the conference leaders had arranged with the dinner hosts to select Barbara and me to be "Queen" and "Knight" in a lengthy story."

Thank you, Barb. Your leadership on the Board will be missed.

Computer Science Curricula 2013: Getting Involved and Getting Ready by Mehran Sahami, and Steve Roach, ACM/IEEE-CS Joint Task Force co-chairs

For over 40 years, the major professional societies in computing—ACM and IEEE-Computer Society—have sponsored the creation of international curricular guidelines for undergraduate programs in computing. As the field has grown and diversified, so too have the recommendations for curricula. The rapid evolution and expansion of the computing field and the growing number of topics in computer science has made regular revision of curricular recommendations necessary. Thus, the Computing Curricula volumes are updated on an approximately 10-year cycle, with the aim of keeping curricula modern and relevant. The most recent complete Computer Science curricular volume was released in 2001 (CC2001) and was followed by a review effort that concluded in 2008 (CS2008). The next volume in the series, Computer Science Curricula 2013 (CS2013), is currently in progress, and two drafts of the CS2013 report have already been released—the Strawman draft in February 2012 and the Ironman draft in February 2013. The final CS2013 report will be released by the end of this calendar year.

CS2013 aims to provide advice and guidance to the computing education community throughout the coming decade by redefining the knowledge areas in CS, rethinking the essentials necessary for a CS curriculum, and identifying actual fielded exemplary courses and curricula along these lines. Balancing topical growth with the need to keep recommendations realistic and implementable in the context of undergraduate education is particularly challenging. Further, the integration of computing with other disciplines creates

additional opportunities for defining innovative computing curricula.

The CS2013 Ironman draft includes a complete update to the Body of Knowledge in computer science, organized around 18 Knowledge Areas:

- Algorithms and Complexity (AL)
- Architecture and Organization (AR)
- Computational Science (CN)
- Discrete Structures (DS)
- Graphics and Visualization (GV)
- Human-Computer Interaction (HCI)
- Information Assurance and Security (IAS)
- Information Management (IM)
- Intelligent Systems (IS)
- Networking and Communications (NC)
- Operating Systems (OS)
- Platform-Based Development (PBD)
- Parallel and Distributed Computing (PD)
- Programming Languages (PL)
- Software Development Fundamentals (SDF)
- Software Engineering (SE)
- System Fundamentals (SF)
- Social Issues and Professional Practice (SP)

Two substantial reorganizations in the Body of Knowledge include introductory programming and systems. In the area now called Software Development Fundamentals (previously called Programming Fundamentals) we have extracted fundamental software development concepts, including topics in algorithms, design, programming, and software development processes. A new area, Systems Fundamentals, identifies common themes among operating systems, networking, and computer architecture. Additionally, recent developments in the field have given rise to the development of knowledge areas in Parallel and Distributed Computing,

Information Assurance and Security, and Platform-Based Development.

The CS2013 Steering Committee understands that few, if any, existing programs will be able to simply add courses to cover new and expanded topics. In fact, the creation of Systems Fundamentals and Software Development Fundamentals aligns with our intent to encourage programs to combine topics from multiple knowledge areas when designing courses.

The CS2013 Ironman draft includes the Body of Knowledge as well as a set of descriptions of exemplar courses reflecting diverse implementations of the Body of Knowledge. Additionally, the document includes chapters providing an overview of CS2013, the principles that were used as a foundation for its development, the characteristics of CS graduates, guidance on how to read the Body of Knowledge, and a discussion of institutional challenges related to CS curricula.

The CS2013 drafts have already benefitted from the input of more than 100 contributors beyond the CS2013 Steering Committee. We welcome further community engagement, including (but not limited to):

- Comments on the Ironman version 1.0 draft.
- Contribution of exemplar courses/curricula that are mapped against the Body of Knowledge.
- Descriptions of pedagogic approaches and instructional designs (both time-tested and novel) that address professional practice within undergraduate curricula.
- Sharing of institutional challenges, and solutions to them.

Comments on all aspects of CS2013 are welcome and encouraged via the CS2013 website: <http://cs2013.org>

Mathematics with Computing and Computational Science: Dialog Encouraged!
by Henry M. Walker, Grinnell College

Most readers of the SIGCSE Bulletin newsletter know that ACM partners with its sister societies (e.g., IEEE-CS) to formulate curricular recommendations in computer engineering (CE), computer science (CS), information science (IS), information technology (IT), and software engineering (SE).

Similarly, the Committee on the Undergraduate Program in Mathematics (CUPM) of the Mathematical Association of America (MAA) publishes guidelines for undergraduate mathematics programs.

In anticipation of the next full mathematics guidelines (targeted for 2015), CUPM created several Content Study Groups to review subject areas within mathematics and about 20 Program Study Groups to examine relationships between mathematics and other disciplines. One Program Study Group was formed to explore relationships between mathematics and the fields of computing and computational science. The idea was not only to consider the mathematical needs of undergraduate majors in these fields, but also to consider possibilities for minors, double majors, interdisciplinary majors, and combinations of majors and minors.

Working within a tight timeframe, CUPM appointed a Program Study Group on Computing and Computational Science in summer, 2012, with myself as chair and with members Douglas Baldwin, SUNY Geneseo, and Daniel Kaplan, Macalester College. The CUPM charge was to prepare a Summary Report (5 pages maximum for written publication) and a Supplemental Report (length as needed for

Web posting) by December 1, 2012.

With these constraints in schedule, the group consulted with faculty and with people in industry, examined curricular guidelines from ACM and its sister societies, presented draft materials at several regional meetings, and solicited feedback from several faculty groups. Time constraints prevented more general distribution before the December 1, 2012, deadline.

At present, both the full Summary and the Supplemental Report have been presented to CUPM for their review. These materials also are available at:

<http://www.cs.grinnell.edu/~walker/maa/program-study-group/>

One interesting observation, tabulated in the Summary Report, was the considerable diversity in expectations for mathematics in the various disciplines: CE, CS, IS, IT, SE, computational science, and big data.

Future developments will depend upon directions from CUPM. In the meantime, these documents may serve as an opportunity for computing faculty to discuss needs and perspectives with their mathematical colleagues. Also, in case CUPM asks this Program Study Group for refinements in the reports, SIGCSE members are invited to provide feedback by emailing: <mailto:walker@cs.grinnell.edu>.

Please include "Feedback: PSG on Computing/Computational Science" in the Subject line.

ITiCSE 2013 Preview

by Janet Carter (Conference Chair), Ian Utting and Alison Clear, (Programme co-Chairs).



2013 sees ITiCSE returning to Canterbury and the University of Kent after a 12 year absence.

This year's conference finds itself in the middle of a positive storm of interest and discussion of the role of Computing in schools in Europe and the USA, and this year's ITiCSE (the 18th) will reflect that, with some of the keynote speakers and sessions, especially on Monday 1st, focusing on the issues and ongoing debate about what is happening and how to move it forwards.

But the conference as a whole will continue to have a broad focus: short Tips & Techniques presentations, a wide range of posters from faculty and students, and three strands of panel sessions and papers reporting both practice and research. Paper submissions this year were high in number and quality, with 51 out of 161 accepted for presentation. ITiCSE also includes five of its unique Working Groups, whose members are already preparing the ground for their first face-to-face meetings and a burst of activity starting on the Saturday before the conference proper, and who will report their progress during the conference.

As well as the high quality of presentations and the opportunities to meet and learn from educators from around the world, attendance at ITiCSE will give you the opportunity to explore the ancient city of Canterbury and the surrounding countryside with the traditional mid-conference afternoon excursions. The conference will finish with a dinner at the historic Dover Town Hall, dating from 1203 when it was built as a hostel for pilgrims heading for the shrine of Thomas Beckett in Canterbury cathedral.

For further details and registration, see <http://www.cs.kent.ac.uk/events/iticse2013/>

Deadline SIGCSE

Here are some upcoming deadlines you won't want to miss!

May 15	Submit SIGCSE Special Project grant proposal http://www.sigcse.org/programs/special
May 26	Register for ITiCSE at early bird rates http://www.cs.kent.ac.uk/events/iticse2013/registration.html
June 3	Apply for ACM Senior Membership grade http://awards.acm.org/html/amg_all.cfm - senior
June 14	Vote for the new SIGCSE Board http://www.acm.org/sigs/elections

SIGCSE Symposium 2013: Best Paper Award

by Christine Alvarado, University of California, San Diego



Leo Porter, Skidmore College (left) and Beth Simon, UCSD (right)
Photo credit: UCSD Jacobs School of Engineering

The SIGCSE Symposium 2013 Best Paper Award was presented to Leo Porter, Skidmore College, and Beth Simon, University of California, San Diego for their paper: *Retaining Nearly One-Third more Majors with a Trio of Instructional Best Practices in CS1*. This paper was selected out of 111 accepted papers.

The paper reports on a set of pedagogical and curricular changes that were made at the University of California, San Diego (UCSD) in the first CS course for majors. The trio of best-practices described in the paper include Peer Instruction—a technique that replaces lecture with class sessions where student work together in small groups to engage in active learning—pair programming, and a media computation context for CS1. These practices were first implemented four years ago, and have resulted in a 31% increase in retention of CS majors at UCSD.

Based on these increased retention rates, it appears that these practices better serve a wide range of potential CS majors. This broad reach is particularly important at a time when CS enrollments are again on a steep upward trajectory. This award helps highlight the importance of developing inclusive curriculum and pedagogy, even in times of plenty.

SIGCSE Symposium 2013: Business Meeting Recap

by Christine Alvarado, University of California, San Diego, Bulletin co-Editor

The SIGCSE Board held its annual business meeting at the SIGCSE Symposium on March 8, 2013. The meeting was brief, yet positive and informative, with the SIGCSEngers, who were rehearsing next door, providing a musical soundtrack for the meeting. Highlights of the meeting included:

- SIGCSE Treasurer Doug Baldwin reported that SIGCSE's finances are in good shape. For fiscal year 2013 SIGCSE is projected to have a budget surplus of \$110,000, which is twice as much as ACM requires (which is not unusual, as it is reasonable for SIGs to be conservative with their finances).
- SIGCSE Chair Renée McCauley announced a new travel grant program, generously supported by Henry Walker, which will provide funds for first-time attendees to attend the symposium (<http://www.sigcse.org/travelGrant>). This program will be discussed in more detail in the July issue of the Bulletin. Renée also announced that Symposium registration was over 1300, at 1302.
- SIGCSE Board Members Amber Settle and Doug Baldwin talked about the SIGCSE Speakers Fund (<http://www.sigcse.org/programs/outreach>) and SIGCSE Special Projects (<http://www.sigcse.org/programs/special>), respectively.
- Outgoing Board members were recognized, and Board member Barbara Boucher Owens presented the slate of candidates running for Board positions in the current election. See Barbara's articles on page 2 of this Bulletin.

There were very few questions, and little discussion, and everyone adjourned for some socializing and networking



SIGCSEngers serenade conference goers with the chart-topping hit For The Longest Path



Henry Walker, Grinnell College, is presented with the SIGCSE Award for Lifetime Service to the Computer Science Education Community



Michael Kolling, University of Kent, is presented with the SIGCSE Award for Outstanding Contribution to Computer Science Education



For the Longest Path*

If you said P is NP tonight
 There would still be papers left to write.
 I have a weakness,
 I'm addicted to completeness
 And I keep searching for the Longest Path.

The algorithm I would like to see
 Is of Polynomial Degree.
 But it's elusive,
 Nobody has found conclusive
 Evidence that we can find the Longest Path.

I have been hard working for so long.
 I swear that it's right, and he marks it wrong.
 Somehow I'll feel sorry when it's done.
 GPA 2.1 Is more than I hoped for.

Garey, Johnson, Karp and other men
 (and women)
 Try to make Order(n log n).
 Am I a math fool?
 If I spend my life in grad school?
 Forever following the Longest Path.

```
for (int k=0; k<4; k++) {
    sing ("Who, oh-oh-oh");
    sing ("Find the longest path");
}
```

*Lyrics by Daniel Barrett (with apologies Billy Joel)

Photo credits: Scott Dexter, Bonnie Heines, James Heliotis, Terry Walker

