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## SIGCSE News in Brief

We want to spice up the Bulletin! Read Christine’s article (p. 8) on how you can help. One of our ideas is “Member Spotlight,” a regular feature in which we’ll showcase recent accomplishments of our members. In this issue we interview Colleen Lewis, Harvey Mudd College, winner of the Chair’s Award for best paper at ICER. Let us know your suggestions for members to feature in future issues.

Speaking of ICER, co-chair Alison Clear, AUT Auckland, gives us the low down on the meeting down under. And Janet Davis, Grinnell College, reports on the recent Grace Hopper conference in Baltimore.

The AP Principles pilot is in its third year. Owen Astrachan and R. Brook Osborne, Duke University, give us an update with details on the portfolio-based assessment used in the course.

Now is the time to start planning a CSED Week activity. Ruthe Farmer, NCWIT, tells us how to get started.

SIGCSE Board members Doug Baldwin, Dan Joyce, and Amber Settle give us the heads up on upcoming deadlines for SIGCSE Special Project awards and ACM Senior Membership nominations.

### Newsletter Credits

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## ICER 2012 Conference Report

by Alison Clear, AUT Auckland, ICER co-chair; photos by Mark Guzdial, Georgia Institute of Technology



*Auckland, the site of ICER 2012*

This year ICER was held in Auckland, New Zealand on the 10<sup>th</sup> and 11<sup>th</sup> of September. Paper submissions were a record for ICER with 53 submissions. The Program Committee accepted 21 papers, 15 research papers and eight discussion papers, a 39% acceptance rate. There were also 15 doctoral consortium presentations given on September 9<sup>th</sup>, and nine lightning talks. The keynote speaker for this conference was Professor Jan Meyer from the University of Queensland, Australia, who spoke eloquently about “Threshold Concepts, Pedagogy and Student Learning: Challenges and Opportunities” and related this theory to computing.

There were two awards given. The “John Henry” Paper Award– Peoples’ Choice was given to the paper that, in the judgment of the conference delegates, has the highest potential for future impact on the field. This award is also known as the “Fool’s Award,” after the Tarot card “the Fool,” symbolizing the willingness to take risks and venture into the unknown, with the possibility of achieving great things.



*Ilan Utting receiving the “Fools Award”*

This year it was won by Ian Utting, Neil Brown, Michael Kölling, Davin McCall and Philip Stevens from the University of Kent, Canterbury for their paper titled “Web Scale Data Gathering with BlueJ.”

There was also the Chairs’ Award for the best paper, and this year it was won by Colleen Lewis, University of California, Berkeley (now at Harvey Mudd College), for her paper titled “Tracking Program State: A Key Challenge in Learning to Program.” (Colleen and this work are featured in our new “Member Spotlight” column on page 7 of this Bulletin.)

Of course it wasn’t all work. There was a conference dinner held on Auckland’s beautiful waterfront and delegates had the opportunity to enjoy Auckland the surrounding sights in the few days following the conference.

A very big thank you to all those who helped organize this conference: Tony Clear and the local committee and helpers from AUT, Simon for the wonderful job he did as submissions chair, Samuel Mann for the registrations and the co-chairs Kate Sanders and Beth Simon.

## GHC Spotlight: Jane Margolis, Unlocking the Clubhouse 10 Years Later

by Janet Davis, Grinnell College

The Grace Hopper Celebration of Women in Computing, held in Baltimore, MD on October 3-6, was an inspiring event full of great sessions about how to build a CS education community where women thrive.

However, the theme of the conference, "Are We There Yet?" hit particularly close to home for Jane Margolis. Although CS education is more inclusive now than in 2001 when *Unlocking the Clubhouse* by Margolis and Allan Fisher was published, in 2011 only 25% of the computing workforce was female and only 19% of those who took the AP CS exam were female. In her inspiring session, Dr. Margolis issued a call to arms to the CS community.

The computing culture still has problems. For one, Dr. Margolis cited the pervasive myth that there are simply no women in computing. She showed a photograph of interns at Twitter co-founder Jack Dorsey's new startup, Square. All thirteen of the interns are men, but even more troublesome was Dorsey's response to the question, "Are there any women interns?" His answer: "Not in this batch. We'd love to find some." Dr. Margolis retorted, just look around GHC—"There are thousands!" You hear this excuse all the time, that there are no female candidates. But, Dr. Margolis contends, that's just an excuse; the women are there, you just have to see them.

Dr. Margolis related her experience working for Pacific Bell in the late 1970s, before she earned graduate degrees in psychology and education. She was hired as a telephone operator, but when the government required affirmative action for the male-dominated profession of "telephone installer," she stepped up.



*The GHC reception, photo by Christine Alvarado*

She loved her new position, and she started asking, what other opportunities are denied to women and minorities? How can we increase access to these opportunities?

Dr. Margolis claimed that she was able to work as a telephone installer, a profession with no female role models, only because the civil rights and women's liberation movements generated systematic pressure to create access for women. She exhorted us to learn from these social movements how to take action today.

As an example, Dr. Margolis pointed to the theory of unconscious bias. Unconscious bias occurs mostly in homogeneous communities, such as the startup world. Indeed, Dorsey had not even realized there were no women among his interns until he was asked.

These issues are systemic and require cultural change. But, Dr. Margolis suggested, "What if 3000 women congregated outside Dorsey's office demanding change?" Acknowledging that we no longer live in the 1960s, she also pointed out that we can't expect change without coming together as a community to demand change. Dr. Margolis concluded, "Why is what we've been doing so far not enough? We need to ask. We should not be afraid to ask." As educators, we are in the perfect position to do just that.

## Computer Science Principles: Portfolio-based Assessment

by Owen Astrachan (co-leader of the CS Principles project) and R. Brook Osborne, Duke University

The Computer Science Principles (CSP) course is in its third year of piloting the curriculum framework that will lead to a new Advanced Placement (AP) exam by the academic year 2016-2017.

We anticipate that the CS Principles AP exam will feature a portfolio-based portion in addition to a more traditional multiple-choice style exam. Over the duration of the CSP course, students will complete small projects, both individually and collaboratively, in response to specific prompts. They then will submit these projects to be scored. The scores on their portfolio tasks will be combined with the scores on the more traditional multiple choice portion of the exam to produce their final AP score.

This year four high schools and two universities are piloting the course and three portfolio tasks, which will be developed into the final tasks students complete as part of their AP exam.

The portfolio tasks include tasks from three different areas: programming, data analysis, and the Internet and its social impact. The portfolio tasks will be available via the CS Principles website: [csprinciples.org](http://csprinciples.org). Here we briefly describe each task to show how these open-ended tasks can foster creativity while ensuring rigorous standards and understanding.

The programming task requires students to choose their own focus area that will lend itself to the development of non-trivial and interesting or personally relevant programs.



*Students working on CSP projects. Photos by Rich Kick (top) and Andy Kueimmel (bottom)*

Students work together to design and implement a program that illustrates the area of focus they chose; then each student individually writes a different program in that same area.

The data analysis task requires that students work together to identify a large data set and then to pose questions that may be answered using that data set that will lead to insight or knowledge. Students must then answer the questions using computational tools and techniques and present their findings. Again students write their own reflection to accompany the collaboratively developed explanation of their data investigation.

The Internet and impact task is done individually and asks students to write a report analyzing a “significant, contemporary problem and potential solution that are connected by computing and the Internet to a societal, economic or cultural context.”



## **CSEd Week: Computer Science Fuels the Future**

by Ruthe Farmer, CSEd Week chair

Computer Science Education Week 2012 (December 9 - 15) offers you a tremendous opportunity to raise awareness about the impact of computing, the richness of computing careers, and the critical need for computer science (CS) education. CSEdWeek is your call to action to inspire students about CS, to employ new and better ways to engage them, and to connect with the broader community about the need for and value of CS education.

Last year, CSEdWeek was a smashing success with more than 3,363 pledges of support and over 550 events and activities engaging students, parents, teachers and the computing community around the world. An amazing feat when noting that both these numbers doubled compared to 2010! We are hoping for even more participation this year and believe – with your support – we can prove that computer science does indeed Fuel the Future!

So get excited and get going! The best place to start is the CSEdWeek website: <http://www.csedweek.org>. You can view the events and activities pledged last year and tap into the wide variety of resources available to showcase computing and CS

education. One example of a successful activity hosted by the Department of Mathematics and Computer Science at Western Carolina University is an annual programming contest for regional high schools.

Here's a step-by-step of how to get involved:

- Go to <http://www.csedweek.org>
- Click on 'Sign the Pledge'
- Enter the information requested and click 'submit'
- Choose to 'Host an event' or 'Carry out an activity' (or both!)
- Provide the event or activity details, click 'submit,' and away you go!

The next steps include encouraging your students to 'Sign the Pledge' to participate in CSEdWeek; using the resources available to you on the CSEdWeek website – especially the Event Planning Toolkit – to craft your event or activity; and contacting your fellow SIGCSE members to motivate them to participate and show that Computer Science Fuels the Future!

CSEdWeek is successful because of passionate educators just like you. We need you to continue this work so that CSEdWeek builds awareness of and celebrates the essential role of CS education.

Thank you to all who pledged for CSEdWeek 2011. If you have not already done so, please share the details of last year's event using the same email address you used when you pledged ([www.csedweek.org/forms/sign/pledge-step3](http://www.csedweek.org/forms/sign/pledge-step3)).

Pledge your CSEdWeek 2012 plans at [www.csedweek.org](http://www.csedweek.org) today!

## **SIGCSE Special Projects Grant Reviews Start November 15**

by Doug Baldwin, SIGCSE Treasurer

A reminder that a new round of Special Projects grants is coming up: SIGCSE will begin reviewing new grant proposals on November 15.

Special Projects grants provide up to US\$5000 for projects that in some way benefit the computing education community. Only SIGCSE members can apply for these grants, and proposals are competitively reviewed to maximize benefit to the computing education community. The application process is deliberately simple, with quick (roughly one month from the start of reviews) turn-around. For a complete description of the program, see [www.sigcse.org/programs/special/](http://www.sigcse.org/programs/special/). For more information on how to apply see [www.sigcse.org/programs/special/apply](http://www.sigcse.org/programs/special/apply).

Of special note, SIGCSE will consider granting funds for equipment purchases starting in the November round. Any requested equipment must directly support the proposed project, and others must be able to use any products of the project without major equipment purchases of their own. Nonetheless, this change is one that several SIGCSE members have asked for, and one that hopefully widens the population that the program can help.

Submit applications via email to [apply@sigcse.org](mailto:apply@sigcse.org). You can also use this address for any questions about the program or about proposal ideas. The review committee particularly welcomes pre-submission questions from authors. We hope to see your ideas in November!

## **ACM Senior Membership Deadline**

by Dan Joyce, SIGCE Vice-chair and Amber Settle, SIGCSE Member-at-Large

The next deadline for applications for Senior Membership in the Association for Computing Machinery is December 3, 2012. The Awards Committee encourages all SIGCSE members who meet the requirements to apply for Senior Membership.

Senior Membership requires at least 10 years of professional experience, including graduate school, and 5 years of continuous Professional Membership. Three letters of recommendation from colleagues are required. For more information about membership and see the following web site:

[acm.org/membership/senior\\_members](http://acm.org/membership/senior_members).

SIGCSE members with advanced ACM memberships are listed on the following page of the SIGCSE web site:

[sigcse.org/programs/awards/grades](http://sigcse.org/programs/awards/grades).

We would like to encourage SIGCSE members who have recently been awarded ACM Senior Membership or other ACM Advanced Memberships to make sure that they are listed.

Please contact SIGCSE Awards Committee members Amber Settle ([asettle@cdm.depaul.edu](mailto:asettle@cdm.depaul.edu)) or Daniel Joyce ([daniel.joyce@villanova.edu](mailto:daniel.joyce@villanova.edu)) with questions about applying for Senior Membership or with updates for the SIGCSE web page.

## MEMBER SPOTLIGHT

*In this new feature of the Bulletin, we highlight recent accomplishments of our members. For this issue, Bulletin co-editor Z Sweedyk interviewed Colleen Lewis, Harvey Mudd College, who won the Chair's Award for best paper at ICER 2012 for her work "Tracking Program State: A Key Challenge in Learning to Program."*



*Colleen Lewis, Harvey Mudd College*

ZS: What is a key practical result of this paper?

CL: One practical take-away from the paper is that we should teach students to pay attention to specific aspects of program state as they

learn to program. A programming environment presents a lot of information, but experts are able to narrow in and pay attention to only the relevant information. There is no reason to expect students to behave like an expert in this way without support. We may teach students the basic rules in a programming environment, but we should also emphasize teaching them what is most important to pay attention to within the programming environment; many times this is program state.

ZS: What methods did you employ?

CL: I collected data in the summer of 2009 at a summer enrichment program teaching computer science to students entering the 6th grade. With student and parent consent, I recorded students' work and conversations when using the Scratch programming environment. The paper presents a case study of one student's experience debugging a program he had written. I used a method referred to as microgenetic analysis, which involves taking into account the moment to moment

behavior of a learner to try to understand their experience and learning process.

ZS: How does your research differ from other studies of novice programmers' debugging behavior?

CL: Typically, debugging behavior is studied by providing a large sample of students a set of programs to debug. Instead of giving many students the same, artificial debugging task, I wanted to observe students in the natural process of debugging - debugging programs they wrote and wanted to get working. Artificial and natural debugging may produce different patterns of behavior, and research investigating artificial debugging may be studying a different phenomenon.

ZS: Why did you analyze only a single student's debugging behavior?

CL: Large scale studies, although generalizable, can miss subtlety that is essential to the phenomenon that is being investigated. By focusing on the subtlety in an individual case we may better be able to design large scale studies that take into account what appear to be the important dimensions of the phenomenon.

ZS: How did it feel to win this award?

CL: It was a wonderful honor to receive the award. I was nervous before I presented the paper because it centers on qualitative analysis of just a few minutes of video data and this type of data and analysis is uncommon in computer science education. I was pleased during the presentation that the attendees took seriously understanding what we could learn from analyzing a single student's experience. This reaction was surprising and encouraging.

## Conference Update



The 44<sup>th</sup> ACM Technical Symposium on Computer Science Education (SIGCSE 2013) will be held March 6-9, 2013 in Denver, CO, USA.

The deadline for Birds of a Feather sessions and Posters is Monday, October 29, 2012. More information is available at the conference web site:

<http://www.sigcse.org/sigcse2013/>



The 18<sup>th</sup> annual Conference on Innovation and Technology in Computer Science Education (ITiCSE 2013) will be held at the University of Kent, Canterbury, England on July 1-3, 2013.

The deadline for submission of Papers, Panels and Working Groups is January 13, 2013. The deadline for Tips, Techniques and Courseware as well as Posters is March 15, 2013.

More information is available at the conference website:

<http://www.cs.kent.ac.uk/events/iticse2013/>

## SIGCSE Bulletin: We Want Your Ideas

by Christine Alvarado, SIGCSE Bulletin co-editor

In 2010, the SIGCSE Bulletin split from ACM Inroads and became an electronic newsletter designed to help SIGCSE members stay engaged with the community by informing them about activities, events and other timely topics of interest.

In addition to reporting on recent and upcoming conferences, we, the co-editors of the Bulletin, are always looking to include other events of interest to SIGCSE members. For the past few months, we have been talking about ideas for new kinds of items to include in the Bulletin that will go beyond just conference reports and general updates. Here are some of our ideas:

- SIGCSE Member Spotlight (test-run in this issue, see p. 7): A SIGCSE member and her or his recent work will be highlighted in an article in the Bulletin. Spotlight members will be chosen by the co-editors with suggestions from the SIGCSE community.
- CS Education in the News: A summary of one or more recent news stories featuring CS and CS education.
- A CS Education Comic Strip: Admittedly one of our more “out there” ideas. We would work to find someone with an amateur talent in writing comic strips to contribute to each newsletter. Do you have comic talent you want to share?

What do you think of these ideas? Do you have other suggestions? We want to hear from you, so please send us a note at [alvarado@cs.ucsd.edu](mailto:alvarado@cs.ucsd.edu) and [z@cs.hmc.edu](mailto:z@cs.hmc.edu).