CRA CONFERENCE AT SNOWBIRD 2010—JULY 18–20

CLIFF LODGE, SNOWBIRD RESORT, UTAH

The flagship conference for chairs of Ph.D.-granting departments of CS and CE and leaders from U.S. industrial and government computing research laboratories and centers interested in computing research issues.

Program

Sunday, July 18

CRA Board of Directors Meeting (begins Saturday)	**8:30AM - 2:45PM**

Conference Registration	**NOON - 7:30PM** **(C Level – Top of the Escalator)**

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Workshop for New Department Chairs	**3:00PM – 5:45PM** **Superior (C level)**

This workshop will give new CS Department Chairs some of the skills to lead their organizations and work with Deans, Provosts, and Advisory Boards—the stuff they never told you in graduate school. Tentative topics include: Strategic thinking; What is different about CS? Communication Matters! and Dealing with Different Stakeholders. Whether you've been a department chair for one week or one year, there is more to the job than you think. Come join your fellow new chairs in this workshop.

Chair: Mike Gennert (Worcester Polytechnic Institute)
Co-Chairs: Barbara Ryder (Virginia Tech)
               Darrell Whitley (Colorado State University)
Panelists: Randy Bryant (Carnegie Mellon University)
               Larry Finkelstein (Northwestern University)
               Jim Foley (Georgia Institute of Technology)
               Susanne Hambrusch (Purdue University)
               Larry Hodges (Clemson University)
               Ed Lazowska (University of Washington)
               Martha Pollack (University of Michigan)

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Welcome Reception	**6:00PM - 7:00PM** **Amphitheater Lobby Terrace - C Level**

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Dinner	**7:00PM - 9:00PM (Ballroom)**

Welcome   Mary Fernández, AT&T Labs–Research (Labs/Centers Co-Chair)
                   David Notkin, University of Washington (Academic Co-Chair)

Brief CCC Update   Ed Lazowska (University of Washington), CCC Chair

Speaker   Yoky Matsuoka (University of Washington)
                   Torode Family Endowed Career Development Professor of
                   Computer Science & Engineering, University of Washington
                   Introduction: David Notkin (University of Washington)

Title   *"Move Better with a Robot"*

Fifty million people in the United States depend on long-term care, currently provided by humans. In the near future, robots will be used to rehabilitate and assist daily activities for people with disabilities. This talk describes how a neural-inspired approach to physical human-robot interaction can re-enable limb movement for people with disabilities.

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Monday, July 19

Breakfast Buffet   **7:00AM - 8:30AM**
                                                                                             Aerie Restaurant

Registration   **7:30AM - 6:00PM**
                                                                      (C level – Top of the Escalator)
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Conference Co-Chairs Announcements   **8:30AM -10:00AM**
                                                                                                      Ballroom

PLENARY SESSION I

- **Foresight and Flexibility**

Dr. Ken Gabriel, DARPA's Deputy Director, will outline the current vision for the Agency; the need for adaptability and discontinuity; the willingness to challenge one's world view; and a conceptual framework for creating strategic surprise and disruptive changes.

    Chair: Peter Lee (DARPA)
    Speaker: Dr. Ken Gabriel (Deputy Director, DARPA)

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Break   **10:00AM -10:30AM**
                                                                                          Ballroom Lobby
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Workshop I (three parallel sessions)   **10:30AM – Noon**

- *The CS/10K Project (Ballroom 1)*

The CS/10K Project aims to transform high school computing with a rigorous and well-taught curriculum centered on a completely new Advanced Placement (AP) course. The new course will not replace AP CS A, but will provide a more accessible option for students. It will be rigorous, but also engaging and inspiring. It will not be programming-centric, but instead will focus on the fundamental concepts of computing, while exposing students to its breadth of application and "magic." This panel covers the motivation, design methodology, and current thinking for the new course in the larger context of high school computing curriculum.

    Chair: Jan Cuny (National Science Foundation)
    Panelists:
    Owen Astrachan (Duke University)
    Jan Cuny (National Science Foundation)
    Larry Snyder (University of Washington)

- ***CCC Workshop on Discovery and Innovation in Health IT (Ballroom 2)***

CCC, in collaboration with federal agencies, organized a workshop on Discovery and Innovation in Health IT exploring productive collaboration between healthcare and computing, exploring and defining fundamental computing research challenges and opportunities in healthcare IT in both the near- and long-term, and identifying a range of "model" proof-of-concept, integrative systems that might serve as motivating and unifying forces to drive fundamental research in healthcare IT. This session will report on the conclusions of the workshop and subsequent efforts and opportunities arising from the workshop.

Chair: Susan Graham (UC Berkeley)
Panelists:
Deborah Estrin (UCLA)
Yoky Matsuoka (University of Washington)
Elizabeth Mynatt (Georgia Institute of Technology)

- ***Thinking Big: Competing Successfully for Big Research Funding (Ballroom 3)***

For a number of years, the computing community has been calling for funding that allows us to pursue big, ambitious research projects. But are we up to the challenge? Can we think, plan and execute big, and what does it take to do so successfully? Join us at this session to learn the secrets to success in conceptualizing, planning and implementing "great big" research projects that will help define your role and that of your department and institution in shaping the future of computing.

Chair: Deborah L. Crawford (National Science Foundation)
Panelists:
Mitra Basu (National Science Foundation)
H.V. Jagadish (University of Michigan)
Gill Pratt (DARPA)
Sonia Sachs (Department of Energy)
Gu-Yeon Wei (Harvard University)

Luncheon **Noon -1:30PM**
Conference Center Terrace

PLENARY SESSION II   1:30PM - 3:00PM
Ballroom

- ***Peer Review in Computing Research***

Refereed journal publication has been the dominant mode of result dissemination in most scientific fields. Prestigious conferences have played a similar, and in some cases even a supplanting, role in Computer Science. At the same time, the web has greatly decreased the costs and speed of dissemination, and publication of popular software tools is frequently considered in the same light as scholarly writing. What does all this mean for our field? What is the impact on scholarship of these different publication media? How should we navigate through these choices? These are the questions for this panel to consider. How we publish, review and value our research is one of the most crucial aspects of computing research. A thoughtful critique of the comparative advantages and disadvantages of our processes and culture in this dimension are essential to helping us push computing research forward even more effectively.

Chair: H.V. Jagadish (University of Michigan)
Panel Moderator: Moshe Y. Vardi (Rice University)
Panelists:
Rich Baraniuk (Rice University)
Lance Fortnow (Northwestern University)
Jeffrey Mogul (HP Labs)
Jeannette Wing (Carnegie Mellon University)

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Break   **3:00PM - 3:30PM**
                                                             Ballroom Lobby

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Workshop II (three parallel sessions)   **3:30PM - 5:00PM**

- ***Education in the Magic Circle: The Promise of Games (<u>Ballroom 1</u>)***

A strong motivator for students entering computer science programs is a desire to create computer games. This session will present success stories from several computer science departments that have dramatically and persistently increased their enrollments by offering strong, game-oriented degree programs. Games also can be inspirational for K-12 education: we present an update on efforts to use computer games as a means of educating students in traditional K-12 subjects.

> *Chair/Speaker:* Michael Mateas (UC Santa Cruz)
> **Speakers:**
> Donald Brinkman (Microsoft Research)
> Monica McGill (Bradley University)
> Michael Zyda (University of Southern California)

- ***The Computing Innovation Fellows (CIFellows) Program (<u>Ballroom 2</u>)***

The past year's economic downturn caused universities and companies to severely curtail their hiring of new PhDs in computing fields. In February 2009, when it became clear that many new PhDs were in danger of falling out of research and education careers, a project was undertaken, with support from NSF, to create opportunities for at least some new PhDs to start careers at top research and education organizations, thereby saving the large investments that have been made in their training and education. In this session, we will review the origins, structure, and process of the CIFellows Project. We will discuss some preliminary lessons learned, plans for continued assessment, and possibilities for the future. In addition, three current CI Fellows will describe their research and their experiences in the program.

> **Speakers:**
> Peter Lee (DARPA)
> CI Fellows:
> Andrew McPherson (Drexel University)
> Miriah Meyer (Harvard University)
> Antonina Mitrofanova (Columbia University)

- ***Achieving Sustainable Energy: New Approaches Based on the Tools of Computer Science (<u>Ballroom 3</u>)***

Achieving a sustainable energy system requires fundamental improvements in how we generate, transmit, store, and consume all forms of energy. Computer scientists have opportunities to contribute to this area in transformative ways using such technologies as: machine learning, networking, sensors, distributed computing, location-based services, social computing, security, and online auctions. This session will provide an overview of research needs and opportunities, and it will present several innovative projects being led by computer scientists.

Chair/Speaker:
Randy Bryant (Carnegie Mellon University)
Speakers:
David Culler (UC Berkeley)
Illah Nourbakhsh (Carnegie Mellon University)
Shwetak Patel (University of Washington)

Dinner and State of the CRA Address　　　　　　　　　　　　　**6:30PM - 9:00PM**
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Ballroom

Presentations:
CRA's Distinguished Service Award to *Moshe Vardi* by Eric Grimson, CRA Board Chair
CRA's A. Nico Habermann Award to *Anne Condon* by Andrew Bernat, CRA Executive Director

Speakers:
Eric Grimson (CRA Board Chair)
Andrew Bernat (CRA Executive Director)

Tuesday, July 20

Breakfast Buffet　　　　　　　　　　　　　　　　　　　　　　**7:00AM - 8:30AM**
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Aerie Restaurant

PLENARY SESSION III　　　　　　　　　　　　　　　　　　**8:30AM - 10:00AM**
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Ballroom

- ***Why Can't Teaching Be More Like Research?***

This talk will examine the (sometimes uneasy) relationship between the twin activities that define the institution of "University": teaching and research. Without teaching a university is merely a research institute, without research it's just a school. In some senses research is the more easily managed activity; certainly it's the more easily incentivized. Why should this be? In some senses teaching is the higher value activity, but—in any institution you care to mention—it is more prestigious to teach two hours a week than twelve. Why should this be? This talk will explore the nature of these differences, and why they are significant—especially their importance for recognizing, rewarding and improving CS teaching.

Chair:　　　　Lynn Andrea Stein (Olin College of Engineering)
Speaker:　　Sally Fincher (Professor of Computing Education, University of Kent)

Break　　　　　　　　　　　　　　　　　　　　　　　　　**10:00AM - 10:30AM**
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Ballroom Lobby

Workshop III (three parallel sessions)   **10:30AM - Noon**

- *CRA-E Report on Basic Computing Knowledge (Ballroom 2)*

CRA-E was created by CRA to explore the issues of undergraduate education in computing and computational thinking for those who will do research in disciplines from the sciences to the humanities. The committee generated six recommendations in two main themes: mechanisms for refactoring the computer science curricula that provide a flexible and adaptable range of options, and issues of mind skills and mastery that pervade the entire curriculum, from introductory "attractor" courses through the advanced courses taken by seniors heading to graduate school. In this session, we will discuss these recommendations.

> *Chair:* Mary Fernández (AT&T Labs Research)
> **Speaker:** Andries van Dam (Brown University)

- *Communicating Computer Science: The Hot Under the Cool (Ballroom 3)*

Computers are everywhere and the public and policy makers have embraced their amazing applications in entertainment, medicine and communication, to name a few. These days, every new computer development is hailed as cool, but how do we convey adequately the incredible science that goes on behind the scenes—"the hot under the cool"? In this session, we will explore how we get information about hot computer science to a wide range of audiences, from high school girls, to academics to the general public, using a variety of traditional and new methods in a highly connected world. Our speakers are representative of the media, an author and an in-field project manager. We will explore everything from partnered web sites, to twitter experiences to social networks, and evaluate the impact they can have in conveying serious material.

> *Chair:* Judith Bishop (Microsoft Research)
> **Panelists:**
> Sara Appleyard (Widmeyer Communications)
> Shyno Chacko-Pandeya (New Image of Computing Initiative)
> Virginia Gold (ACM)
> Jon Kleinberg (Cornell University)

- *Guidelines for Coordinating Faculty Recruitment (Ballroom 1)*

In 2008 the CRA Board considered the issue of faculty hiring practices, especially the timing of the process and the associated gridlock as faculty candidates wait to hear from universities and vice versa. Several problems were identified with the current procedures, and guidelines were suggested for improvement. The effectiveness of the improvements depends on how broadly the improvements are implemented; thus we need to decide, as a community, if we have a strong will to implement new procedures. This session will review ideas for new procedures, encourage open discussion, and discuss potential implementation.

> *Chair:* Jeffrey Vitter (University of Kansas)
> **Panelists:**
> Eric Grimson (MIT)
> Debra Richardson (UC Irvine)
> Eva Tardos (Cornell University)

Luncheon   **Noon-1:30PM**
Conference Center Terrace

PLENARY SESSION IV   1:30PM - 3:00PM
                                                      Ballroom

- *Making a Federal Case for Computing*

In the past four years, U.S. science policy has risen markedly in prominence, as policymakers and pundits have grown increasingly concerned about American competitiveness and jobs. From "The Gathering Storm" to "American COMPETES" to the "American Recovery and Reinvestment Act," the role of science in driving American innovation, empowering the economy, and creating jobs has fueled an increase in the federal government's investment in R&D and an urgent need to increase the participation of U.S. students in science and engineering fields. Inside the Beltway, CRA is working hard to leverage this increased attention. Computing presents a compelling case for the impact of federal investment in research and in increasing the computing workforce. How does our case "play" in Washington? How connected and influential is our community? And what can the computing research community expect as federal budgets tighten and agencies adjust their priorities?

> *Chair:*   Fred Schneider (Cornell University)
> **Speaker**:   Peter Harsha (Director of Government Affairs, CRA)

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Break   3:00PM – 3:30PM
                                                       Ballroom Lobby

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Workshop IV (three parallel sessions)   3:30PM – 5:00PM

- *Enriching Undergraduate Learning through Apprenticeships (Ballroom 1)*

Learning a discipline and preparing for a profession benefit greatly from exposure to a variety of teachers, each helping to develop a student's education through his or her own experience. This workshop explores three modes of apprenticeship: co-operative education, research internships, and mentorships. Co-operative programs supplement academic teachers with managers and senior co-workers from industry and government. Research internships provide opportunities to work with senior researchers from academic or industrial laboratories. Mentorships engage experienced professionals to motivate and guide students towards their objectives. Each speaker will outline a form of apprenticeship and describe how to incorporate it, or improve it, within your undergraduate program.

> *Chair:* Frank Tompa (University of Waterloo)
> **Panelists:**
> Arnie Dyck (University of Waterloo)
> Ran Libeskind-Hadas (Harvey Mudd College)
> David Porush (MentorNet)

- *Understanding and Using Graduate Program Rankings in Computer Science (Ballroom 3)*

Computer Science rankings, whether by the National Research Council, The US News and World Reports, or by any of several other groups generate considerable discussion among faculty, students, and academic administration alike. In this panel, we provide an overview several different ranking efforts of graduate programs and research activity in computer science departments and the methodologies by which these rankings are established. We also discuss various perspectives on how rankings might be used by various individuals, and will have an open discussion on what advice/perspectives that we, as a community, might want to provide to these individuals.

Chair and Panelist: Jim Kurose (University of Massachusetts)
Panelists:
Charlotte Kuh (National Research Council)
Valerie Taylor (Texas A&M University)
Jeffrey Vitter (University of Kansas)

- ***Computer Science and Global Development: A New High-Impact Research Area (Ballroom 2)***

There has been a recent explosion in the use of information and communication technologies (particularly mobile phones) in many developing countries. These technologies have the potential to aid in many global development efforts, including those focusing on public health, sustainable livelihood development, the environment and education. Computer Science researchers have been assisting in these efforts by developing novel approaches for long-distance wireless networking, human-computer interaction for different literacy levels and cultures and low-cost computing devices, among other areas. Technical research must be inherently multi-disciplinary, as it seeks to use the tools and techniques of Computer Science to problems faced by these domains. This session will summarize and discuss some of these efforts, and provide a brief overview of this new but growing field. We will also discuss our proposal for SIGDEV, a new ACM special interest group focusing on this topic.

Co-Chairs and Speakers:
Tapan Parikh (University of California, Berkeley)
Lakshmi Subramanian (New York University)
Speaker: Beki Grinter (Georgia Institute of Technology)

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Managing Up – Partnering with your Dean *(Ballroom 2)*   5:00PM – 6:30PM

Department chairs are often given lots of advice about how to manage, but most of the time the emphasis is on "managing down," i.e., interacting effectively with the faculty and staff in one's department. However, success—for you as well as for your department—also depends on your ability to "manage up," to work cooperatively with your dean. Current and recent deans will work with small groups of department chairs to provide their perspectives on the issues that chairs face, and on the types of chair-dean interactions that are most successful. Example topics include:
- What's the best way to request resources, such as faculty positions for your department, from the dean?
- What makes a good department chair from a dean's perspective?
- What departmental leadership approaches do deans view as most effective?
- When should you try to solve a problem yourself, and when should bring the dean in?
- How can you help the dean in his or her role? And why would you want to do so?
- How can you best work with a dean who is not a computer or information scientist?

Department chairs will have plenty of opportunity to raise questions.

Co-Chairs & Participants:
Martha E. Pollack (Dean, School of Information, University of Michigan)
Bobby Schnabel (Dean, School of Informatics, Indiana University)

Participant Deans:
Peter Bloniarz (College of Computing and Information, SUNY Albany)
Rich Brown (University of Utah)
Randy Bryant (School of Computer Science, CMU)
Rich DeMillo (College of Computing, Georgia Tech, former Dean)

Dan Huttenlocher (Computing and Information Science, Cornell University)
Ron Larsen (School of Information Sciences, University of Pittsburgh)
Debra Richardson (Donald Bren School of Information and Computer Sciences,
   UC Irvine)
Jeffrey Vitter (Office of the Provost, University of Kansas; former Dean at Purdue University)

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Reception/Dinner *(Golden Cliff Room)*   **6:30PM – 7:30PM**

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CRA-Deans Meeting
Chair: Debra Richardson (UC Irvine)

Tuesday, July 20   **5:00PM – 6:30PM (** *Superior* **)**

Reception/Dinner   **6:30PM - 7:30PM** *(Golden Cliff Room)*
Meeting Continues (note room change)   **7:30PM - 9:00PM (** *Magpie* **)**

Wednesday, July 21   **8:30AM –Noon (** *Magpie* **)**

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