

# 2020 Conference at Snowbird Agenda

## Dear CRA Members,

CRA continues to monitor the situation concerning COVID-19 and its potential impact on our upcoming CRA's Conference at Snowbird, July 21-23, 2020. At the moment, the circumstances remain too uncertain for us to make any decisions about whether the conference will take place as planned.

We believe there is great value in bringing together the leadership of the computing research community in-person at Snowbird and will do all that we can to make that happen this July. But, obviously, health and safety concerns are paramount and we plan to heed Federal, State and local guidance about travel and public gatherings.

While we are not yet sure when we will make the decision to go ahead with the conference as in the past or modify it in some form, our intention is to decide with sufficient time for those who plan to attend to make their arrangements. Until then, it may be worthwhile to hold off on making travel plans.

If you have any questions about the conference, please direct them to [snowbird@cra.org](mailto:snowbird@cra.org).



## Conference theme: Tech for Good

This year's CRA Conference at Snowbird will highlight computing's potential for social good and the related responsibility for computing research to consider the risks inherent in the work we do. Topics include social impact, positive and negative externalities, risks and opportunities, and responsibility.

Track themes:

**Track 1: Computing Departments**

**Track 2: Computing Education**

**Track 3: Computing Research in Industry**

**Track 4: Tech for Good**

## Schedule

### TUESDAY, JULY 21

2:00 pm

**Registration**

3:00 – 5:45 pm

**New Chairs Workshop**

This workshop will give new CS department chairs some of the skills needed to lead their organizations and work with deans, provosts, and advisory boards – the stuff they never told you in graduate school.

Co-Chairs:

- Susanne Hambrusch (Purdue University)
- Rachel Pottinger (University of British Columbia)

## Snowbird Agenda (*continued*)

5:00 - 5:45 pm

### Industry Attendee Welcome

Co-chairs:

- Vivek Sarkar (Georgia Tech)
- Jaime Teevan (Microsoft)

6:00

### Welcome Reception

7:00

### Dinner/Awards Presentations/Plenary Session

Welcome from the Conference Co-Chairs

Awards Presentations

Plenary: **Hacking the Human Bias in the Robotics Machine**

Speaker: Ayanna Howard (Georgia Tech)

People tend to overtrust sophisticated computing devices, including robotic systems. As these systems become more fully interactive with humans during the performance of day-to-day activities, the role of bias in these human-robot interaction scenarios must be more carefully investigated. Bias is a feature of human life that is intertwined, or used interchangeably, with many different names and labels – stereotypes, prejudice, implicit or subconsciously held beliefs. In the digital age, this bias has often been encoded in and can manifest itself through AI algorithms, which humans then take guidance from, resulting in the phenomenon of *excessive trust*. Trust conveys the concept that when interacting with intelligent systems, humans tend to exhibit similar behaviors as when interacting with other humans; thus, the concern is that people may under-appreciate or misunderstand the risk associated with handing over decisions to an intelligent agent. Bias further impacts this potential risk for trust, or overtrust, in that these systems are learning by mimicking our own thinking processes, inheriting our own implicit biases. Consequently, the propensity for trust and the potential of bias may have a direct impact on the overall quality of the interaction between humans and machines, whether the interaction is in the domains of healthcare, job-placement, or other high-impact life scenarios. In this talk, we will discuss this phenomenon of integrated trust and bias through the lens of intelligent systems that interact with people in scenarios that are realizable in the near-term.

### **WEDNESDAY, JULY 22**

6:00 am

Registration/Breakfast

8:30 am

Plenary: **CRA Strategic Planning**

Chair: Ellen Zegura, Georgia Tech

10:00 am

Break

10:30 am

**Parallel Discussions of Strategic Plan**

Noon

**Lunch**

## Snowbird Agenda (*continued*)

1:30 pm

### Parallel Tracks

#### Track 1: Departmental Plans for Broadening Participation in Computing

Chair and Moderator: Nancy Amato (University of Illinois)

Speakers:

- Tracy Camp (Colorado School of Mines)
- Jeff Forbes (NSF)
- Mary Hall (University of Utah)
- Ron Metoyer (Notre Dame)

The National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) is committed to broadening participation in computing (BPC). Since 2017, CISE has started asking CISE Principal Investigators to include meaningful BPC plans in proposals submitted to a subset of CISE's research programs. The plans can be individually developed by PIs or PIs could participate in departmental BPC efforts. This session will review the BPC requirement with a focus on the Departmental BPC Plan. It will be organized as a panel which will include a representative from NSF and the organizers of an NSF-sponsored Workshop on Departmental Plans for BPC which was held at UIUC in November 2019. It will also review useful resources such as the BPCnet.org portal which is sponsored by NSF and hosted by CRA.

#### Track 2: Incorporating Ethics into Computer Science Education

Co-Chairs:

- Bobby Schnabel (University of Colorado) - moderator
- Jenn Beard (Mozilla)
- Kathy Pham (Mozilla)

Speakers:

- Anna Lauren Hoffman (University of Washington)
- Seny Kamara (Brown University)
- Helena Mentis (University of Maryland, Baltimore County)
- Kathy Pham (Harvard University)
- Bobby Schnabel (University of Colorado, Boulder)

In recent years, there has been a surge of attention into incorporating ethics into education in computer science and related fields. This is taking a variety of approaches, including integrating ethics topics into core technical computer science courses, and standalone ethics and computing courses that in some cases involve partnerships with other disciplines. This panel will summarize some of these recent developments, including examples from the Responsible Computer Science Challenge that is integrating ethics into undergraduate computer science courses, and experience in standalone courses at undergraduate and graduate levels. It also will discuss efforts led by an ACM task force to collect and provide materials that will aid faculty in teaching ethics in computing topics. The panel will consist of fairly brief presentations followed by considerable time for discussion with the audience.

### Track 3: Computer Science Research in Industry

Chair: Jaime Teevan (Microsoft) – moderator

Speakers:

- Joaquin Quiñonero Candela (Facebook)
- Brent Hecht (Microsoft)
- Mounia Lalmas (Spotify)
- Fernando Pereira (Google)

Computation is in the process of transforming all areas of a business, from the way work gets done to the products and services that are created. As a result, companies are increasingly investing in fundamental computer science research in support of their strategic goals. This panel will look at what it means to do computer science research in an industrial setting. Panelists will describe how research is conducted in their organizations, highlighting how problems are selected, how research is incentivized, and how results have internal and external impact. They will also discuss some of the key differences of doing research in an industrial setting compared with an academic setting, and share ideas for how universities might best prepare their students for a career in industrial research.

### Track 4: Earth Day at Snowbird: Computing to Address Grand Challenges Facing Our Changing Planet

Co-Chairs:

- Kate Larson (University of Waterloo)
- Shashi Shekhar (University of Minnesota)

Speakers:

- Liz Bradley (University of Colorado Boulder)
- Lucas Joppa (Microsoft)
- Vipin Kumar (University of Minnesota)

The Earth Day panel will bring together thought leaders in academia, industry and government to explore discuss computing opportunities to address the challenges that Earth faces today by addressing questions such as the following:

- What is the role of computer science in this interdisciplinary (or transdisciplinary) area? What are computing research success stories in addressing grand challenges facing the Earth?
- What are major computing opportunities in this area?
- How may new computing researchers get involved?
- What are key research infrastructures (e.g., datasets, cyberinfrastructure, funding)?
- Is there a need for computing research community action? If so, recommend one.

## Snowbird Agenda *(continued)*

3:00 pm

Break

3:30 pm

### **Networking Activities**

Guided Hikes

Interactive Computing Ethics Workshop

- Chair: Michael Skirpan (Probably Models)

6:30 pm

Dinner

**After dinner research talks** – organized by the Computing Community Consortium  
Computing Research Futures

Chair: Liz Bradley (University of Colorado, Boulder)

Speakers:

- Todd Hylton (University of California, San Diego)
- Melanie Mitchell (Portland State University)

### **THURSDAY, JULY 23**

8:30 am

### **Plenary Session**

Speaker: Margaret Martonsoi (NSF CISE AD)

The fields of computer and information science and engineering are central to many of society's needs, opportunities, and challenges. My talk will give an overview of computer and information science and engineering research, education, and research infrastructure programs at the National Science Foundation, and relate them to the trends and topics that will impact their future trajectory. I will highlight particular opportunity areas where individual researchers, teams of researchers, and whole departments can engage going forward.

10:00 am

Break

10:30 am – Noon

### **Parallel Tracks**

#### **Track 1: Development of Teaching Faculty**

Chair and Moderator: Ran Libeskind-Hadas (Harvey Mudd College)

Speakers:

- Christine Alvarado (University of California, San Diego)
- Nancy Amato (University of Illinois)
- Dan Grossman (University of Washington)
- Susan Rodger (Duke University)

## Snowbird Agenda (*continued*)

Teaching faculty play a critically important role in undergraduate CS education at large research universities. These faculty members contribute to their departments in multiple ways including - but not limited to - teaching very large introductory sequence courses and promoting pedagogical innovations that can benefit the entire department. This session addresses effective practices in recruiting, retaining, and mentoring teaching faculty. Among the questions that will be addressed are:

- What are effective models for teaching track faculty positions in terms of teaching, scholarship, and service expectations and responsibilities?
- What are effective practices in recruiting and mentoring teaching track faculty members?
- What are good practices in reviewing, renewing, and promoting teaching faculty?
- What are good practices and trends with respect to contract duration and security of employment for teaching track faculty?

### **Track 2: Security and Privacy Education**

Chair and Moderator: Lorrie Cranor (Carnegie Mellon University)

Speakers:

- Matt Bishop (University of California, Davis)
- Bo Yuan (RIT)

Companies are reporting a growing shortage of qualified cybersecurity professionals, with hundreds of thousands of jobs going unfilled. New privacy laws around the world are also leading to rapid growth in the privacy profession, with an increased demand for privacy engineers. The demand for security and privacy professionals has prompted the creation of new degree programs at all levels. In addition, some universities are finding ways to incorporate security and privacy lessons throughout their computer science curricula. Panelists will discuss security and privacy undergraduate and graduate education, including course modules, full courses, and entire degree programs devoted to these areas.

### **Track 3: Industry-Academia Partnerships**

Chair and Moderator: Divesh Srivastava (AT&T Labs-Research)

Speakers:

- Laura Haas (University of Massachusetts, Amherst)
- Chris Ramming (VMWare)
- Jennifer Rexford (Princeton University)
- Vivek Sarkar (Georgia Tech)
- Alfred Spector (Two Sigma)
- Katherine Yelick (University of California, Berkeley and Lawrence Berkeley National Laboratory)
- Benjamin Zorn (Microsoft)

In 2015, the CCC co-sponsored an industry round table that produced the document “The Future of Computing Research: Industry-Academic Collaborations.” Since then, several important trends in computing research have emerged as described in the CCC document “Evolving Academia/Industry Relations in Computing Research.” These trends include: (i) significant increases in the level of interaction between professors and companies in certain computing disciplines such as currently AI, which take the form of extended joint appointments, and (ii) increasingly, companies are highly motivated to engage both professors and graduate students working in specific technical areas, because companies view computing research and technical talent as a core aspect of their business success. This increasing connection between faculty, students, and companies has the potential to change (either positively or negatively) numerous things, including: (a) the academic culture in computing research universities, (b) the research topics that faculty and students pursue, (c) the ability to solve bigger problems with bigger impact than what academia can do alone, (d) the ability of universities to train undergraduate and graduate students, (e) how companies and universities cooperate, share, and interact, and (f) the potential for principles and values from academia informing products and R&D roadmaps in new ways through these unique joint arrangements. A recent survey carried out by CRA measures the degree and impact of this trend. This session brings together a diverse set of participants from industry and academia to understand these trends and help identify best practices that can be shared widely among computing research institutions.

### **Track 4: From Fairness to Responsibility: Actioning and Advancing the Discussion around “Algorithmic bias”**

Co-Chairs:

- Brent Hecht (Microsoft) – moderator
- Ece Kamar (Microsoft)
- Miranada Bogen (Facebook)
- Joaquin Quiñonero Candela (Facebook)

At the beginning of the last decade, the domain popularly known as “algorithmic bias” was a niche research area being advanced by a tiny group of scholars. By the end of the decade, “algorithmic bias” had become one of the most prominent domains of computing and a subject of great interest to policymakers and the general public. Anytime a field grows this quickly, it can be useful to stop and reflect on the field’s strategic directions. In this panel, we will take part in this reflection. Some of the questions we will debate include:

- Is the computing community focusing on symptoms of problems related to “algorithmic bias” rather than their causes?
- Can a repositioning of the field around responsibility rather than fairness encourage more robust solutions to the problems at the core of “algorithmic bias”?
- How can the research and engineering practices around fairness (and responsibility) match the urgency and needs emerging from AI systems entering the world in diverse ways?
- Are there ways in which productizing ideas in the fairness literature can lead to more harm than good, e.g. through a belief that a model’s “bias can be fixed”? If so, how can we prevent this from happening?
- Rather than attempting to tweak models, is our time better spent developing new technologies and systems that directly address societal harms?

## Snowbird Agenda (*continued*)

12:00 pm

**Lunch**

1:30 pm

**Parallel Tracks**

### **Track 1: Undergraduate Research and Booming Enrollments: Who Wins?**

Chair and Moderator: Lori Pollock (University of Delaware)

Speakers:

- Christine Alvarado (University of California San Diego)
- Edward Coyle (Georgia Tech)
- Sarah Heckman (North Carolina State)
- Diba Mirza (University of California, Santa Barbara)

While the boom in enrollment has created significant challenges to CS units, it also provides opportunity to increase the supply of talented and well-educated computing researchers.

The challenge faced by units with surging enrollments is how to scale undergraduate research opportunities to reach the increasing number of exceptionally capable and well-motivated students. The major goals for this session are: (1) increasing awareness of different approaches/programs that units have established towards scaling undergraduate research in CS and CS-related fields and (2) enabling replication of such programs with best practices.

The session will highlight successful scaling strategies with particular focus on successful research training support courses, incentive structures for faculty and students, mentoring structures, and recruitment and matching models. Panelists will discuss what activities can be done in groups for training and mentoring undergraduate researchers and models for offering those activities as well as promising approaches for faculty incentives to participate in undergraduate research.

### **Track 2: Data Science on Computer Science Education**

Chair and Moderator: David Ebert (Purdue University)

Speakers:

- Michael Franklin (University of Chicago)
- Magda Balazinsak (University of Washington)
- Remzi Arpaci-Dusseau (University of Wisconsin)
- Brian Noble (University of Michigan)

In the 2016 CRA Report on [Computing Research and the Emerging Field of Data Science](#), we highlighted the fact that data science will drive fundamentally new research in computer science and that our community has the opportunity to shape the emerging field of data science. In this session, we'll discuss

## Snowbird Agenda (*continued*)

and explore how data science has impacted the educational programs in computer science, and consider experiences, approaches, and answers to questions including:

- Which courses should change to include data science issues?
- What new course and requirements are the most effective?
- Are most departments creating a series of specialized topic courses (e.g., ICR)?
- Should we create new specializations/degrees or integrate into core programs?
- How has student interest in specialization shifted to data science or the shift just specifically to Machine Learning and AI?
- How should we manage the growing demand, and will it continue?

### **Track 3: Allyship: Fostering Inclusion from Academia to Industry**

Chair: Patrick Pantel (Facebook)

Diverse perspectives and backgrounds are critical to the technologies we develop and to the community of experts surrounding us. A more diverse community requires us to focus on inclusion, ensuring that diverse perspectives are welcomed and supported. By building our “ally muscles”, we are able to raise our own awareness, spot exclusion, and proactively support those around us to ensure we are building an inclusive workplace from academia to industry. In this interactive session, attendees will connect with each other in small group activities to (1) build empathy and awareness among participants by surfacing real-life “ally scenarios” (e.g., interrupting the interrupter, taking credit for others’ work, tokenism); (2) brainstorm solutions for how to react in these real situations, leveraging the diverse perspectives in the room; and (3) walk away with a common language to address difficult situations in the moment rather than letting them slide.

### **Track 4: Techlash in Context: What Should CS Departments Do?**

Chair and Moderator: Vivek Sarkar (Georgia Tech)

Speakers:

- Lorrie Cranor (Carnegie Mellon University)
- Alfred Spector (Two Sigma)
- Moshe Vardi (Rice University)

In past decades, CS departments and tech companies have been admired as drivers of positive change. However, there is now a growing undercurrent of negative associations with tech companies, which is also being transferred to CS departments in their interactions with industry. Several recent mainstream news articles have documented on-campus student protests criticizing various actions by tech companies, both in how their products are used and in how companies have responded to internal missteps. In some cases, these protests also target CS departments and faculty members involved in partnering with or hosting these companies. Adding fuel to fire, the current rapid growth and adoption of AI technologies threatens to further

## Snowbird Agenda *(continued)*

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amplify this backlash. While our community has always benefited from members who have advocated for increased social responsibility in computing, a broader response is needed to address the growing techlash on campus and in society. In this interactive session, we will place techlash in context, and discuss what actions CS departments and tech companies can take to rebuild a positive image for tech in academia and industry. Much of the discussion will be driven by audience questions, so audience participation will be highly welcomed!

3:00 pm

Break

3:30 – 5:00 pm

### **Making a Federal Case for Computing**

Speaker: Peter Harsha (CRA)

5:00 pm

Break

6:30 pm

Dinner

### **Committee:**

- Penny Rheingans (University of Maine) Co-Chair
- Jaime Teevan (Microsoft) Co-Chair
- James Allan (University of Massachusetts, Amherst)
- Christine Alvarado (University of California, San Diego)
- Lorrie Cranor (Carnegie Mellon University)
- Kate Larson (University of Waterloo)
- Ran Libeskind-Hadas (Harvey Mudd College)
- Patrick Pantel (Facebook)
- Divesh Srivastava (AT&T)