2022 CRA Conference at Snowbird Preliminary Agenda

Conference theme: Socially Responsible Computing Research

This year's CRA Conference at Snowbird will explore the tremendous opportunities for computing research to dramatically benefit the human condition, as well as the related responsibility for computing research to consider the risks inherent in the work we do. Ensuring socially responsible intentions and practices is critical to realizing the future potential of computing research.

Sessions will be broken down into four tracks:

Track 1: Computing Departments – Undergraduate and graduate interest in computer science has skyrocketed. This track includes sessions that will explore how to support high-quality, diverse research and teaching in the context of booming enrollments.

Track 2: Computing Education – This track looks at areas that are emerging as an important part of the computing research curriculum, including ethics, security and privacy, and data science.

Track 3: Computing in Industry – As computing grows ubiquitous, computing research is increasingly important to industry. This track will cover how research is conducted in industry and the partnership between industry and academia.

Track 4: Computing for Good – This track will explore the ways that computing research can help create a better future by supporting social justice, removing bias, and driving environmental sustainability.

Preliminary Agenda

TUESDAY, JULY 19

1:00 – 2:30 pm	**How and Why to Create a Departmental BPC Plan**
1:00 – 4:00 pm	**Inaugural CRA-Industry Meeting** Co-chairs: Vivek Sarkar (Georgia Tech) and Ben Zorn (Microsoft)

CRA-Industry is a new standing committee of the CRA created with the mission to convene industry partners on computing research topics of mutual interest and connect our partners with CRA's academic and government constituents for mutual benefit and improved societal outcomes. This event at Snowbird is intended to introduce potential industry partners to CRA-Industry and its ongoing activities and discuss ways in which CRA-Industry can most effectively support industry partners.

2:00 pm	**Registration**
3:00 – 5:45 pm	**New Chairs Workshop** Co-chairs: Carla Brodley (Northeastern University) and Katie Siek (Indiana University)

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.

6:00 – 7:00 pm	**Welcome Reception**

7:00 – 8:00 pm   **Welcome Dinner**
Welcome from the Conference Co-Chairs
50th Anniversary of the CRA
Celebration of Andy Bernat

8:00 pm   **After-dinner Keynote**
Dr. Sethuraman "Panch" Panchanathan, Director, National Science Foundation

WEDNESDAY, JULY 20

7:30 – 8:30 am   **Registration/Breakfast**

8:30 – 10:00 am   **CRA: Looking Forward**

Co-chairs: Ellen Zegura (Georgia Tech), Tracy Camp (CRA), Nancy Amato (University of Illinois), and Andy Bernat (Retired CRA)

CRA has finalized its Strategic Plan, thanks to tremendous effort and excellent input from a large number of community members. In this opening session, we'll share CRA's strategic themes, priority outcomes, and near-term initiatives. Our Strategic Plan, and its focus on socially responsible computing research, has defined CRA's direction for years to come. CRA will continue to excel in key areas, such as be a source for resources that inform the field, as well as establish itself as a catalyst for computing research organizations to enhance the field. We invite you to learn where CRA is headed, both in the long-term and the short-term, as well as who will help lead us there.

Awards Presentations

10:00 – 10:30 am   **Break**

10:30 am – noon   **The Trusting of Intelligent Machines: How AI Influences Human Behavior**

Chair: Penny Rheingans (University of Maine)

Speaker: Ayanna Howard (The Ohio State University)

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.

noon	**Lunch**
1:30 – 3:00 pm	**Parallel Tracks**

Track 1: Booming Enrollments While Broadening Participation in Computing

Co-chairs: Nancy Amato (University of Illinois) and Carla Brodley (Northeastern University)

Moderator: Nancy Amato (University of Illinois)

Speakers: Christine Alvarado (University of California, San Diego), Carla Brodley (Northeastern University), and Craig Partridge (Colorado State University)

Demand for undergraduate degrees in computing has increased rapidly in the last few years and shows no signs of abating. Many universities have put enrollment caps into place for various reasons including being unable to hire sufficient faculty to keep up with student demand, or to maintain balance between disciplines across the university. An inability to hire sufficient faculty is in part due to great demand and competition in the job market but also frequently due to lack of resources, which can be hindered by a university's adaptability in reapportioning resources quickly. COVID has exacerbated the gap between student demand and faculty resources due to hiring freezes at some universities. In this panel we discuss the ways in which universities are handling booming enrollments and their positive/negative impact on broadening participation in computing. In particular, we will discuss how to effectively scale introductory classes, fair/unfair ways to cap enrollments, and how interdisciplinary computing majors can provide a solution to booming enrollments.

Track 2: Incorporating Ethics into Computer Science Education

Co-chairs: Kathy Pham (Federal Trade Commission/Mozilla) and Bobby Schnabel (University of Colorado, Boulder)

Speakers: Casey Fiesler (University of Colorado, Boulder), Seny Kamara (Brown University), Helena Mentis (University of Maryland Baltimore County), Kathy Pham (Federal Trade Commission/Mozilla) and 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 repository created by an ACM Education Board task force that collects and provides materials that 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: Computing Research in Industry

Chair/Moderator: Jaime Teevan (Microsoft)

Speakers: Susan Dumais (Microsoft), Fernando Pereira (Google), Manuela Veloso (JPMorgan Chase), Mounia Lalmas (Spotify) and Kristin Lauter (Meta)

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 computing 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: Climate-Smart Computing to Address a Grand Challenge Facing Our Changing Planet

Co-chairs: Kate Larson (University of Waterloo) and Shashi Shekhar (University of Minnesota)

Speakers: Liz Bradley (University of Colorado, Boulder), Andrew A. Chien (University of Chicago), Lucas Joppa (Microsoft) and Vipin Kumar (University of Minnesota)

Climate change has been declared as the defining crisis of our time and concrete actions are needed now. Many communities have started major initiatives to address climate change. For example, the Biden administration has made it a central priority for all federal agencies resulting in initiatives for reducing greenhouse gases (GHG) emissions (e.g., electric vehicles), absorbing GHG (e.g., forests), increasing resilience (sea level rise, forest fires, extreme cold/hot weather), etc. This panel will bring together thought leaders in academia, industry and government to explore climate-smart computing opportunities by addressing questions such as the following:

- What is climate-smart computing? What may it help understand, mitigate, and adapt to climate change? How may we reduce computing's carbon footprint?

- What are computing research success stories in this area?

- 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.

3:00 – 3:30 pm	**Break and Group Photo**
3:30 – 6:30 pm	**Networking Activities** Guided Hikes Alternative talking/interacting activity
6:30 pm	**Dinner**

Reboot!

The CCC Council embarked on a new activity this year to generate new ideas for us to explore as a community. In this session, we will have a set of lively, provocative conversations about three of these "blue sky" topics.

Organizer: CRA's Computing Community Consortium - Ann Schwartz (CRA)

Speakers: Sujata Banerjee (VMWare), Nadya Bliss (Arizona State University), Bill Gropp (University of Illinois) and Dan Lopresti (Lehigh University)

Moderator: Liz Bradley (University of Colorado Boulder)

THURSDAY, JULY 21

7:30 – 8:30 am	**Breakfast**
9:00 – 10:00 am	**Reports from the Computing Research**

Abstract: This session will highlight recent developments and reports from across the computing research community. Each presenter will provide a brief overview of their report and findings, and then audience members will participate in short, guided table-discussions around the themes introduced in the presentation. The goal of the session is to spur conversation at Snowbird on topics that are important to the computing research community and provide a teaser into a larger body work that inspires audience members to learn more after the session.

10:00 am	**Break**
10:30 am	**Parallel Tracks**

Track 1: Development of Teaching Faculty

Chair/Moderator: Ran Libeskind-Hadas (Claremont McKenna College)

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

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/Moderator: Lorrie Cranor (Carnegie Mellon University)

Speakers: Patrick McDaniel (The Pennsylvania State University), Bo Yuan (Rochester Institute of Technology), Matt Bishop (University of California, Davis) and Michael Bailey (Georgia Tech)

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/Moderator: Divesh Srivastava (AT&T)

Speakers: Elizabeth Mynatt (Northeastern University), Chris Ramming (VMWare), Jennifer Rexford (Princeton University), Vivek Sarkar (Georgia Tech), and 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) and Ece Kamar (Microsoft)

Moderator: Brent Hecht (Microsoft)

Speakers: Ece Kamar (Microsoft), Miranda Bogen (Meta), Michael Kearns (University of Pennsylvania) and Maria De-Arteaga (UT Austin)

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?
- Rather than attempting to tweak models, is our time better spent developing new technologies and systems that directly address societal harms?
- How can industry and academia productively collaborate on responsible AI, especially given concerns about "ethics washing"? How can industry productively contribute more generally?
- 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?

noon	**Lunch**
1:30 pm	**Parallel Tracks**

Track 1: Undergraduate Research and Booming Enrollments: Who Wins

Co-chairs: Christine Alvarado (UC San Diego) and Kelly Shaw (Williams College)

Moderator: Kelly Shaw (Williams College)

Speakers: Edward Coyle (Georgia Tech), Sarah Heckman (North Carolina State), Joe Hummel (University of Illinois, Chicago) and Brandon Fain (Duke University)

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 in Computer Science Education

Chair/Moderator: David Ebert (University of Oklahoma)

Speakers: Michael Franklin (University of Chicago), Magda Bałazi ska (University of Washington), and Atul Prakash (University of Michigan)

The 2016 CRA Report on Computing Research and the Emerging Field of Data Science, highlighted the fact that data science will drive fundamentally new research in computer science and that the computing community has the opportunity to shape the emerging field of data science. Numerous schools have created minors and majors in data science. This session will 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/have changed 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., 1CR)?
- Should we create new specializations/degrees or integrate into core programs?
- How has student interest in specialization shifted to data science or is the shift just specifically to Machine Learning and AI?
- How should we manage the growing demand, and will it continue?

Track 3: Techlash in Context: What Should CS Departments and Tech Companies Do?

Chair/Moderator: Vivek Sarkar (Georgia Tech)

Speakers: Lorrie Cranor (Carnegie Mellon University), Alfred Spector (Google), Moshe Vardi (Rice University) and Nirit Weiss-Blatt (Author of "The Techlash and Tech Crisis Communication")

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 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!

Track 4: Addressing the Challenge of Mis- and Disinformation, Online and Beyond

Chair/Moderator: Kate Starbird (University of Washington)

Mis- and disinformation are a critical challenge for democratic societies. Acute misinformation can lead to poor decision making, for example about whether or not to take a vaccine. At scale, it can render a society unable to effectively respond to collective crises, from pandemics to climate change. Pervasive disinformation (intentionally misleading information) erodes trust in institutions, including science, journalism, government, and democracy — and can make it difficult for citizens of democratic societies to come together to do the difficult work of governing themselves. In recent years, we seem to be experiencing an acceleration and expansion of mis- and disinformation, with many pointing to the role of the Internet and social media in particular in their spread. As we continue to come to terms with the scale and nature of the issue, the work of identifying potential "solutions" looms. It's clear that there is no one, simple solution — but there is hope that we can mitigate its damage by productively chipping away at the problem from multiple angles. This conversation explores the some of the proposed solutions to the challenge of mis- and disinformation, addressing them along several distinct dimensions — e.g. from education, to policy, to platform (re)design.

3:00 – 3:30 pm	**Break**
3:30 – 5:00 pm	**Making a Federal Case for Computing**

Speaker: Peter Harsha (CRA)

Peter Harsha is the Director of Government Affairs for the Computing Research Association. In his position, Peter works to help CRA influence computing research policy by improving public and policymaker understanding of the nature of research, and by increasing the computing community's awareness of and participation in policy issues. Prior to joining CRA in October 2001, Peter spent six years working for Congress, beginning as a member of the personal staff of Congressman Nick Smith of Michigan. In the 106th and 107th Congresses, Peter served as a member of the professional staff of the House Science

Committee as Chairman Smith's designee on the Subcommittee on Research, working on a portfolio of issues that included oversight of the National Science Foundation, Information Technology, the U.S. Fire Administration, and the National Earthquake Hazards Reduction Program. Peter has three boys, and a cat named for 80's hockey goon Marty McSorley.

5:00 – 6:30 pm	**Break**
6:30 pm	**Dinner**

2022 Conference at Snowbird Organizing Committee:

- Penny Rheingans (University of Maine) Co-Chair
- Shashi Shekhar (University of Minnesota) Co-Chair
- Jaime Teevan (Microsoft) Co-Chair
- James Allan (University of Massachusetts, Amherst)
- Christine Alvarado (University of California, San Diego)
- Carla Brodley (Northeastern University)
- Peter Harsha (CRA)
- Kate Larson (University of Waterloo)
- Ran Libeskind-Hadas (Claremont McKenna College))
- Divesh Srivastava (AT&T)