

INTRODUCTION TO THE CCC AND THE CCC COUNCIL

July 23rd, 2020

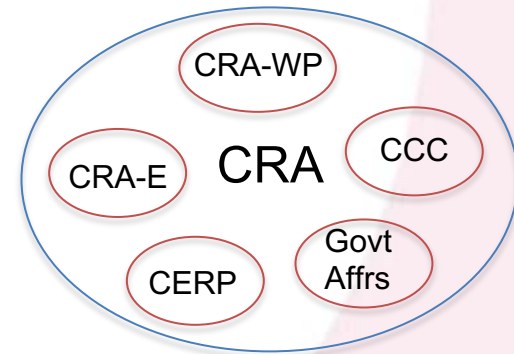


CCC

Computing Community Consortium
Catalyst

THE COMPUTING COMMUNITY CONSORTIUM (CCC)

- Established in 2006 as a standing committee of the Computing Research Association (CRA)
- Funded by NSF under a Cooperative Agreement
 - Third three-year award began in April 2018
- **Facilitates the development of a bold, multi-themed vision for computing research and communicates that vision to stakeholders**
- Led by a broad-based Council
- Staff based at CRA



OUR MISSION

“A catalyst and enabler for the computing research community”

- Respond rapidly to requests and opportunities
- Bring the community together to help shape the future of the field
- Provide leadership for the community, encouraging revolutionary, high-impact research
- Encourage the alignment of computing research with pressing national priorities and national challenges (many of which cross disciplines)
- Work with policymakers to facilitate the translation of these important research directions into funded programs
- Give voice to the community, communicating to a broad audience the many ways in which advances in computing will create a brighter future
- Grow new leaders for the computing research community



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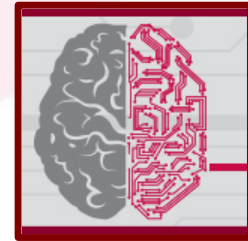
HOW WE DO THIS



- ❖ Visioning workshops
- ❖ Activities at conferences
- ❖ White papers & social media
- ❖ Roadmaps & reports
- ❖ Biannual Symposium to DC'ers
- ❖ Human Development

COMMUNICATION IS KEY

- Visioning workshop outputs: reports, slide decks, briefings, ...
- White Papers
 - CCC works with the computing research community to produce timely white papers that inform policymakers and the broader community about issues that are apropos of national priorities
- CCC Blog
 - Provides a continuous stream of information on advances in computing research
 - Opportunities for community to get involved
 - Forum for community discussion
- Website
 - Collection of resources
- Great Innovative Ideas
 - Showcases the exciting new research and ideas generated by the computing research community
- "Catalyzing Computing" Podcast
 - Features interviews with researchers and policy makers about their background and experiences in the computing community.
- Events
 - CCC Symposium, CRA Snowbird, Early Career Researcher Symposium, ...



Evolving Methods for Evaluating and Disseminating
Computing Research

The CCC Blog



OUR STAKEHOLDERS

- The Computing Research Community!
 - Faculty and industry researchers
 - CRA
 - CSTB (Computer Science and Telecommunications Board, part of National Research Council)
 - Professional societies
 - Academic units
 - Research labs
- Industry
 - Computing industry, major users of IT
- Public
- Government
 - NSF (esp, CISE), NIH, DARPA, NIST, HHS, IARPA, DoT, NITRD, ...



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CCC ORGANIZATIONAL STRUCTURE

Chair and vice-chair

- Two-year non-staggered terms
- Vice-chair is presumptive chair

Director, two Senior Program Associates, Program Associate

- Full-time paid positions

Support

- As needed, from other CRA Staff



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CRA/CCC STAFF

CCC Director: Ann Schwartz

Senior Program Associate for
Communication: Helen Wright

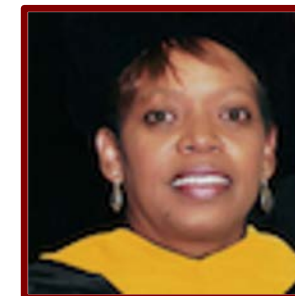
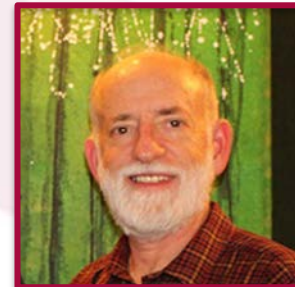
Senior Program Associate for
Engagement: Khari Douglas

Program Associate: Maddy Hunter

CRA Executive Director: Andy Bernat

Other CRA staff that work with the
CCC:

- Peter Harsha, Director of Government Affairs
- Sandra Corbett, Administrator
- Sabrina Jacob, Program Manager



CCC ORGANIZATIONAL STRUCTURE

Chair, Vice-chair

- Two-year non-staggered terms
- Vice-chair is presumptive chair

Director, Senior Program Associates (2), Program Associate

- Full-time paid positions, based in DC

Support

- As needed, from CRA Staff

Executive Committee

- Chair, Vice-chair, Director
- Two-three at large drawn from Council for one-year terms
- CRA Executive Director

Council

- 20 members
- Three-year terms; at most two consecutive terms



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THE CCC COUNCIL

Chair: Liz Bradley, University of Colorado Boulder

Vice Chair: Dan Lopresti, Lehigh University

CCC Chair Emeritus: Mark Hill, University of Wisconsin, Madison

Terms ending June 2023

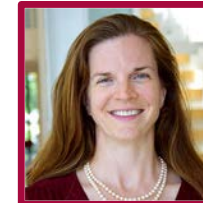
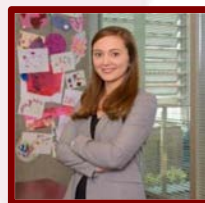
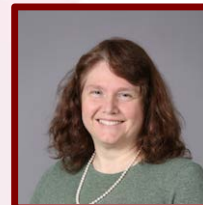
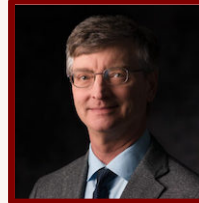
- Nadya Bliss *, Arizona State
- Kathleen Fisher, Tufts University
- William D. Gropp, Illinois Urbana-Champaign
- Brian LaMacchia, Microsoft Research
- Melanie Moses, University of New Mexico
- Helen Nissenbaum, Cornell Tech
- Holly Yanco, University of Massachusetts Lowell

Terms ending June 2022

- Sujata Banerjee, VMware
- Elisa Bertino, Purdue University
- Tom Conte, Georgia Tech
- Maria Gini, University of Minnesota
- Chad Jenkins, University of Michigan
- Melanie Mitchell, Portland State University
- Katie Siek, Indiana University

Terms ending June 2021

- Ian Foster, University of Chicago
- Ronitt Rubinfeld, MIT
- Suresh Venkatasubramanian, Utah
- David C. Parkes, Harvard
- Shwetak Patel, Univ. Washington



WHAT DO COUNCIL MEMBERS DO?

- Attend three “face-to-face” council meetings annually
- Participate in monthly council calls
- Develop and lead new activities and initiatives (visioning workshops, CIFellows, ...)
- Engage with government agencies, industry, and sister organizations (NSF, ACM, Big Data Hubs, ...)
- Write articles, white papers, and blog posts
- Participate in task forces that target CCC’s strategic areas; produce and curate relevant resources, activities, and outputs (visioning workshops, white papers, blog posts, briefings, ...)
- Other requests as needed (agency visits, symposium, Snowbird, ...)

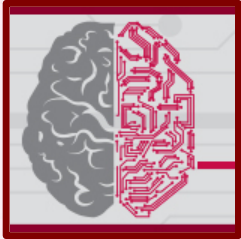


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CCC's BREAD & BUTTER: VISIONING WORKSHOPS

- Average of eight visioning workshops per year in the last three years (55 over our 10-year history)



AI Roadmap



Economics and
Fairness



NAE/CCC
Workshop on the
Role of Robotics
in Infectious
Disease Crises



CCC / Code 8.7
Workshop on
Applying AI in the
Fight Against
Modern Slavery



Wide-Area
Data Analytics

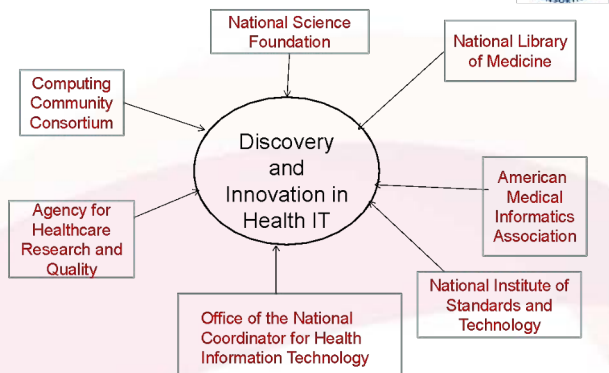
- Top-down (agency initiated)
- Bottom-up (open RFP)
- Sideways (council initiated, joint with other agencies,...)

SUCCESSFUL VISIONING WORKSHOPS

- Engage the community, together with relevant stakeholders, rapidly capturing and synthesizing the important ideas
- Facilitate broad thinking with compelling examples
- Create new avenues for (interdisciplinary) collaboration
- Frame future opportunities in a manner that energizes the community and engages potential funders
- Align with national and computing research priorities
- Articulate needs and barriers to research impact
- And close the loop!

CASE STUDY: HEALTH IT

October 2009 Workshop



National Science Foundation
WHERE DISCOVERIES BEGIN

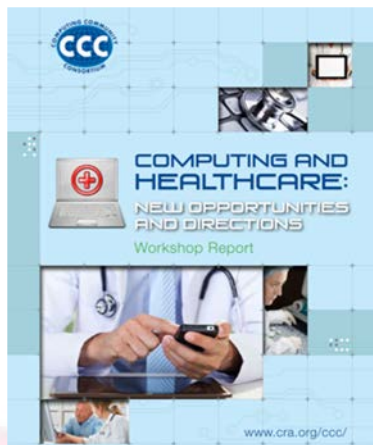
Directorate for Computer & Information Science & Engineering

SMART HEALTH AND WELLBEING (SHW)

CONTACTS

See program guidelines for contact information.

SYNOPSIS



Smart and Connected Health (SCH)

PROGRAM SOLICITATION

NSF 13-543

REPLACES DOCUMENT(S):

NSF 12-512

National Science Foundation

Directorate for Computer & Information Science & Engineering
Division of Computing and Communication Foundations
Division of Computer and Network Systems
Division of Information & Intelligent Systems

Directorate for Engineering

Directorate for Social, Behavioral & Economic Sciences



National Institutes of Health

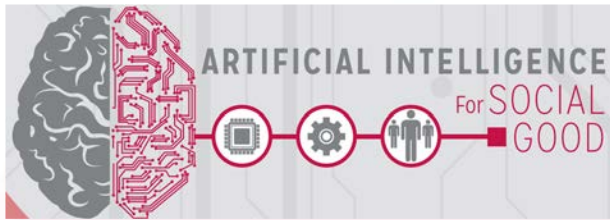
October 2012 Workshop



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CASE STUDY: ARTIFICIAL INTELLIGENCE



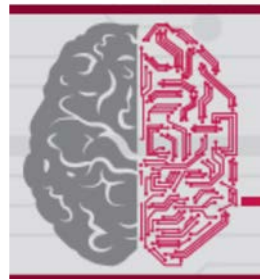
Symposium for 400 people
June, 2016



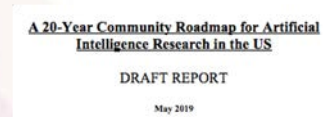
Report Released
Spring, 2017



White House announces
interest in AI, asks CCC
to lead 1 of 4 workshops
Winter, 2018



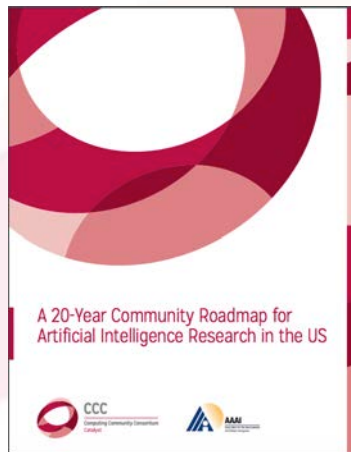
CCC launches AI
Roadmap with 3
Community Workshops
Fall, 2018



Draft Report Released,
Soliciting Community
Input
Spring 2019



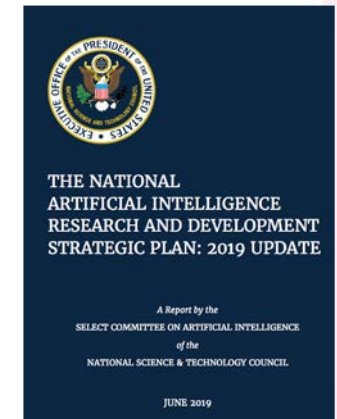
CASE STUDY: ARTIFICIAL INTELLIGENCE (CONT.)



Final report
released
August 2019



Several DC Meetings
Summer – Winter 2019



National Artificial Intelligence (AI) Research Institutes Accelerating Research, Transforming Society, and Growing the American Workforce solicitation cites the AI roadmap
October 2019

BLUE SKY & GREAT INNOVATIVE IDEAS

Goal - Help conferences reach out beyond the usual research papers. Encourages submissions that are open-ended and possibly “outrageous” or “wacky.”

- 27 different tracks at 15 different conferences in last five years
- On average, 13 papers submitted per track
- Winners are asked to submit “Great Innovative Ideas” entries that are publicized on the CCC webpage



Past CCC Chair Gregory Hager with AAI-16 Blue Sky award winner Francesca Rossi



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CCC TASK FORCES

CCC task forces and working groups are organized around our chosen strategic priorities. Membership is guided by council members' interests and expertise, with external members included where appropriate. In 2019/2020, these entities included:

- **Cybersecurity and Cybercrime**
- **FADE (Fairness, Accountability, Disinformation, and Explainability)**
- **Future of the Research Enterprise**
- **Health and Computing**
- **Systems and Architecture**
- **Artificial Intelligence Working Group**
- **Industry Working Group**

Goal is for CCC to be **engaged in ongoing activities** in these strategic areas, to **identify needs and opportunities** in those areas, and to **identify actions** (generating white papers, convening a workshop, publicizing information, etc.) that have the possibility of “moving the needle” in those areas.

Annual process to determine topics, membership and priorities. Informed by major stakeholders (NSF, OSTP, PCAST, NITRD, workshops and council members).

NURTURING THE LEADERSHIP PIPELINE

Grow leadership and community capacity to engage in and respond to national science policy needs, and to identify important new directions for computing research.

Involvement in Visioning Activities

- Cultivate leaders for the community through leadership / involvement in visioning activities

Computing Innovation Fellows (CIFellows) Projects

- Rapidly created program to preserve human capital when faculty positions became scarce due to crisis situations. Original program: 2009-2011. New program was stood up this year in response to COVID-19.

Postdoc Best Practices

- Program to study institutional support structures for postdocs
- Deployed at the University of Washington, NY ASCENT, UArizona

Leadership in Science Policy Institute (LiSPI)

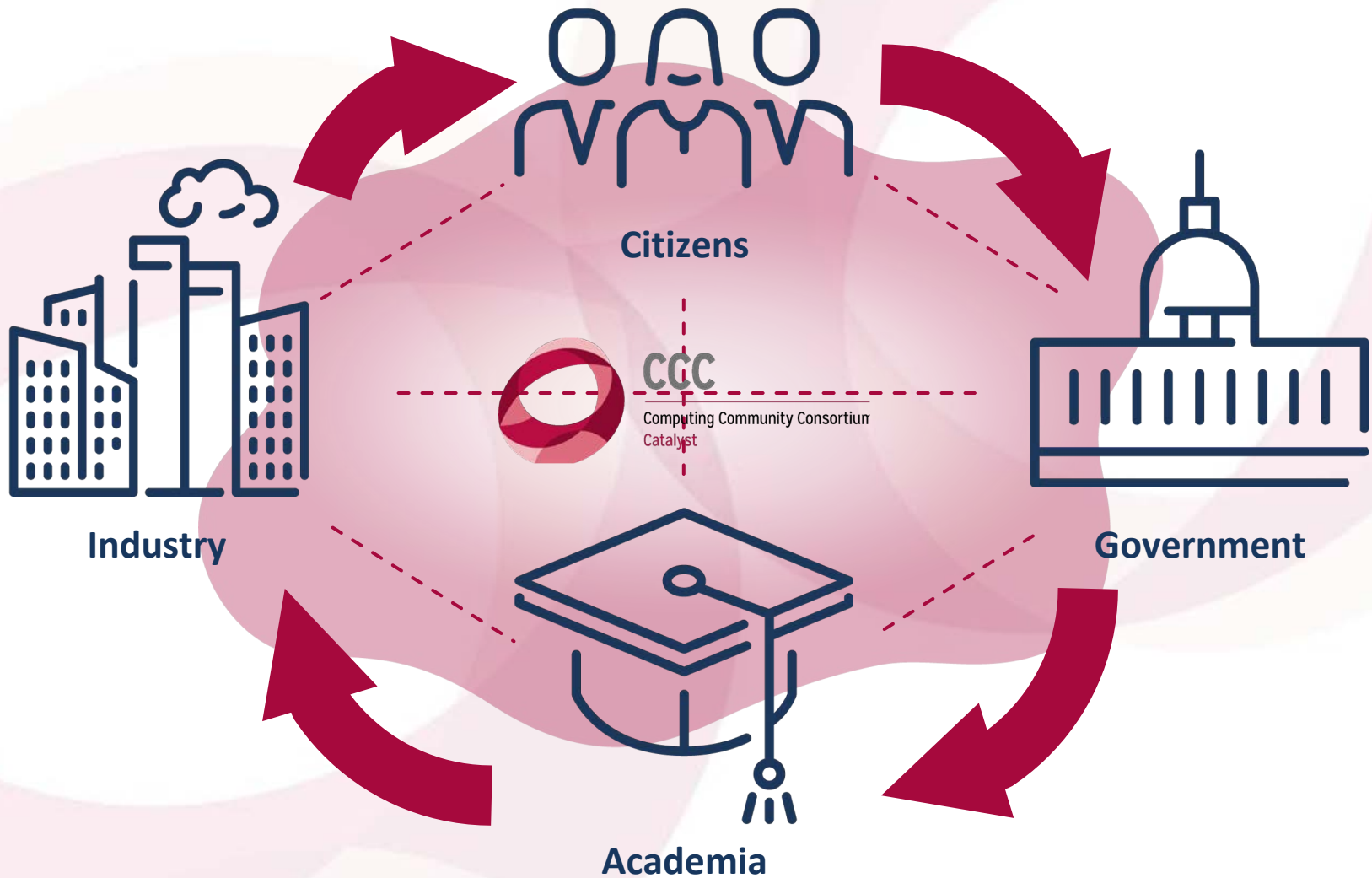
- Educates and trains computing researchers on how science policy in the U.S. is formulated and how to advocate for computing research
- Co-sponsored by CRA's Government Affairs Committee

Acronym reference sheet

- **NSF** - National Science Foundation
- **CISE** - Computer Information Science and Engineering Directorate at NSF
- **SBE** - Social, Behavioral, and Economic Sciences Directorate at NSF
- **NIST** - National Institute of Standards and Technology
- **DARPA** - Defense Advanced Research Projects Agency
- **AAAS** - American Association for the Advancement of Science
- **AAAI** - Association for the Advancement of Artificial Intelligence
- **OSTP** - Office of Science Technology Policy
- **NIH** - National Institutes of Health
- **DoE** - Department of Energy
- **HHS** - Health and Human Services
- **ONC** - Office of the National Coordinator for Health Information Technology
- **IARPA** - Intelligence Advanced Research Projects Activity
- **DoT** - Department of Transportation
- **NITRD** - Networking and Information Technology Research and Development
- **PCAST** - President's Council of Advisors on Science and Technology

Extra Slides

CCC: CATALYZING I.T.'S VIRTUOUS CYCLE



WHAT DOES EXECUTIVE COMMITTEE DO?

- Each member has a major responsibility within the organization
- Oversees the work of subcommittees and working groups
- Guides the planning of new activities
- Oversees the execution of the Strategic Plan and annual Implementation Plan
- Meets biweekly by teleconference



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PRE-HISTORY

In the mid-2000's, NSF CISE leaders and computing research community leaders had similar concerns regarding:

- The Federal commitment to research in general, and to computing research in particular
- Public and policymaker perception that computer science is “yesterday’s news”
- Failure to articulate and coalesce around exciting research visions in computer science – research visions that would galvanize the public, policymakers, researchers, and students
- Need to groom leadership for the field
- Decrease in student interest
- GENI Project direction

This led to:

- Increased focus on these issues by NSF CISE and the computing research community
- Computing Community Consortium solicitation by NSF
- Eager response by a group of computing research community leaders under the auspices of the Computing Research Association
 - Randy Bryant
 - Susan Graham
 - Anita Jones
 - Dick Karp
 - Ken Kennedy
 - Ed Lazowska
 - Peter Lee
 - Jeff Vitter

MAJOR ORGANIZATIONAL MILESTONES

- NSF solicitation + CRA Proposal + Cooperative Agreement (2006)
- Chair appointed (Winter 2007) + Council appointed (Spring 2007)
- Vice-Chair position formalized: Fall 2007
- Full-time Director (Erwin Gianchandani) joins: Spring 2010
- Renewal proposal submitted: Spring 2011
- Steady-state organizational structure defined: Fall 2012
- Executive Committee launched: Winter 2013
- Ann Schwartz joins as Director: Spring 2013
- Regular Chair / Vice-Chair succession kicks in: Summer 2013
- Proposal and Renewal (2017)
- Third Award (2018)
- Proposal and Renewal (2019)

RELATIONSHIP TO COMPUTING RESEARCH ASSOCIATION (CRA)

NSF cooperative agreement is with CRA

CCC is a standing committee of CRA

- Andy Bernat, CRA Executive Director, is an ex officio member of the CCC Executive Committee
- Mark Hill, the CCC Chair Emeritus is a member of the CRA Board of Directors
- Ellen Zegura, the CRA chair must consent to CCC Council appointments
- Greg Morrisett, CCC Council member and member of the CRA Board of Directors

CCC staff are based in CRA

RELATIONSHIP TO COMPUTING RESEARCH ASSOCIATION (CRA)

Other CRA standing committees:

- CERP: Center for Evaluating the Research Pipeline
 - Mission: To increase diversity in the field of computing research through evaluation and research.
- CRA-WP: Committee on Widening Participation in Computing Research
 - Mission: To increase the success and participation of women, underrepresented minorities, and persons with disabilities in computing research and education at all levels. to address society's need for a continuous supply of talented and well-educated computing researchers.
- CRA-E: Education Committee
 - Mission: To address society's need for a continuous supply of talented and well-educated computing researchers.

NSF INTERACTIONS

