

CCC Council Meeting

July 20th, 2016

Snowbird, Utah

General Updates

- Industry- Academic Collaborations for Early Career Faculty
 - Leftover funds that we needed to spend
 - Asked each hubs to write a proposal to engage with early career researchers
 - Klara- CCC's contribution amplified the potential for these projects
 - Some of the young assistant professors get embedded into the company
 - They come for two weeks and look at the data
 - They have helped the tenure cases around the data
 - Academic institutions who come to these workshops, they start sharing and talking about their data
- CCC Computing Research Symposium
 - How to growing the funding at NSF, DARPA
 - Goal of the symposium was to broaden the impact and grow the computer science community and inform the different agencies
 - The last session had many funding agencies-made sure they stayed the entire time
 - The poster session allowed for junior faculty to share their work with the community
- AI for Social Good
 - Ask from Tom Kalil during our March 2016 Council meeting
 - Highly successful, June 2016 event
 - Co-sponsored by OSTP, AAI, and CCC
 - OSTP has a request for information due on Friday about the meeting
 - Live-streamed event- 3,500 unique viewers
- Upcoming Visioning Workshops
 - Three coming up this fall

Task Force Updates and Plans

- We can invite members of the community to join the task force
- Who should we invite to join?
- Could possibly grab people who we think might be good CCC Council members
- Ben has agreed to be the Task Force Advisor to help task forces encourage others in the community to join, and how to deliver deliverables
- Maja- we should have a robotics task force, should involve folks in NRI
- Computing in the Physical World Task Force
 - Smart Homes- in progress
 - Smart Communities - update in progress
 - How to grow task force
 - Find specific people, think about specific agendas to promote, grow the task force by bringing outside people

- Round table discussion in the fall
 - What are some of these overlaps?
 - AAAS proposal that was accepted, “Connected Devices” for February Meetings
 - Opportunity to reinforce the Aging in Place work
 - IEEE Internal Conference on smart cities and smart communities
 - Talked about how do you model disruptions?
 - NSF has also rapidly put together two workshops on this space as well
 - The energy has been much more on the IoT side of things, although robotics is still important.
 - Should we be thinking about re-configuring this space?
- Healthcare Task Force
 - BRAIN workshop, Inclusive Access, Aging in Place
 - Round table oriented smart health, smart community, IoT type of space
- Convergence of Data and Computing
 - Two successful white papers
 - Fall Plans
 - Contribute to CRA statement on Data Science
 - AAAI Symposium (CCC roundtable)
 - Brief symposium report in the AI Magazine
 - Transition papers
 - Grow Task force participation
 - Next year focus- engage with agencies around white papers
 - Workshops that build on transition papers
 - HPC community and CCC
 - Deep learning presentations
- Education
 - Two white papers
 - *The importance of computing education research*
 - *Workshop report on computer-aided personalized education*
 - Fall plans
 - work on CRA-E transition paper on CS for all
 - Participate in the NSF-funded workshop
 - Next Year
 - Collaborate with CRA-E
- Artificial Intelligence
 - Eric, Vasant, Randy, Greg
 - AI for Social Good
 - There are a lot of fundamental computing issues
 - Randy took first step and the group is still working on it
 - How broadly do we want to reach?
 - Will be important to include someone with bridges.
 - Maja and Greg will talk about develop some ideas together

- Privacy
 - PbD workshops
 - Working on report
 - Need to continue to work with Deirdre Mulligan
 - NITRD privacy research strategy
 - Finally came out
 - CCC had a great influence on that
 - Privacy is something that we need to stay engaged with
 - Perhaps we combine it with cybersecurity? Should have the conversation with Cynthia
 - Sampath is happy to join this task force
- Industry
 - Industry roundtable, summer 2015, 25ish folks in the room
 - Produced a report from that workshop
 - Presented to the CISE AC
 - What is industry- start ups, tech companies, etc.
 - CRA would be the logical place to do this- how do you show up and engage in the conversations
 - Data is a good way to bring people to the table
 - Perhaps we remove this from the task force list and declare victory
- Perhaps we do a biology task force?!

Inventory and Transition Paper Topics

- 2-4 pages, based on needs of the society as a hold
- Need to have an outline
- Challenges (needs) and Opportunities
- Agency/domain oriented; could use to build a multi-agency agenda

View from PCAST

- On June 18th John Holdren became the longest serving science advisor
- We want to prepare for the possibility that it [him remaining] won't be the case/will be the case
- PTech was a separate committee that wasn't part of PCAST
 - Never met with Bill Clinton, only with Al Gore
- The Bush Administration wanted to set the agenda as opposed to the committee deciding what is important
- Part of the motive of the CCC was to have a voice to the administration about computing
 - We're in a good place in playing that role
- We talk to our community as professional equals; when we talk to the government we aren't talking to scientists or engineers
 - Need to be careful about words and phrases that we use
 - Ex. "Technology for Future Cities" as opposed to "Technology for Smart Cities"
 - When you talk to the transition team you need to talk about the purpose and the goals
 - Internet of Things is a marketing term

- OSTP vs PCAST: OSTP is part of the government; PCAST is an external advisory board advising the government
 - Important to look at what Tom Kalil and Jim Kurose have suggested and also step back and look at things we think are important but that they haven't addressed
 - The original 4 CCC Task Forces were in areas Tom Kalil recommended
- While writing transition papers need to consider that we might not have a receiver like Tom Kalil
- We want to get these ideas out sooner rather than later
 - We are also being asked by agencies that are weathering this transition as well
 - The agencies will be marketing new ideas within this overall context; not only about the presidential election
- Peter - 2008 was the first time I saw this push to submit papers by agencies. Wasn't much a tool prior to this
- Clinton administration will want to put its own twist on things
- Susan - One of the important themes I think will emerge is inclusion.
 - Mostly economic diversity, but also racial and ethnic diversity
 - If smart cities are only for the well educated and the risk it's not going to help us
 - The way you design the services that will be used by people who are not necessarily technologically savvy
- Ben - City of Seattle is looking at how to increase participation in government. Can technology be used to help this? Involves inclusion
- See writing inventory slides for references that may be useful
- See transition paper possible topics from Tom and Jim
- Tom:
 - Reflect on existing investments, how would you re-envision these?
 - Ex. Privacy Score similar to a credit score
 - End of Moore's Law
 - This is an area where the research is so fundamental, most of industry will not/cannot focus on it
 - Jobs and IT, Automation, Labor
 - Transform Teaching and Learning
 - Societal: Privacy, Inequality, fairness in data
 - Concerns about AI
 - Cybersecurity
 - Right modalities of funding
 - What are the right ways for the government to invest in Smart Cities?
 - Not all about research, a lot of this is about deployment. This is where public-private partnerships come into play
- If only NSF would be interested in this, then it's probably not a good use of time (for this)
- Open-source, synthetic biology
 - Is there an NIH version of the CCC we could collaborate with?
 - No, but we can find something

- Do we work with people who are sitting in agencies right now to write these?
- Klara - In NSF, CPS area there are various people going to conferences and being involved
- Greg - Talk to Expedition team to get involvement
- Randy - these people can be useful as references/sanity check
- Greg - topic I think is missing = what are the technology opportunities in healthcare?
 - Ben - Microsoft project called Premonition that predicts Zika exposure
 - Beth - How could you have an intelligent assistant that supports door-to-door data gathering about Zika
- There are a lot of cross-connections, will we target a specific area or keep it broad?
 - Beth - we can umbrella it in creative ways
- Susan - Idea: Have a white paper that is a future looking tire tracks report, 3-4 pages
 - Focus on longer term research and breadth of impact
 - Why investments are important for the future
 - I wouldn't tie to too closely to government investment of research, but overall impact of computing on society
 - Injecting this not just into industry but also into government
 - A lot of this has come through NIST Global Cities Tech Challenge
- Jim:
 - Socio-technical systems or convergent (interdisciplinary on steroids)
 - Research infrastructure/testbeds
 - Frequently comes up in our workshop reports, but we haven't focused in on it
 - Ex. Cities, machine learning data sets (the community is struggling to articulate what they need), inclusive access - the bar is high for someone to jump in and create these technologies
 - What kind of data rather than what is it for
 - Not just about data, also the physical structures. Need something large enough that can withstand scrutiny at a top level
 - Conference submissions introduced on a rolling deadline?
 - Shaping the New Human-Technology Frontier
 - Augmentation
 - Harnessing Data
 - Leading the Next Quantum Revolution
 - Last 3 bullets are from presentation by NSF Director
 - [NSF Big Ideas](#) (will be sent out)
 - [Additional link](#)
 - These exist as 1 pagers in a powerpoint deck
 - Ask Keith about where NSF Big Ideas sit in the process
- Susan - I'm working on a forensics study that is close to being done. Will probably be approved in August
 - Basic idea is that forensic science is not at all a science. What would it take to make it a science

- Looked at pattern matching technologies: bullets, hair, tire tracks, DNA
- All of these except for DNA have no scientific basis
- There were federal court cases that objected to certain evidence because of this
- Scientific validity and validity as applied
- Expert witness says they are certain about a match, but there is no certainty for these. They won't talk about probabilities
- The coming technology will be digital forensics. Identify information about people based on their online behavior
- Need to ID an acceptable form of digital forensics rather than waiting for something and then critiquing it
- Justice (forensics, fairness, inequality etc.) will be a big think if Clinton is elected
- The general public doesn't understand probabilities. Educational problem?
- Need a better way to convey these everyday things - e.g. What does it mean when there's a 60% chance of rain?
- Computing equivalent of Neil Degrasse Tyson violation of astrophysics show
- How to get characters into film that show them as normal people, attractive careers, women and minorities

Overview from NITRD

- "The most important small agency you never heard of"- not an agency it is part of OSTP
- Created by the HPC Act of 1991
 - Increase cooperation and eliminate gaps
- NITRD has a very specific mission
- OSTP
 - National Science and Technology Council
 - Committee on Technology
 - Subcommittee on Networking and Information Technology R&D
- 21 agencies and offices that are part of NITRD
 - Machine learning, AI, Smart Cities
 - Data calls results in strategic plans and ideas for initiatives
- Produces a lot of reports
 - Supplement to the president's budget
- Program Component Areas
 - 8 buckets (such as Computer security information assurance, High confidence software and systems, etc.)
 - Budgets have been going along with the national security properties
- How reliable is this data?
 - NSF approaches it programmatically
 - Consider the spreadsheet
 - We are not sure how accurate it is.
 - Much of the reporting is going through the front office
- PCAST had been telling NITRD that there program component areas were out of date
 - Wanting to reflect the changes in the national computing strategic initiative
 - Ftac, fast track action committee

- Where do you put Moore's Law? In these very specific buckets, nothing is perfect
 - All agencies report what they are, so you could go look at it
- Could you use a set of approved tags?
- When you make a suggestion to ICT, add something to eJacket, then first question is who is going to pay for it
- Bucket for foundational computer science
 - But for OSD how do you interpret that?
- Interagency Working Groups
 - Big Data
 - Strategic plan released may 2016, workshops being planned
 - CPS
 - Smart cities strategic program data call and strategic planning
 - CSIA
 - Strategic plan released February 2016. Program coordination and future directions,
 - HCSS
 - Program coordination and future directions
 - "What is the direction and future of human in the loop?"
 - HEC
 - Program coordination and future directions
 - Have been on hold
 - HITRD
 - Framework being developed
 - LSN(Large Scale Networks)
 - Program coordination and future directions
 -
 - Privacy
 - Strategic plan released July 2016. Workshop being planned
 - New group, has a lot of energy
 - RIS
 - Robotics and intelligent systems
 - Framework being developed to understand what they are going to do past the NRI
 - Leader is Terah Lyons, Lynn Parker, David Han
 - Cyber Physical systems and robotics tension is hard
 - Do not merge them, should keep them separate
 - CPS is more on the sensing side rather than the action side
 - Social Computing
 - Program coordination and future directions
 - Focusing a lot on the dark web (part of the internet that is not linked), may go in different directions, but that is where they are now
 - HCI
 - SPSQ

- Workshops, socialization
 - They don't understand why we don't understand that the problem is software
 - VIA
 - Strategic plan being developed
 - Sorta related to big data, they are in the area of visual analytics
 - DoT datasets, so much private information
 - WSRD
 - Data call on platforms, Advances Wireless Research Initiative
 - They are doing much more than ICT in this space
 - Supplying information for the wireless research initiative
- Other Activities
 - FASTER (Faster Administration of Science and Technology Education and Research)
 - JET (Joint Engineering Team)
 - Information sharing among federal agencies and non-referred participants with interests in high performance research networking and networking to support science applications.
 - MAGIC (Middleware and Grid Interagency Coordination)
 - Federal agencies and non-federal participants with interests and responsibilities for middleware
 - MLAI
 - Strategic planning in ML/AI R&D
 - Social good workshop
- Discussion
 - FASTER is trying to find a new direction
 - Is there real energy in the group for acting with humans?
 - Yes
 - Are there two topic areas where CCC could be of greatest impact?
 - MLAI
 - Big Data is stalled out a bit, but there could be some space in there as well
 - If the CCC were interested in, that might be a good place
 - Data analytics and future of science?
 - NSF will likely run with it and leave out big data
 - Smart Cities
 - Role of technology
 - Broad areas
 - Tie together humans and technology

New Task Forces 2016- 2017

- AI/ Robotics (Randy, Maja, Greg, Vasant)
- Privacy and Fairness (Sampath, Lorenzo, Cynthia)

- Computing in the Physical World (Klara, Ben(security), Debra, Beth, Jen (cross-cuts), Shwetak, Dan)
- Convergence of Data and Computing (Holly, Klara, Mark, Liz, Vasant)
- Healthcare (Nina, Kevin, Maja, Greg, Beth)

Transition Paper Topics

- Beth- Healthcare (Home health and aging, counter to precision medicine and personalize health care delivery)
- Greg- Healthcare delivery, manufacturing, infrastructure, information technology (privacy score idea)
- Liz- Digital forensics (understanding statistics as a separate thing), social justice as an umbrella
- Keith- engagement, better ways for engagement of the population (budgeting); smart cities, what are the ways we can ease adoption of these solutions
- Kentaro- inequality (high paid jobs done by very few people, creating machines that help people, enhancing people) societal
- Vasant- Accelerating Science, health surveillance
- Jen and Lorenzo- research infrastructure/ testbeds
- Jen- wireless (dynamic spectrum management), software defined infrastructure (Maybe work with Rus Park)
- Sampath-Role of theory within tire tracks/ need for computing/societal needs (future tire tracks), economic network space within sociotechnical space
- Holly- Public engagement, ways of letting people access government resources (policy work with Patty Bergin)
- Ben- Intersection of IoT and security, Digital Forensics, Biology and Computing (programming matter-design automatically, 3D printing)
- Klara- Information sharing in smart cities across domains, research infrastructure (work with Jen)
- Randy- Future look of tire tracks
- Nina- emergency response old 911 system (can we use data to bring it to the 21st century, FCC component)
- Maja- Shaping open the new human-technology frontier (with Beth and Debra)

Ben's comments- every manufacture has to learn how to do the same thing, PCAST, open source software

Keith Comments- Public budgeting, what are they ways that we can address?, What is a common thing about smart cities solutions?

Implementation Plan and New CCC Proposal

- Implementation Plan: 2016-2017
- Proposal: 2017-2021
- Emphasis for this year

- Expanding Investments in Computing Research
 - Agencies; Initial focus on transition papers
- Cross Cutting Visioning
- Scalability
 - Task Forces
- Outreach and Communication
 - Academic Depts
 - Industry (including “non CS”)
- Assessment
- What are mechanisms to make the average Joe faculty is aware of what is out there?
 - Needs to be actionable. Here is some of the content we have and here is how you can use it.
- Ben - Content like what Kentaro (?) presented and the forensics Susan discussed are good examples of things to emphasize and put into the community
 - Think about social responsibility
- FCRC conference; run a workshop there?
 - Every 4 years
- Ben - governments at the state and local level have increased need for people with computing/technology knowledge
- Something different that we could do?
 - Should we trying to publish white papers? Augment them with other content (Powerpoint slides with main ideas...)?
 - Workshop where we pull people from society who have specific problems that could use computer science solutions? Government, social workers, etc.
 - What do the 99% need?
 - Could we get together a high level industry forum (Bill Gates etc.)?
 - Science and life meeting?
 - Find a way to sensitize the industry broadly to the needs of the ecosystem they contribute to
 - Structure that makes clear those who are behaving well and indirectly makes it clear that there are those who are not behaving well
 - Include foundations in the discussion? Bill and Melinda Gates Foundation
 - CRA-S, who gets to determine what S is?
 - Realization that the social aspect needs to be somewhat addressed. Who is the right thing to address this?
 - There are ways of thinking through this that do not include picking winners and losers
 - You need a really good strategy to approach industry with these kinds of problems
 - PRAI program (?)
 - Goal to visit major corporations to present CCC and what we have done. Talk about ways that they could contribute
 - Make it a pipeline issue

- Is there a way to work more closely with NSF on visioning workshop to prevent overlap?
 - We're good at communicating with NSF but not so much the other way around necessarily
- Blog gives other workshops and activities visibility
 - It would be great to have more council members write blog posts
- Ben - Materials science and Chinese apps, 2 major blind spots. Should we think more about blind spots in the community

Next Steps and Who's Doing What

- Visioning: Lorenzo, Liz, and Jen
- Visioning Liaisons: Beth, Mark, Randy, Lorenzo
- Blue Sky: Vasant
- Task Forces: Ben and Ann
- Implementation Plan: Beth and Ann
- Assessment: Beth, Dan, and Helen
- Transition Papers: Beth, Randy, and ?
- Proposal: Beth, Mark, Ann
- Postdoc Best PRactices: Ann, Cynthia?, Anita
- Big Data Industry Awards: Ann and ?
- Nominations: Mark, ?, ?,?

Calendar:

- Will send poll to find a time that works for everyone
 - Won't have anything before 8:30 AM west coast time
- Then monthly calendar:
 - Week 1: full council
 - Week 2: task forces 1 and 2
 - Week 3: task forces 3 and 4
 - Week 4: task forces 5 and 6
- Occasionally we may need to flip weeks if there is a deadline to be met
- Exec will also have a weekly call time that we will also hope to use for NSF calls and short burst of coordination