National Science Foundation
Directorate for Computer and Information Science and Engineering Advisory Committee (CISE AC)

November 13-14, 2014

National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230

Meeting Summary

The fall meeting of the National Science Foundation's Directorate for Computer and Information Science and Engineering's Advisory Committee (CISE AC) was held at the National Science Foundation on November 13-14, 2014.

Thursday, November 13, 2014

Welcome, Introductions Review of Agenda, and Approval of Minutes
Drs. David Culler (UC Berkeley) and Fran Berman (RPI), CISE AC co-chairs, opened the meeting at 12:30 p.m., thanking the AC members for their presence and welcoming all in attendance (A list of attendees is in Appendix I). Following introductions, Dr. Culler provided an overview of the meeting agenda. Then, the minutes from the May 2014 meeting were unanimously approved.

CISE Update
Dr. Suzi Iacono, Acting CISE Assistant Director, welcomed the AC and provided an update on CISE (Slides are posted on the CISE AC website, http://www.nsf.gov/cise/advisory.jsp). She highlighted CISE staff changes, including the appointment of Dr. Jim Kurose as the CISE Assistant Director to begin in January 2015, the appointment of Dr. Lynne Parker as Division Director for Information and Intelligent Systems (IIS) also to begin January 2015, the re-appointment of Dr. Keith Marzullo as Division Director for Computer and Network Systems (CNS), and the appointment of Dr. Chaitan Baru in August 2014 as CISE's first Senior Advisor for Data Science.

Dr. Iacono also updated the AC on CISE activities, emphasizing the recently funded NSFFutureCloud projects (Chameleon and CloudLab); the President's Fiscal Year 2015 Budget Request for NSF and CISE; CISE partnerships with other government agencies, industry and international collaborators; and recent requests for information on privacy and big data. Dr. Iacono thanked the AC members for their participation in the CISE AC and in other NSF-wide activities.

CISE 2025 Update and Discussion
Dr. James Landay (University of Washington), CISE AC member, and Dr. Beth Mynatt (GA Tech), CCC, provided an update on the CISE Vision 2025 working group, which was charged with envisioning future trends and opportunities in computing research over the next 10-15 years.

In collaboration with the Computing Community Consortium (CCC), three workshops have or will take place:
1. Interacting with Computing All Around Us (May 2014)
2. The New Making Renaissance: Programmable Matter and Things (June 2014)
3. Computing and the Smart World (TBD)

The goal of the May 2014 workshop was to develop visions and identify core technologies needed for the future of interaction among humans, computers and the physical world. The outcome of the workshop concluded that many computational fundamentals come up in multiple application areas and that there are great benefits in cross-pollination within the vast computational research world.

The June 2014 workshop examined the ways in which the new making renaissance, underpinned by the "maker movement," may change the way that most items are designed, manufactured and delivered. The workshop concluded that the success of the new making renaissance requires interdisciplinary efforts across practitioners, materials and techniques.

Dr. Mynatt presented an overview of the Computing Vision's 2025 discussion from the 2014 CRA Conference in Snowbird, UT, which examined ways to get the perspectives of the broader computing community.

Overview and Breakout Discussion on the Rising Tide of CS Enrollments
CISE AC members Dr. Bobby Schnabel (Indiana University) and Dr. Rob Rutenbar (University of Illinois) provided data demonstrating the increasing number of computer science (CS) majors (including computer engineering and information science majors) and demand for CS jobs, and each led a discussion group.

The two groups discussed the growing enrollment of students in CS courses and ways to collect broad enrollment and job data and how these trends impact faculty funding. The groups agreed that universities need to develop uniform ways to gather enrollment data to include enrollments in majors and courses, including non-majors taking upper-level CS courses. The groups also agreed that university career centers, alumni associations and departments need to use existing job data to see where CS majors are being employed, how CS skills are being used on the job and what additional skills are needed. Finally, the groups agreed that there is higher demand for CS funding and for more CS tenure track faculty positions.

Presentation and Discussion of the Committee of Visitors Report
The CISE Committee of Visitors (CoV) report was presented to the CISE AC for approval. The CoV chair Dr. Peter Steenkiste (CMU) led the presentation, and was joined by the co-chairs for each of the divisions reviewed: Dr. Salil Vadhan for Computing and Communication

Foundations, Dr. Azer Bestavros for Computer and Network Systems and Dr. Nancy Amato for Information and Intelligent Systems. The CISE CoV, which took place on Oct. 22-24, provided recommendations to fine-tune the merit review process, program management and commented on conduct of future CoVs, especially noting that the multi-division approach facilitated the review of cross-cutting efforts. All co-chairs thanked NSF staff for facilitating the CoV, providing data and responding to questions. The CISE AC unanimously approved the CoV report.

Dr. Deborah Lockhart, Acting Division Director of IIS, provided a response to the COV report on behalf of CISE. She thanked the leadership and members of the CoV for their work and input. She noted that CISE is taking all CoV recommendations under consideration, will continue to explore new ways to improve the merit review process and already has in place and is actively investigating new ways to improve program management, especially in the areas of workload and staff training and support.

The AC adjourned for the day at 5:30 p.m.

Friday, November 14, 2014

Welcome
The CISE AC resumed at 8:30am with remarks from Dr. Berman, who provided an overview of the day's agenda.

Data Science Panel
Dr. Peter Lee (Microsoft Research) began the panel discussion on data science with an introduction of the panelists: Josh Greenberg (Sloan Foundation), Dr. Chaitan Baru (NSF) and Dr. Philip Bourne (NIH; participated remotely).

Dr. Lee noted the emergence of new capabilities in data science and that for the CISE community, the concept of data science is founded on many research investments and fueled by alignment with commercial interests. Each of the panelists provided brief opening remarks and provided their perspectives on data science. Discussion topics included collaborations across agencies, the connection between computer science and data science, ethics of using data, and the possibilities for the future of data science.

Meeting with NSF Director
NSF Director Dr. France Córdova and Chief Operations Officer (COO) Dr. Richard Buckius joined the CISE AC. Dr. Córdova thanked the AC for their service to NSF and acknowledged Dr. Iacono for her leadership as the Acting AD of CISE and thanked Dr. Kurose for agreeing to serve as the CISE AD beginning in January. She noted the importance of engaging with a broad range of partners including global, foundation, industry and government in advancing science and engineering. AC members noted important issues for the CISE community, including the rising enrollments in computer science courses, broadening participation, data science, and partnerships with industry.

Closing Remarks and Wrap-up

In closing, Dr. Berman thanked the CISE AC for their participation; Dr. Kurose noted his enthusiasm for his new position; and Dr. Culler announced that the dates for the next AC would be announced in a future correspondence.

The meeting adjourned at 12:15 pm.

Appendix I: Attendance for CISE AC November 13-14, 2014

AC Members Present
Francine Berman, Rensselaer Polytechnic Institute
David Culler, University of California at Berkeley
Teresa Dahlberg, University of North Carolina – Charlotte *(Participated via phone on 11/13)*
Susan Davidson, University of Pennsylvania
Brent Hailpern, IBM Research - Almaden
Charles Isbell, Jr., Georgia Institute of Technology *(Participated via phone on 11/13)*
James Landay, University of Washington
Peter Lee, Microsoft Research Redmond *(Present 11/13 only)*
Craig Partridge, BBN Technologies
Ronitt Rubinfeld, Massachusetts Institute of Technology
Rob Rutenbar, University of Illinois
Robert Schnabel, Indiana University
Victoria Stodden, Columbia University
Alex Szalay, The Johns Hopkins University *(Participated via phone on 11/13)*

AC Members Absent
Henrik Christensen, Georgia Institute of Technology
Stefan Savage, University of California, San Diego
Jeffrey Vitter, University of Kansas