Winter/Spring 2017 Edition

CRA-Women NEWSLETTER

This Issue:

Editors:

Carla Ellis, Duke University

Amanda Stent, Bloomberg

CRA-W

Computing Research Association

Women

Highlight on Alum **Lana Yarosh**

Svetlana "Lana" Yarosh is an Assistant Professor in the Computer Science & Engineering Department at University of Minnesota. Her research in HCI focuses on embodied interaction in social computing systems. Lana has won NSF CRII and the NSF CAREER grants, and best paper awards at CHI 2013 and CSWC 2014. She is a recipient of the McKnight Land Grant Professorship. Lana has two Bachelor's of Science degrees from the University of Maryland (in Computer Science and Psychology), a Ph.D. in Human-Centered Computing from Georgia Institute of Technology, and two years of industry research experience with AT&T Labs Research. She attended CRA-W's Career Mentoring Workshop for early-career researchers.

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Carol Frieze wins 2017 A. Nico Habermann Award

Carol Frieze, director of SCS4ALL and Women@SCS at Carnegie Mellon University (CMU), was selected as the recipient of the 2017 A. Nico Habermann Award Winner for devoting nearly two decades to promoting diversity and inclusiveness in computing. She has worked with and supported a wide variety of students including women, people with disabilities, and various age groups ranging from K-12 to graduate students.

Carol has contributed valuable research towards understanding the challenges diverse populations face, and in many ways, her research has challenged the existing narrative in the field. And it's had impact: 48% of computer science majors in the 2016 incoming freshman class at CMU are women, far above the national average.

Carol's work towards improving diversity and inclusion in computing goes well beyond advocacy. She has shared her knowledge with others by developing teacher resources, books, and course materials. She also participates in conferences and other programs including CRA-W's Collaborative Research Experiences for Undergraduates (CREU) program.

Carol's nomination letters attest that she played an important role in creating an inclusive environment at CMU, and her research can help others learn best practices and insights to help spread this type of progress beyond her home institution to the entire community.

Interview with Lori Clarke

Interviewed by Carla Ellis, Duke University

Lori A. Clarke is an emerita professor in the College of Information and Computer Sciences, University of Massachusetts Amherst, having retired in 2015 after serving on the faculty for forty years and as chair from 2011-2015. She is a Fellow of the ACM and IEEE, and a board member of the Computing Research Association's Committee on the Status of Women in Computing Research (CRA-W). She is a former vice chair of the Computing Research Association (CRA), IEEE Publication Board member, associate editor of ACM TOPLAS and IEEE TSE, member of the CCR NSF advisory board, and ACM SIGSOFT chair. Awards include the 2012 SIGSOFT Outstanding Research Award, 2011 University of Massachusetts Outstanding Accomplishments in Research and Creative Activity Award, 2009 College of Natural Sciences and Mathematics Outstanding Faculty Service Award, 2004 University of Colorado, Boulder Distinguished Engineering Alumni Award and 2002 SIGSOFT Distinguished Service Award.

In addition to her research accomplishments, Lori has a long history of working to increase the diversity of those participating in computing. She is an active board member of CRA-W, previously serving as co-chair and now serving as co-director of Grad Cohort, an annual two-day mentoring workshop for women graduate students. She was instrumental in helping the Coalition to Diversify Computing (CDC) and CRA-W develop coordinated programs. Within her college, she has fostered an active Women in Computer Science group. Lori has been involved in a number of mentoring programs and advised and mentored an impressive set of graduate students.

Q: You recently retired after 40 years on the computer science faculty at UMass. What did you enjoy most about your career? What are your plans going forward? Being a professor is the best job in the world! Doing research and teaching at the university level means that you are being paid to engage in life-long learning about topics that intrigue you the most. In addition to the intellectual challenges, being a professor provides opportunities to work closely with students. Helping students learn about research and develop the skills to further their own careers is one of the most rewarding aspects of being a faculty member. Another bonus is the independence of setting your own research direction and schedule. In many ways, being a research faculty member is like running your own research enterprise. Your efforts determine how successful you are and how large an enterprise you oversee, but at the same time, your faculty position provides a safety net in case your research ambitions temporarily exceed your financial support.

Don't think I am being overly Pollyannaish; there are downsides to being a faculty member. It is very demanding and requires great dedication. And I don't think anyone enjoys having to create and grade exam questions.

In retirement, I have defined a path forward where I get to continue doing those parts of my career that I enjoy the most (i.e., doing research and working with students), while jettisoning those that I don't relish. I am presently working with my colleagues on developing technology for modeling and analyzing human-intensive processes. We are currently engaged in a project where we are further developing the technology and evaluating it as applied to cardiac surgery. Although we believe this approach has broad applicability, it will be very exciting to see how it applies to this challenging, life-critical domain.

Q: Tell us about your decision to enter computer science and your career path. I loved computing from the moment I wrote my first (machine code) program. I was a (not very good) mathematics undergrad and I loved getting concrete answers, instead of wondering if my proof had flaws. Perhaps that is why later in graduate school, I was interested in techniques that would automatically help determine definitely what we knew (and didn't know) about a particular program.

Lori working with Heather Conboy, who is getting her PhD this spring.

Lori meets with colleagues, Bruce Croft, Debra Richardson, and Jan Cuny at the CRA Snowbird Conference

My career path was purely serendipitous. I decided to try academia because I was advised that it is easier to move from an academic job to an industrial job than vice-versa; I was trying to keep my options open until I knew what I wanted to do. I started my faculty position wondering if I was going to actually like it. Luckily for me, I soon discovered that I really loved being a faculty member.

Q: Explain a bit about your most recent research activities. How has your research evolved over time? I was one of the early developers of symbolic execution, a technique that provided a foundation for software verification, testing, and program analysis. At the time, computing power was too limited to make these approaches widely applicable, but concepts from this work are now found in commercial test data generation and static analysis tools as well as in many research prototypes.

Frustrations with developing and maintaining a symbolic execution system led to my interest in software development environments. I was one of the principal investigators in the multi-institutional Arcadia Project, which made several contributions that are now mainstays of IDEs.

Ever since I was a graduate student, I was intrigued with the information that could be derived from programs using data flow analysis techniques. FLAVERS, developed with my graduate student Matt Dwyer, was one of the first model-checking systems to work directly on distributed programs. It automatically creates a concise but imprecise model and uses compositional data-flow analysis to allow precision to be added incrementally. Recognizing that specifying the properties for verification is itself an error-prone exercise, my graduate student Rachel Cobleigh, my colleague, George Avrunin, and I developed the PROPEL property elucidation system. PROPEL explicitly represents the various options associated with the most common property patterns and allows specifiers to view these as templates in a number of possible representations, including as finite-state automata and as English text.

My current research is primarily focused on improving medical safety and builds on these past contributions. Working with Leon Osterweil, George Avrunin, and a number of grad students and medical professionals, our medical safety team has been modeling life-critical healthcare processes and using static analysis and property specification techniques to find defects and vulnerabilities in these processes. Our most current work is exploring how these validated processes can be used to provide on-line, situational-aware guidance during error-prone, critical procedures. In the long term, we hope that the detailed process execution histories will provide important feedback about the effectiveness of different process alternatives. I believe this is going to be a major future research direction, combining software engineering and data analytics in new ways.

Q: How have you been involved in CRA-W? What has this involvement meant to you? One of the challenges early in my career was not having many role models or female colleagues. Although software engineering tended to have more women researchers than many other fields in computing, women were still a very small minority. Researchers such as Barbara Ryder, Mary Lou Soffa, and Mary Jean Harrold were wonderful colleagues and friends. We were very motivated to help pave a path for more women to enter computing.

I was delighted to become involved in CRA-W because of the opportunities it provided to help women (and minorities) succeed in computing and, selfishly, for the opportunities it provided me to meet so many amazing women in computing outside of my primary research areas. Careers associated with computing have the possibility of positively impacting the lives of so many people, in addition to being intellectually and financially rewarding. I strongly believe that it is important to make sure that the doors are open to all individuals who have the interest and aptitude to pursue such careers.

Q: How do you balance work and family life? What do you enjoy doing when you aren't working? One of the benefits of having a

Lori loves to travel. Here she is in the Swiss Alps.

family is that it places demands on your time to NOT work. To be a good parent or partner means that you must put aside your work and devote time and energy to your family, which is really a benefit to you as well as to your family. I cherish the time with my family.

I enjoy playing tennis, skiing, hiking, and traveling, all activities that I continue to do with my family. My husband and I have a blended (I actually hate this word because it suggests an unrealistic level of homogeneity) family with 5 wonderful grown children and one adorable granddaughter.

Q: Do you have any advice for women at any stage of their careers? Go for it! There are so many opportunities that can be pursued now. If there is something that really appeals to you then pursue it wholeheartedly. If it doesn't turn out or you find that it is not what you expected or wanted, there are other avenues to be explored. This is true when you are first starting your career as well as when you are well established. We are so lucky that individuals with computational skills are in such wide demand now and are expected to remain so long into the future. This provides tremendous flexibility to take chances and pursue your dreams.

Q: What challenges have you had to overcome as a woman? The most difficult challenge was dealing with societal expectations when I was a child. I was immediately drawn to mathematics and science, and at that period of time most people I interacted with considered this an abnormality that I would (and should) outgrow. Starting in junior high, I was "tracked' into advanced course, but was one of only a few females in the mathematics and science courses. I am particularly appreciative of the support I received from my junior high and high school physics teachers who were both very supportive of my interests. To better understand the climate at this time, my first assigned physics lab partner in college complained to the instructor about being disadvantaged because he had to work with a female and asked to be (and was) reassigned another lab partner.

Most importantly, I was very lucky that my father was a staunch feminist and fully supported and encouraged my interests. He died when I was in college, but I know he would have been delighted with my career choices.

Although inequality is still a major problem along many dimensions throughout society, I am delighted that there has been significant progress during my lifetime.

You can learn more about Lori's research by viewing the April 7th Virtual Undergraduate Town Hall webinar at http://cra.org/cra-w/events/virtual-undergraduate-town-hall-using-software-engineering-help-reduce-medical-errors.

New CRA-W Co-Chair

A.J. Brush hands off co-chair of CRA-W to Julia Hirschberg

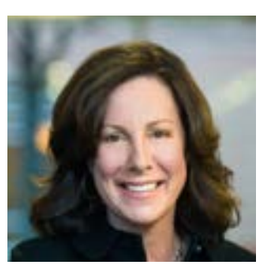
Julia Hirschberg (Columbia University) has stepped forward to begin a three year term as CRA-W co-chair. She takes over from A.J. Brush who recently completed her term. Julia joins Nancy Amato who remains as co-chair for another year. We want to thank A.J. for providing excellent leadership. A.J. will continue to serve CRA-W by organizing the career mentoring tracks that CRA-W offers at the annual Grace Hopper Celebration.

CRA-W Alums Named Fellows of ACM and IEEE

The IEEE and ACM, two of the major professional societies dedicated to scientific and technological innovation, including advancements in computing, have recently named several women who have been active in CRA-W programs as new Fellows of their organizations. We extend our congratulations!

ACM Fellows

The ACM has recognized 53 of its members as Fellows for their contributions to computing that are driving innovations across multiple domains and disciplines.



Carla E. Brodley
Northeastern University
Recognized for applications of machine learning and for increasing participation of women in computer science.
Carla is a former co-chair of CRA-W.

Justine Cassell
Carnegie Mellon University
Recognized for contributions to human-computer interaction and advocacy for empowerment and voice through technology.
Justine has served as a DREU mentor.

Holly Rushmeier
Yale University
Recognized for work on global illumination, material capture and display of high-dynamic-range images.
Holly is a member of the board of CRA-W and is co-director of the mid-Career Mentoring Workshop.

Valerie E. Taylor
Texas A&M University
Recognized for leadership in broadening participation in computing.
Valerie is a former board member of CRA-W.

Manuela M. Veloso
Carnegie Mellon University
Recognized for contributions to the field of artificial intelligence, in particular in planning, learning, multi-agent systems, and robotics.
Manuela is a former board member of CRA-W.

Radia Perlman
EMC
Recognized for contributions to the theory and practice of Internet routing and bridging protocols. Radia participated in a DSW.

IEEE Fellows

IEEE Fellow is a distinction reserved for select IEEE members whose extraordinary accomplishments in any of the IEEE fields of interest are deemed fitting of this prestigious membership level.

Sandhya Dwarkadas
University of Rochester
Recognized for contributions to shared memory and reconfigurability.
Sandhya is a member of the board of CRA-W. She leads the Borg Early Career Award committee and serves as co-director of Grad Cohort.

Julia Hirschberg
Columbia University
Recognized for contributions to text-to-speech synthesis and spoken language understanding.
Julia currently serves as co-chair of CRA-W.

Wenye Wang
North Carolina State
Recognized for contributions to modeling and performance evaluation of wireless networks.
Wenye participated in a DSW.

CRA-W Continues Research Mentoring at the 2016 GHC

by Andrea Danyluk, Williams College, and Tracy Camp, Colorado School of Mines

The 2016 Grace Hopper Celebration of Women in Computing (GHC) was held October 19-21, 2016, at the George R. Brown Convention Center in Houston, Texas and broke last year's attendance record with over 15,000 participants this year. For the 8th year in a row, CRA-W presented career mentoring content for GHC attendees interested in research. CRA-W Board Member Tracy Camp (Colorado School of Mines) designed this year's program, organizing the mentoring program into three tracks for early-career academic researchers, graduate students, and undergraduates. Brand new for 2016 was the CRA-W GHC Undergraduate Research Scholars Program, spearheaded by CRA-W Co-Chair Nancy Amato (Texas A&M University) and CRA-W Board Member Andrea Danyluk (Williams College), which provided funding for undergraduates to attend the conference, and guidance for finding and navigating the research content at GHC.

CRA-W's mentoring tracks for early-career researchers and graduate students kicked off on Wednesday, October 19 with "Want to be a Bias Interruptor?" – an active session that discussed unconscious biases that exist in academic computing departments, techniques for becoming a "bias interruptor," and included time to practice the skills learned. This session was a collaboration of CRA-W, ACM-W, and NCWIT, and was organized by Valerie Barr (Union College and ACM-W), Tracy Camp (Colorado School of Mines and CRA-W), and Lucy Sanders (NCWIT). The featured speakers were Latanya Sweeney (Harvard University) and Brad McLain (NCWIT).

CRA-W's mentoring program on Thursday, October 20, focused primarily on early-career faculty, with talks on (1) Effective Teaching Tactics, presented by Valerie Barr (Union College) and Susan Rodger (Duke University), (2) Research/Funding Strategies for Faculty, by Andrea Danyluk (Williams College) and Deb Agarwal (Lawrence Berkeley Labs), (3) Preparing for Tenure and Promotion, presented by Julia Hirschberg (Columbia University) and Jodi Tims (Baldwin Wallace University), as well as (4) Gaining Recognition for Your Accomplishments in Academia, by Nancy Amato (Texas A&M University) and Ellen Walker (Hiram College). This track – essentially a workshop within the conference – was extremely popular, with many students attending multiple presentations.

The sessions on Friday, October 21, focused on students at all levels. CRA-W staffed ten tables in the Student Opportunity Lab (SOL) on six different topics: (1) How to Be Successful Post-Bachelor's, (2) Is Graduate School for You?, (3) Masters or Ph.D.?, (4) How to Successfully Apply to Graduate School, (5) What is Computing Research? How Can Undergraduates Participate?, and (6) Research Careers: What Are The Options? How Do I Get There? The SOL was in a large convention center room, and had many tables with 1-2 mentors at each table leading discussions on different topics. Short 20-minute sessions allowed small groups of students to have interactive discussions with mentors at several different tables over the 3-hour SOL session. The CRA-W tables, which were primarily designed for undergraduates in the past, included plenty of content for graduate students as well as those contemplating going back to school. CRA-W Board Member Andrea Danyluk recruited 40 fabulous mentors, who generously volunteered their time to talk with students, answer questions, and provide advice.
For students looking for a larger group mentoring experience, CRA-W presented three talks on Friday, October 21, focused on building student success: (1) Building Your Academic Professional Network, presented by Sunita Chandrasekaran (University of Delaware) and Soha Hassoun (Tufts University), (2) The Graduate School Experience, presented by Laura Dillon (Michigan State University) and Katie Siek (Indiana University Bloomington), and (3) Finding Your Dream Job with a Ph.D., by Dilma Da Silva (Texas A&M University) and Rita Wouhaybi (Intel Labs).

This year CRA-W, with generous funding from the National Science Foundation, introduced an exciting new scholarship program for undergraduates with strong interest in computing research. The CRA-W GHC Research Scholars Program provided registration and travel funding for 65 students representing 53 different institutions to attend GHC for small group mentoring, interaction with other research-interested students, and participation in research-focused events. A "passport" provided Research Scholars with a roadmap for navigating research content at the conference. This roadmap included the ACM Student Research Competition, technical talks,

CRA-W tables at the Student Opportunity Lab, CRA-W presentations and the student poster session, where several posters were presented by participants in the CRA-W Distributed Research Experience for Undergraduates (DREU) and Collaborative Research Experience for Undergraduates (CREU) programs. Two special events – a networking reception for Research Scholars and CRA-W mentors, as well as a breakfast on the final day of the conference – served as bookends to the program. At these events, students met each other and later shared what they had learned.

Details on the GHC 2016 version of the CRA-W workshops are available here: http://cra.org/cra-w/career-mentoring-workshops-at-grace-hopper/. CRA-W partners with the Anita Borg Institute in order to offer career advice to hundreds of GHC attendees, as well as to ensure they are aware of the other programs that CRA-W offers. CRA-W's GHC 2016 programs would not have been possible without the additional support of 40 mentor volunteers, many of whom were current or former CRA-W board members.

Energetic CRA staff members (Erik Russell, Melissa Borts, and Sandra Corbett) and several CRA-W board members ensured that the CRA-W booth at GHC 2016 was always fully staffed. The booth was busier than ever before, with staff answering questions and getting the word out about CRA-W's programs .

An earlier version appeared in Computing Research News January 2017, Vol. 29/No.1.

Thank You to Our Individual Donors

CRA-W wants to show our appreciation to the individuals who generously responded to our year-end fundraising appeals.

Sponsors (>$3000): Kathryn S McKinley & Scotty Strahan

Contributors ($1,501-$3000): Julia Hirschberg

Supporters ($501-$1,500): Carla Brodley, A.J. Brush, Tracy Camp, Lori Clarke, Anne Condon, Carla Ellis, Kathleen Fisher, Janie Irwin, and Diane L. Souvaine

Friends (up to $500): Nancy Amato and Lawrence Rauchwerger, Sara Amini, Francine Berman, Andrew Bernat, Andrea Danyluk, Dilma Da Silva, Barbara Di Eugenio, Laura Dillon, Aaron Gember-Jacobson, Shambhavi Gupta, Ayanna Howard, Susanne Hambrusch, Dr. Sheila M. Humphreys, Lizy John, Susan Landau, Angelina Lee, Ming Lin, Patty Lopez, Theresa Mammarella, Margaret Martonosi, Stacey McNeely, Patricia Morreale, Nannette Napier, Shruti Padmanabha, Heather Pon-Barry, Ann Redelfs, Erik Russell, Barbara Ryder, Zeinab Sadeghipour, Dr. Suzanna Schmeelk, Mary Lou Soffa, Sara Sprenkle, James A Tolbert II, Diman Zad Tootaghaj, and Julita Vassileva

There were also 9 donors who wished to remain anonymous, bringing the total to $15,218.
Thank you to everyone for your support!

Highlight on Alum Lana Yarosh (continued)

Interviewed by Amanda Stent, Bloomberg

Q: What has been your career path? My start in Computer Science was due to a scheduling error in high school (I was signed up for European History but it conflicted with another course, so they put me in Pascal Programming instead). I found that I really loved the CS approach as a way of thinking and solving problems. I was also drawn to the fact that Computer Science could be combined with almost any other field. So I decided to major in it at the University of Maryland and I explored a few potential double majors as well, eventually settling on Psychology. In my Junior year, I discovered the area of Human-Computer Interaction. After participating in undergraduate research, I was hooked! I applied to a Human-Centered Computing Ph.D. program at Georgia Tech. At first, I thought I wanted to go into industry because I had great industry internship experiences during graduate school. I accepted a position at AT&T Labs Research. It was great to be able to work with such a talented team of colleagues and I learned a lot from the collaborations with experts there. But I also found that I really missed the energy and optimism that students brought to the table. Summer was my favorite time of the year because I would get to work with and advise interns! I did a bit of soul-searching and decided that maybe I should consider going back to academia. After a few months on the job market, I finally landed at the University of Minnesota. So far, it's the perfect fit for me -- I have great students, great mentors, and great peers!

Q: In your current position, what are your goals and the opportunities to make an impact? One of my favorite things about academia is that there are so many different ways to have impact. Of course, there are the usual -- publishing, organizing conferences, and teaching. There are also lots of opportunities to transition work into industry (for example, HP is currently licensing some work from my group), to file patents, and to spin up startups. I definitely want to keep pushing in both scholarly and entrepreneurial directions, but my most important goal right now is to have an impact through mentorship and advising. I want to be known as an advisor who does right by her students and for graduating the next crop of Computer Science superstars! I spend my time accordingly -- I make sure to make time to connect with my students daily, I have a big group, and I am always recruiting graduate and undergraduate researchers to my lab!

Q: Tell us about someone who inspires you and the knowledge they have imparted. My greatest inspiration is my Ph.D. advisor, Gregory Abowd. As any of his students will tell you, he really exemplifies caring mentorship, perspective, and integrity. He taught me to put my students first and how to provide students with opportunities to shine. He also taught me how to pick research problems -- focusing on issues of personal relevance, research novelty, and broader impact. As I get older in my research program, I find myself reflecting more and more on lessons that he imparted.

Q: How do you balance work and the rest of your life? What do you enjoy doing when you aren't working? My favorite thing to do is travel! The academic career is really well-suited for that. Beyond the yearly trips to major conferences in my field, I also get significant periods of time each year without teaching commitments (e.g., summer and winter breaks). This can support longer trips that serve both as opportunities to explore and ways to collaborate on research at other universities. For example, last summer my husband and I spent a month living in Chicago. The year before that, we were able to spend a whole month living and working in Tel Aviv. There are very few jobs where something like this is possible!

I also always make sure to stay strongly connected with my friends, family, and support network. Since most of them are not in Minneapolis, this means making opportunities to travel to connect. My husband and I have a strong core group of friends from grad school. We live all over the country, but we always make sure to spend a week together to celebrate New Years. We've been doing this for over five years now, each time picking a different location to meet up. This year we spent New Years in a cabin in upstate New York, enjoying the fireplace, playing a ton of board games, and taking turns cooking for each other.

Q: There's a lot of talk these days about "AI", data science and machine learning. What challenges should a person wanting to work in both HCI and data science/ML be looking at? Machine learning and data mining are really powerful tools! I myself have been reaching into these domains (particularly recently, as I have begun a productive collaboration with Prof. Arindam Banerjee in my department). I think

Lana and friends celebrating New Years

that the key thing to keep in mind is that these approaches are tools, not ends in themselves. These approaches have the potential to improve so many facets of our lives, but it also may introduce a substantial threat to fundamental human rights like privacy, justice, belonging, independence, and more. A fundamental thread in my research and teaching is in understanding and evaluating technological advances in terms of both the benefits they may provide and the costs they may incur for the people who use them. I think that people seeking to work at the intersection of the two domains should be trained in ML methods but also in a human-centered mindset. They should be ready to work closely with people and communities affected by their research and be willing to change approaches and methods to advocate for the best interests of those groups.

Q: You have quite a strong online presence. How do you maintain this? How does it serve your career growth? I think that online presence is one of the most important tools in one's research arsenal. This is how people discover what you do, how you get connected with opportunities, and frequently is the first experience potential students have with you. My online footprint centers mostly on my blog (http://lanayarosh.com/blog/). I post monthly on topics including the role of HCI in Computer Science, social justice issues in technology, and reflections on teaching and research. At first, I thought of this blog more as a personal place for reflection and cataloguing thought, but over time it has began to attract an audience. My two most viewed posts received over 9000 and over 5000 views respectively, which is definitely more eyes than any of my published papers. I now see it as a great opportunity to disseminate work and expand impact. For students in my group, it is a mandatory part of the process --- when they publish a paper, they have to contribute a blog post to our research group's page. We've had a few of these receive quite a bit of attention.

Q: You participate in Maker Faires and incorporate embodied / situated activities in your research and teaching. How do you think that dealing with the opportunities and constraints of the physical world strengthens your work? I think that embodied interaction defines the next age of computing. As we moved from mainframes to personal computers (PCs) to mobile computing, technology became more and more embedded in our lives, homes, and even on our bodies. As we think about computing, we need to shift our focus from designing sites, programs, or apps that people "visit" and instead consider how technology can best be embedded, embodied, and living in the world along with us. Physical computing, embodied interaction, tangible technologies, etc. allow us to leverage the intuition, skills, and capacity that we currently have for interacting with our world and apply it to our interactions with digital agents. Of course, there are also a number of challenges these approaches introduce. We need to be mindful to keep the interests of people and communities who use these technologies primary on the design agenda.

Lana is part of the GroupLens research center at University of Minnesota, pictured here

Q: You recently attended a CMW for early-career researchers. How did you find out about this opportunity? What did you find most valuable about the workshop? What ongoing relationships or activities have come out of this experience? I have a very supportive department! The department head and 3 or 4 other folks forwarded information to me about the CMW for early-career researchers on the same day! So, I knew that I should really check it out. It was a great experience. My favorite part of it was being able to connect with faculty at multiple points in their career. I like being able to think a couple of steps ahead. So, I loved being able to see not just what is important for me to get tenure but also start thinking about longer-term advancement and impact.

After the workshop, I was able to connect with a few folks more junior than me (swapping grants, etc.) and a few folks more senior than me as well. One of the most valuable things to come out of it was a conversation that I had with an industry colleague from Microsoft Research. We starting chatting about an area of research that we've both been meaning to explore. It turned out that there was a really interesting project in there and we're now in the process of structuring a collaboration on a first investigation that we'll be running this summer!

Q: What advice do you have for Ph.D, students? For new faculty members? Figure out which work activities charge you up and make sure to make time for these. Whether what drives you is programming, experiments, giving talks, teaching, planning research, analyzing data, etc. there are probably ways to structure any project to maximize your involvement in these activities. Then, take time to reflect and express gratitude when you do find opportunities to do what you love. It's still amazing to me how I can get caught up in some painful minutia of the job and it takes a conversation with an outsider to step back and see the larger picture. I've been practicing finding moments to reflect on how much enjoyment I actually get from doing what I do!

CRA-W Alums Elected as Members of the NAE

Membership in the National Academy of Engineering (NAE) is by election based on accomplishment in engineering discipline

Julia Hirschberg
Columbia University

Recognized for contributions to the use of prosody in text-to-speech and spoken dialogue systems, and to audio browsing and retrieval.

Julia currently serves as co-chair of CRA-W.

Katherine A. Yelick
Lawrence Berkeley National Lab
University of California, Berkeley

Recognized for software innovation and leadership in high-performance computing."education.

Katherine was most recently a panelist at the 2015 CRA-W mid-career mentoring workshop.

CRA-W Alums Win Awards

Nancy Amato
Texas A&M
The IEEE RAS Distinguished Service Award recognizes individuals who have performed outstanding service for the benefit and advancement of the IEEE Robotics and Automation Society (RAS).

Nancy is a 2017 recipient of this award "for innovative leadership in the RAS Electronic Products and Services Board and in ICRA and IROS conferences".

Nancy is co-chair of CRA-W.

Ruzena K. Bajcsy
Texas A&M

The National Academy of Engineering Award was established in 1965 to honor an outstanding NAE member or foreign member who has upheld the ideals and principles of the NAE through professional, educational, and personal achievement and accomplishment
Ruzena is a 2017 recipient of this award "for seminal contributions to the fields of computer vision, robotics, and medical imaging, and technology and policy leadership in computer science education and research."

Ruzena is a former board member of CRA-W.

Alum News

Dominique Dalani
California State University, Dominguez Hills

In November of 2016, I was selected as one of thirteen Advancing Women In Technology scholarship recipients. This award's main purpose is to promote the advancement of women in California who are studying and pursuing careers in technology. I have also been selected to attend the 2017 Women In Cybersecurity Conference (WiCyS) in Tuscon, Arizona.

Wendy Fisher
Colorado School of Mines

I am in the last year of my PhD studies at the Colorado School of Mines, working with an interdisciplinary team under the supervision of Dr. Tracy Camp. Our goal is to develop data-driven techniques for the advancement of health monitoring of flood defense structures. In June of 2016, I presented "Crack Detection in Earth Dam and Levee Passive Seismic Data Using Support Vector Machines" at the International Conference on Computational Science in San Diego, California. After competitive selection, I was invited to expand the paper for publication in a special issue of the Journal of Computational Science. I also won the Colorado School of Mines Electrical Engineering and Computer Science Outstanding Research Award.

Lauren Gillespie
Southwestern University

Recently I was chosen to participate in the The Computer System, Cluster, and Networking Summer Institute internship at Los Alamos National Laboratory in Los Alamos, New Mexico. I am excited to be able to work with the High Performance Computing Division where I will be able to expand my passion for computing through hands-on learning about cluster computing and performing real-time research on computer clusters. I am also looking forward to exploring the beautiful state of New Mexico, as hiking and rock climbing are two of my favorite outdoor activities.

DeArtez Grace
Talladega College

My experience with the CREU program has been amazing, it really has open my eyes and expanded my knowledge about cyber crime. I enjoyed blogging and posting about different cyber crimes throughout the world. I plan on going out more into my community and spreading the knowledge behind my research and what I have learned about cyber crime.

Rebecca Hsieh
Western Washington University

As an undergraduate student, I found GHC 2016 to be an extremely rewarding experience. I attended as one of CRA-W's GHC Research Scholars. Being surrounded by so many women and supporters of women in technology was astounding. I attended talks of every variety! The career fair at GHC also provided many opportunities, however, the most important opportunity for me was that I was able to speak to faculty from various schools around the country. After attending GHC, my plans to attend graduate school were solidified. GHC gave me the motivation to continue my undergraduate bioinformatics research. It also gave me a better idea of how to search for graduate schools as well as how I might go about applying to those schools. I am also really excited to announce that the bioinformatics research paper I have been working on has been published by IEEE!

Jingling Li
Bryn Mawr College

I am now writing two theses (one for my Math major and the other for my CS major) and I am going to graduate this coming May. I hope to pursue further education in computer science, I am waiting for results from the graduate schools I applied to.

Kristin Yvonne Rozier
Iowa State University

In 2016 I moved to Iowa State University, where I am an Assistant Professor and Director of the Laboratory for Temporal Logic in Aerospace Engineering. I enjoyed collaborating with my new colleagues to host Midwest Verification Day at ISU!. I am the recipient of an NSF CAREER Award for "Theoretical Foundations of the UAS in the NAS Problem (Unmanned Aerial Systems in the National Air Space).", and a NASA Early Career Faculty Award for "Multi-Platform, Multi-Architecture Runtime Verification of Autonomous Space Systems."

Nikita Tank
Botsfloor

I am a software engineer at botsfloor.com where I developed the site Bot Stash. I recently wrote a post on how to develop facebook messenger chatbots without any coding: https://tutorials.botsfloor.com/how-to-build-facebook-messenger-chat-bot-without-any-coding-4fe42393e2e4#.lkcw8lufm.

Tiara Threadford
Talladega College

I am very grateful that CREU awarded me a research opportunity. The CREU staff were very helpful and responsive whenever we contacted them, I love the topic that we are doing the research on, cybersecurity. That is one of the biggest concerns right now in today's society, I had the opportunity to inform students here at Talladega College of what cybersecurity really is and what it's about. If CREU wants me to participate in any more research with them I will be honored to because of how helpful they were with this research.

Scholarships for Women Studying Information Security

by Jeremy Epstein, SRI International

Now in its sixth year, seven winners of the ACSA / CRA-W / HPE Scholarships for Women Studying Information Security (SWSIS) met at the Annual Computer Security Applications Conference (ACSAC) in Los Angeles on December 5-9 2016. Since its inception, SWSIS has awarded over $300,000 to women studying cybersecurity. SWSIS Scholars attend well known colleges like Carnegie Mellon and Columbia, but also less famous schools like Ferris State, Dakota State, and University of North Texas.

Awards were presented by Jeremy Epstein, managing director of the SWSIS program, and Linda Chung Mahoney, representing Hewlett Packard Enterprise, a major financial sponsor of the scholarship program. The SWSIS Scholars who attended ACSAC are part of a larger group of 16 winners for the 2016-17 academic year. They spent the week attending workshops on digital forensics, car hacking, and industrial control systems, as well as hearing research papers from across the spectrum of cybersecurity including embedded security, applied cryptography, sidechannels, and anti-censorship techniques. While half the attendees are undergraduates, they enjoyed the opportunity to meet with faculty and grad students, as well as industry and government representatives in hallway discussions. There were plenty of opportunities to make new connections over meals, and to enjoy a live jazz performance by the Cal State University Northridge band.

Next year's winners will receive their awards at the ACSAC conference in San Juan PR, Dec 4-8 2017. For information about scholarship sponsorship or scholarship winners, please visit http://www.swsis.org.

Upcoming Events and Deadlines

Apr. 7-8: CRA-W Grad Cohort Workshop - Washington, D.C.

Apr. 18: Virtual Undergraduate Town Hall - Privacy in Today's World with Rebecca Wright

May 22-24: NCWIT Summit - Tucson, AZ

May 18: Application deadline for 2016-17 CREU

Jun. 13: Virtual Undergraduate Town Hall - Planning Motions for Robots, Crowds and Proteins with Nancy Amato

Jun. 15: Proposal deadline for Discipline Specific Workshop program

Sep. 20-23: Mentoring Tracks at the ACM Richard Tapia Celebration of Diversity in Computing - Atlanta, GA

Oct. 4-6: Mentoring Tracks at the Grace Hopper Celebration of Diversity in Computing - Orlando, FL

Rolling: CRA-W Distinguished Lecture Series program

CERP Receives SIGCSE Exemplary Paper Award

CRA's Center for Evaluating the Research Pipeline (CERP) was created by CRA-W's BPC Alliance to perform evaluation of our programs and research on diversity in computing.

A paper from CERP was recently named an "Exemplary paper" in the 2017 SIGCSE Proceedings. New this year, the SIGCSE program chairs recognized a new category of the top 25% of accepted papers as "Exemplary papers", highlighted for their accomplishment of high quality, novelty and broad appeal to reviewers.

The paper, "Examining the Relationship Between Introductory Computing Course Experiences, Self Efficacy, and Belonging Among First Generation College Women," was written by Jennifer Blaney, a Ph.D. student at UCLA and the senior data manager for the BRAID research project, and Jane Stout, director of CERP.

From the abstract: "Computing self-efficacy and sense of belonging are known predictors of motivation and persistence. As such, these psychological states are important to study in order to broaden participation in computing. This study examined the relationship between (a) introductory computing course experiences and (b) self-efficacy and sense of belonging in computing, focusing on differences by gender and college generation status. We found that the relationship between some introductory course experiences and self-efficacy and sense of belonging was strongest among first-generation college women, which reveals the importance of considering women's experiences in light of their additional intersectional identities."

The full paper is available at http://cra.org/cerp/wp-content/uploads/sites/4/2017/02/Blaney-and-Stout-Final-SIGCSE-Paper.pdf.

News from Affiliated Groups:

Indiana Celebration of Women in Computing

by Alka Harriger, Purdue University

The 2016 Indiana Celebration of Women in Computing (InWIC) was held on September 30-October 1 at the Four Points Sheraton in West Lafayette, Indiana. Previous InWIC's were held during the spring, but this year's event began the transition to a fall offering. The reason for the change to a fall offering was two-fold: better weather and better opportunities for internships/full-time jobs.

Through the support of eleven sponsors, including funding from CRA-W as part of the Distinquished Lecture Program (DLS), InWIC raised over $20,000, which supported the attendance of 145 people, including 72 undergraduate students, 31 graduate students, 20 university faculty/staff, and 22 IT professionals. Academic attendees came from Arsenal Tech High School, Ball State University, DePauw University, Indiana State University, Indiana University, IUPUI, Ivy Tech Community College, Purdue University, and Rose-Hulman University. IT professionals came from Apparatus, Cerner Corp, Ciholas Inc., Crowe Horwath LLP, Eli Lilly and Co, General Motors, Liberty Mutual, Neurensic, Raytheon, and USAA.

Undergraduate and graduate students who presented 15 lightning talks and 22 posters gave everyone an opportunity to see the impressive work of female students across Indiana. One of the platinum sponsors, USAA, provided prizes for the top poster and top lightning talk. The winning poster was presented by Miranda Lung, a Purdue University senior, who shared her work on, "Natural Language Processing: Graphing an Ontology." The winning lightning talk was presented by the duo of Izabelle Bystrowicz and Jacqueline Pelletier, both sophomores at DePauw University. The pair shared, "Balancing Your Life and Your Resume."

Attendees listen to Raquel Hill describe how each of them is an eagle among chickens

Attendees talk to recruiters about job opportunities at the InWIC 2016 Career Fair

45 attendees provided feedback by completing the survey that was included in their program. Over 90% of the respondents responded favorably (agreeing or strongly agreeing) to the following statements about the effect of their attendance at InWIC:

- Increased my commitment to complete my current degree program (100% of the respondents said they have or would complete a computing degree)
- Helped me see myself as a computing person
- Positively impacted my professional development
- Made me feel part of a community of women in computing
- Fed my interest in a computing career
- Inspired me to emulate the successful women I saw at the conference
- Increased my network of technical women
- Motivated me to stay in touch with people I met at the conference
- Taught me about opportunities at sponsor companies

Both keynote speakers made the InWIC experience memorable for all. Dr. Raquel Hill, an Associate Professor at Indiana University related her insights using the analogy of being an eagle among chickens. Dr. Carolyn Phillips, the Lead Scientist at Neurensic, shared useful, online resources that showed the beauty of data.

The success of InWIC is due to the tireless voluntary activities of many including, but not limited to the keynote speakers, Day-In-The-Life panelists, proposal reviewers and review coordinator, judging coordinator, speaker coordinator, school coordinators, and our student assistant.

The Distinguished Lecture Series is proud to support the next InWIC by providing Raquel Hill and Carolyn Phillips as keynote speakers.

Profiles in Computing: Tanya Amert

by Shar Steed, CRA Communications Specialist

Tanya Amert, a computer science Ph.D. student at University of North Carolina, Chapel Hill, found herself drawn to computer science because she enjoyed figuring out how things work. At 13 years old, she was a big fan of the Neopets website and online community. Amert noticed some users had customized homepages, and her interest grew even more. Despite not knowing any HTML at the time, she learned how to look at the source code and figured out how to change the color of the scroll bar within the CSS. "I discovered that specific lines of HTML made that happen. And I thought that was mind boggling and awesome."

Computer science was not offered at her high school, so as a freshman at MIT, she enrolled in her first programming class and it "completely clicked" for her. After graduating Amert, spent three years in industry working at Microsoft. But she began to feel like the projects she was really excited about were coming out of Microsoft Research. So, she got in touch with a contact there who told her if she really wanted to be working on the cutting edge of research, a Ph.D. was needed. Amert then felt like a Ph.D. would open more doors than they would close, and began applying to Ph.D. programs.

Amert's specialty is in computer graphics, specifically physically-based simulations. She first took an interest in cloth simulation after watching extra features on a Shrek DVD. "I was so fascinated that they had these tools to model characters and improve the visualization." It inspired her to take a computer graphics class in her junior year of college, and this is the focus of her Ph.D. research.

In undergrad, Amert did not participate in many women in computer science activities because of her heavy course load. But after experiencing some isolation in the working world, she returned to school with a personal commitment to become more active in the community. At Microsoft, Amert would often be one of only two female engineers in a room of 15-20 people, and began to feel the disparity. So when she was invited to speak at CRA-W's **Virtual Undergraduate Town Hall (VUTH)** this summer, Amert gladly accepted and shared her experiences with the participants. VUTH events are webinar sessions designed to give students the opportunity to learn more about a specific discipline in computer science and also ask the host and speaker mentoring questions to help them prepare for graduate school.

During the webinar, Amert conducted a research presentation titled, "Accelerated Cloth Simulation for Virtual Try-On." She described the hosting experience as both "intimidating" and "exciting". It was intimidating to know that the audience was tuning in from around the globe and that she may influence the trajectory of a young person's career. It was exciting because the participants are on the cusp of a big life step, and Amert vividly remembers her experiences applying to graduate school. "It was also really motivating to be able to share my insights with other people because I've already been through the experience."

Presenting at the webinar also helped her practice how to explain her research in a high level way to broader audience. She presented the same set of slides to her mother, who doesn't have a technical background, to help her mother understand specifically what her research is about.

Despite successes, Amert also battles with feelings of imposter syndrome. To combat this, one thing she finds useful, especially when she starts to feel discouraged or like she doesn't belong, is to focus on her positive outcomes. Amert was previously a tutor and kept her course evaluations, so she often looks back at her positive reviews when she gets discouraged.

Profiles in Computing

Part of the mission of the Computing Research Association (CRA) is to mentor and cultivate the talent development of computing researchers at all levels. Several programs led by the Committee on the Status of Women in Computing Research (CRA-W) focus on increasing gender diversity in computing. This new column, "Profiles in Computing," showcases successful women in computing, who donate their time and energy to mentoring future generations and strengthening the community of female computing researchers through CRA-W initiatives.

About CRA-W

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CRA-W is an action-oriented committee of the Computing Research Association dedicated to increasing the access, retention, and advancement of women in computer science and engineering research and education, including undergraduate and graduate students, faculty, and industry and government research labs. See more about CRA-W and its activities at http://www.cra-w.org.

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CRA-W encourages individual contributions from alums of our programs and other CRA-W friends. Because CRA-W programs have touched so many lives, this initiative is an outlet for alums and friends to make contributions toward reaching the next generation of women computer scientists and engineers. To donate to CRA-W, visit http://www.cra.org/cra-w/donate/.