Workshop on Supporting Diversity in Systems Research (Diversity '08)

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Summarized by Ann Kilzer (akilzer@cs.utexas.edu)

- ***Succeeding in Grad School and Beyond***
  Alexandra (Sasha) Fedorova, Simon Fraser University; Claris Castillo, IBM Research; James Mickens, Microsoft Research; Hakim Weatherspoon, Cornell University

Alexandra Fedorova advised students to work towards an ideal CV, looking at CVs of recently hired professors for ideas. A good CV has publications in top conferences or journals, and quality and impact outweigh quantity. Fedorova also encouraged students to imagine the final product of research and to write as much of the paper as possible before building anything. Writing helps thinking, and this approach helps researchers develop methodology, review background material, and find gaps in their approach. Her final advice was to be ready for adjustment—research can be risky and may not turn out the way one intends.

Hakim Weatherspoon explained that his path had been filled with sharp turns, playing football as an undergrad, getting married in graduate school, and raising children. A postdoctorate inspired him to pursue an academic career. Hakim noted that being in graduate school is very different from being an undergrad. Grades matter less, but one is expected to become an expert in his or her field and learn from a variety of sources. He emphasized the importance of collaborations, noting this could be a challenge for underrepresented students. Hakim observed that "everyone has an agenda." Finally, he told students to "own their own career"—we are each responsible for our own success.

The section ended with James Mickens' presentation, in which he stressed that students should not fear adversarial growth—a lot can be learned from bad reviews. He encouraged students to network at conferences and not just associate with underrepresented colleagues. Networking can help lead to internships, teaching, or collaborative research. Regarding the thesis, Mickens noted that grad school was about producing science, and that students shouldn't let the thesis trip them up. Mickens ended with an assortment of random systems advice, which included learning a scripting language, not fearing math, looking for interesting problems outside of computer science, and interning in industry.

In the Q&A session, a student observed that international students have different views on authority and asked how to reconcile this when working with an advisor. Hakim

recalled his own experience with his advisor, who told him that he could not graduate until Hakim confronted him as an equal and voiced his disagreement. Every advisor has his own agenda and wants students to further that; however, students must also consider what is best for their career. Hakim stressed compromise in the advisor-student relationship, noting that the student should learn to act as a colleague. Finally, he warned students not to focus too much on being a member of a minority, because that can lead to mistakes.

- ***Technical Talks***
  Andrea Arpaci-Dusseau, University of Wisconsin—Madison; Helen Wang, Microsoft Research

Andrea Arpaci-Dusseau explained her work on gray box systems, semantically smart disks, and IRON filesystems. She advised students to keep their eyes open for new observations and unique approaches. What is good research? According to Arpaci-Dusseau, research addresses problems general to many systems. Good research begins when one initially doesn't have the terminology to describe what one is thinking about.

Helen Wang presented her work on Web browser security. Wang showed the evolution leading to browsers as a multi-principal OS. Her research seeks to create a better security model, with multi-principal protection and communication abstractions in the browser. As for future research, Wang seeks to build a browser as an OS, enable browser support for robust Web service building, analyze Web service security, and investigate usability and security with the mobile Web.

- ***Career Paths in Systems Research***
  Bianca Schroeder, University of Toronto; Ramón Cáceres, AT&T Labs—Research; Jeanna Matthews, Clarkson University and VMware

Bianca Schroeder contrasted work in academia and research labs. Academic responsibilities include working with graduate students, teaching classes, applying for grants, and traveling to give talks. There is lots of freedom in the research, as well as variety in daily activities. Professors work closely with students, acting as teachers and mentors. Typical requirements of industry researchers include working with co-workers and interns. The research often has less freedom, as there is a focus on products. Industry researchers don't have to write grants but must sell their ideas internally.

How should one decide which route to take? Schroeder suggested trying out internships, teaching, and writing grants during one's graduate career. She advised improving one's name recognition by giving talks, attending conferences, or doing internships. Advisors can help set up talks at other schools. Schroeder ended with advice about selling oneself, noting the importance of strong writing and speaking skills.

Ramón Cáceres shared his challenges with self-doubt, noting that it is important to seek advice and support. He found strength in things he was certain about. He found satisfaction in developing or redesigning things that real people could use. Regarding diversity, Cáceres stressed that one's differences add value to the field. Diversity isn't just about fairness, but also about providing perspective from underrepresented user communities. Cáceres also contrasted work for research labs and startups. In research labs, one has the freedom to pursue multiple areas of interest. In startups, research is more likely to affect actual products. He ended by advising students to have confidence, learn from criticism and move on, and seek second opinions.

Jeanna Matthews described the challenges of working at a small university. As a graduate student at Berkeley, she grew accustomed to working in a large team. She taught briefly at Cornell and recalled working with well-prepared Ph.D. students, teaching one course per semester, working with other systems professors, and having access to teaching and administrative support. Matthews contrasted this with her current position at Clarkson University. Now she teaches two courses per semester and works with undergraduates. She has found it useful to "build a pipeline" so that every student learns and teaches other students. Matthews spends a lot of time mentoring and teaching, which leaves less time for research. She finds her work at Clarkson very rewarding, and she advises anyone who enjoys teaching and working closely with students to consider a position at a small university.

- ***Making the Best of an Internship in Systems***
  Lin Tan, University of Illinois at Urbana-Champaign; Dilma Da Silva, IBM Research

Lin Tan, who interned at IBM Watson and Microsoft Research, recommended finding internships by using advisors' connections, asking colleagues for advice, visiting career fairs, and searching online. Before the internship, Tan advised asking for a reading list. Because internships are fairly short, it's a good idea to talk with one's mentor ahead of time. Tan also emphasized setting expectations and working toward goals.

Dilma De Silva described benefits of internships, including honing skills, gathering information for one's thesis, and broadening one's research experience. For successful interviews, do homework, be able to discuss general ideas as well as specifics, and develop an "elevator speech" to summarize one's research. De Silva also emphasized interviewing the interviewer by asking questions about the position. Sometimes internship decisions have nothing to do with performance; rather, the internship may simply be the wrong fit. All interviews should be viewed as practice.

At the internship, students should track their progress, understand expectations, and find a mentor outside their group. Internships are short, so it's important to make plans and adjust them as necessary. Finally, De Silva noted that it's better to seek internships from different companies rather than returning to the same position in the future.

In the Q&A session, a commenter asked whether software development or research internships are better. De Silva noted the importance of asking lots of questions during the interview. Both experiences can be valuable, but it's important to be sure the internship is what you want.

OPEN DISCUSSION

Life as a System Researcher: Challenges and Opportunities

De Silva shared her experiences at the 2008 Grace Hopper Conference, including a panel discussion on the "imposter syndrome": underestimating oneself, doubting one's qualifications, or believing that everyone else is working harder and faster. The panelists listed tips for overcoming self-doubt. It's important to believe in oneself and to remember past successes rather than dwelling on failures. They advised speaking up, finding support, and faking confidence when necessary. Most importantly, we are responsible for making ourselves feel like impostors—we create our own experience.

An open discussion followed,. Fedorova posed a question on the work-life balance in graduate school. One commenter shared her experience of raising a child while in graduate school: "How do you manage? You just do. . . . When it comes down to it there are some basic things in life you can't put aside." Other participants shared stories of raising children while in graduate school. Regarding personal relationships, one commenter noted the bursty nature of research and the importance of letting friends and family know about work schedules.