~~Planning~~ Your Career Advice

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CRA Mentoring Workshop
Washington, DC
27 February 2012

Three General Career Tips

- Know Thyself
  - Strengths and weaknesses
  - Be honest with yourself
- Be passionate about your work
  - Enjoy what you do
- Be willing to work hard

Academia 101

- Evaluation Criteria
  - Research, Education, Service
- Path
  - (Post-doc) → aP → AP → Tenure → Full
    - At some schools AP and Tenure come at the same time
  - Along the way and beyond
    - *Opportunities* for administrative and service positions in academia and government; sabbaticals and leaves
- Impact is what matters
  - Quality, not quantity
  - Ideas and people (students) are your legacy, not papers.

Doing Research: Picking a Problem

- It should interest you
- It should interest others
- Nature of research will change throughout your career
  - Rule of thumb: Ensure progress/results within 3-5 years
- Be ambitious and bold

- Look for intersection between areas for opportunities and new questions
- Don't be afraid of interdisciplinary research

Doing Research: Finding a Solution

- Work examples
- Simplify, simplify, simplify

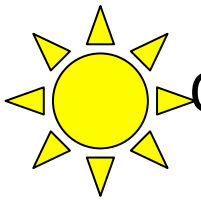
- Scientific method: Three Pillars of Science
  - Experimental: Hypothesis, design experiment, run, evaluate, iterate
    - Microbenchmarks, real benchmarks
    - Simulation
  - Theoretical: Solution is proof and algorithm or impossibility result
  - Computational
    - Algorithmic, software
    - Data-driven (Jim Gray's "Fourth Pillar")

Doing Research: Mechanics

- Seek feedback
  - Talk about your work with colleagues, students, at conferences, from industry
- Keep a research diary
  - Always be writing
- Work with others
  - Colleagues, post-docs, graduate students, undergraduates, visitors

Education

- Take educational responsibilities seriously
  - Teaching; developing new courses, curricula, and degree programs; advising graduate students
- Find balance between teaching and research
  - You can spend 100% of your time on teaching and still not do the best you know you can
  - Time does not go into giving lectures, but in making up homeworks, labs, exams, and in managing staff and infrastructure



Online learning is a hot topic now

- What is the role of the professor in higher education?

Communication Skills Are Critical

- Networking
  - Always ask questions at conferences
  - Introduce yourself to senior people in field and program directors at conferences and workshops
  - Meet colleagues on campus
- Speaking
  - Know your audience
  - Practice important talks
- Writing
  - Know your audience
  - Publish in top conferences and top journals
  - Workshops are for getting ideas out quickly and getting early feedback

Academic Career Advice

- Don't worry about tenure
  - Just do good work and tenure will come
  - Schools go through a lot of trouble to hire you. They want you to succeed
- Make sure you have a "buddy" on the faculty and mentors on campus and elsewhere
  - Your mentors will change over your career
- Take sabbaticals
  - Leave home: go to other schools, industry, government, abroad
  - There is never an ideal time, just do it!
- Make time for yourself and your family

Service: You are Part of Two Communities

Research Community,

Early on:

- Program committees
- Panel or ad-hoc reviewer for funding agency
- Reviewer for journals

Eventually:

- Program director, division director, assistant director for funding agencies
- National committees, e.g., ACM Council, CRA, CSTB, DARPA ISAT, NSF CISE AC

University Community

- Program, Department, School, University committees

Online resources

- Dave Patterson's Non-Technical Talks
  - http://www.cs.berkeley.edu/~pattrsn/talks/nontech.html
- Jeannette Wing's Tips on Interview Process
  - http://www.cs.cmu.edu/afs/cs/usr/wing/www/talks/tips.pdf
- Jeannette Wing's "Twelve Tips for Department Heads from an NSF Perspective"
  - http://cacm.acm.org/blogs/blog-cacm/54177-twelve-tips-for-department-heads-from-an-nsf-perspective/fulltext
- Advice about everything:
  - http://people.engr.ncsu.edu/txie/advice.htm

Thank You!

Twelve Tips for Department Heads from an NSF Perspective

1. Talk to NSF program directors
2. Take reporting requirements seriously
3. Learn the basics of the NSF organization. Ditto for other agencies
4. Sign up for the NSF and CISE mailing lists
5. Mentor junior faculty in writing CAREER and regular NSF proposals
6. Learn the basics of the federal budget process
7. Lead your faculty in building collaborations
8. Encourage undergraduates to do research in computing
9. Encourage seniors and first-year graduate students to apply for an NSF Graduate Research Fellowship
10. Encourage faculty to serve as reviewers for NSF
11. Encourage mid-career and senior faculty to serve as "rotators" to NSF
12. Encourage bold, creative, visionary thinking