HPCSS MENTORING: CAREER PATHS

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I. SESSION OVERVIEW

I.1. SCHEDULE

20 min	Career Paths Talk
3x7 min	Returning Mentor Career Talks
Remaining Time	Break into mentoring groups and go to lunch

.2. DISCLAIMER

- This is a *quick* talk, with links to some other resources.
- You don't need to know exactly what you want to do, but it's good to have an idea of the possibilities.
- Talk to the staff here about their career experiences and see which options appeal to you.
 - This makes a good topic for your one-on-one discussions

I.3. GENERAL CAREER PATHS



Research Software Engineer

?. ACADEMIA

2.1. ACADEMIA

- Teaching at a college or university
- Each institution has a difference emphasis on 3 areas:
 - Teaching Responsibilities
 - Research (winning grants and writing publications)
 - Community Service (departmental roles, conference & journal organization)
- Some initial funding comes from the school, but then you must find more money

2.2. ACADEMIC CAREER PATH (US)

itles may be different in different countries

- 1. Post Doc (optional)
- 2. Assistant Professor, tenure track
- 3. Tenure
- 1. Full Professor

2.3. ACADEMIA PROS

- You get to work with students through teaching and research
- You get to build your own lab
- Once you have tenure...
 - You are "unfireable and almost rich"
 - Can explore any research topic you want (*if you can get funding*)
 - Long term career path and stability

2.4. ACADEMIA CONS

- You have to work with students, teaching whatever classes need to be taught
- Getting tenure is difficult
- You have to move to wherever the school is

2.5. HOW TO GET STARTED

- Try teaching / being a teaching assistant
- Try mentoring undergraduates, new graduate students
- Talk to professors in your department
- Talk to Scott Callaghan, Orly Alter, Erwin Laure, Brian Jewett

3. INDUSTRY

3.1. INDUSTRY

- Beholden to customers, must create products to sell
- Can work on government contracts / grants

3.2. INDUSTRY CAREER PATH

- Varies by scientific field & company
- Larger companies typically have well-defined career paths with a specific progression of job titles
- May look something like:
 - 1. Individual contributor
 - 2. Project lead
 - 3. Technical Expert

3.3. INDUSTRY PROS

- Pay is usually higher than academia
- Company perks: free food, stock options, bonuses, sabbaticals
- May have the freedom to work remotely or more options of where in world/country to work
- You work with/for the customer
- Higher turnover, you can have a more varied career and change roles every few years

3.4. INDUSTRY CONS

- You have to make a product / make a profit for the company
- Less freedom to do "pure" research
- You work with/for the customer
- Company culture may not have the best work/life balance

3.5. HOW TO GET STARTED

- Look for summer internship programs
- Go to career fairs / recruiting sessions
 - at your university
 - at conferences
- Talk to ??????

I. SUPERCOMPUTER CENTER

I.1. SUPERCOMPUTER CENTER

- Could be associated with a University or Government Research lab
- Funding could depend on current political climate or vary depending on your current project
- Best of both academia and industry worlds:
 - No required teaching responsibilities
 - option to work with summer interns
 - possibility to do HPC training sessions
 - Understand basic research activities, such as publication and conference attendance

I.2. SUPERCOMPUTER CENTER CAREER PATH

nany paths available, depending on role

- 1. Individual contributor; Consultant/user support; Trainer
- 2. Team Lead or Project Lead
- 3. Management <u>or</u> Technical Expert

I.3. SUPERCOMPUTER CENTER PROS

- Opportunity to do a specific role, such as user support or application development
- Opportunity to do "pure" research/get grants
- Some labs may have a "mission"
- No required teaching responsibilities
- Culture typically has good work/life balance

I.4. SUPERCOMPUTER CENTER CONS

- Government bureaucracy
- Federal funding, not as many perks as industry
- Not as well paid
- Employees are typically there for a long time, some can become "Retired In Place"
- Career path may be limited, depending on size/needs of the center

I.5. HOW TO GET STARTED

- Look for lab people in your research area, ask about an internship
- Look for summer internship programs
- Research if there are citizenship preferences for different labs
- Talk to Elsa Gonsiorowski, Ilya Zhukov, Ann Backhaus

5. RESEARCH SOFTWARE ENGINEER (RSE)

5.1. RSE

- Could be a associated with a (Research) University or Research Lab
- Bring software engineering skills to research projects

those who regularly use expertise in programming to advance research. This includes researchers who spend a significant amount of time programming, full-time software engineers writing code to solve research problems, and those somewhere in-between. We aspire to apply the skills and practices of software development to research to create more robust, manageable, and sustainable research software.

5.2. RSE CAREER PATH

- Can be a domain scientist who picks up computer science / software engineering expertise
- Can be trained computer scientist who, over the course a career, supports research software in different domains
- Gaining more recognition as its own career path

5.3. RSE PROS

- Diversity of projects, improves the quality of scientific research
- May have the potential to do "pure" research / get grants

5.4. RSE CONS

- Funding for RSE's has traditionally been somewhat volatile, but "RSE" as a career path has been getting more recognition in recent years.
- May have to fight for full recognition for contributions
- Career path may be ill-defined

5.5. HOW TO GET STARTED

- Join an RSE society. They have job postings and host conferences.
 - Society RSE (Mostly UK-based)
 - <u>US RSE</u>
- Continue to improve software engineering skills, many online courses
- Talk to Andrew Kirby, Weronika Filinger

5. RESOURCES

5.1. RESOURCES

- **<u>A PhD is Not Enough!</u>** by Peter J. Feibelman
- **Tomorrow's Professor** by Richard M. Reis
- **<u>The Psychologist's Guide to an Academic Career</u>**, by Harriet L. Rheingold
- **<u>Career Next Steps</u>**, Elsa Gonisorowski
- **The Postdoc: A Special Kind of Hell**, Adam Ruben
- Illustrated Guide to a PhD, Matt Might
- I did a PhD and did NOT go mad, Richard Butterworth

7. CREDITS

Created with <u>Emacs</u>, <u>Org Mode</u>, and <u>RevealJS</u> using the <u>Robot Lung</u> theme). /iew the <u>source</u>.

3. RETURNING MENTOR LIGHTNING TALKS

After which, we will breakout into mentoring groups and head to lunch

peaker notes

peaker notes