Your CS Career 2014

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May 6, 2014

Coursework

Coursework at Cornell

- ▶ Not all courses are created equal!

- ▶ Put the most work into the CS Core: 3110, 3410, 4410, 4820!

- ▶ While other classes might focus on topics you're more interested in, these are your core competencies.

Choosing Courses

- The first digit is not always correlated with difficulty

- Don't be afraid to explore subjects you aren't familiar with
  - Common: I thought I would like X but I didn't, I never tried Y but now I really like it.

- Don't lock yourself in to just one vector!

Courses of Interest

- **Theory**: 4820, 4810, 6820, 6810, 6850
- **PL**: 4110, 6110, 6118, 4120/4121
- **Systems**: 4410, 3410, 6410, 4411 highly recommended
- **AI**: 4700/4701, 4740, 4780, 4670
- **Math**: analysis, algebra, combinatorics, logic, topology
- **Info**: data-driven web apps, human computer interaction, rapid prototyping

Useful Things at Cornell

- Join a course staff

- Project teams

- Association of Computer Science Undergraduates

- Women in Computing at Cornell

- BigRed//Hacks

- The (extended) CS community (ISSA, CUxD, POPSHOP, Cornell Opensource)

- Open Source Projects (Firefox, GNU, etc.)

- However, this isn't highschool: don't spread self too thin

Industry

Big Company

- ▶ Experiences can be mixed

- ▶ Generally hire students with a breadth of skills

- ▶ Even though you will probably work on one type of thing (e.g. iOS, compilers, systems, front end)

- ▶ Advantage: Lots of resources, perks, housing, other interns, established intern and orientation programs

- ▶ Disadvantage: You can fall through the cracks

Startups

- ▶ Often looking for generalists
    - ▶ R&D, back-end, front-end, mobile, all of the above
- ▶ Often looking for very polished engineers
    - ▶ They won't have much time to train you
- ▶ Usually a fast, hectic environment with longer hours
- ▶ If you're good at what you do, then you'll actually have more job security than in, say, the financial industry. And in the case that the company does run out of money, you'll have no trouble finding your next gig.
- ▶ Be prepared to take a salary cut for some significant equity and the chance to learn

Timeline

- ▶ Find job opportunities and apply (fall semester best)

- ▶ Interview (a few weeks later)

- ▶ Choose from among your offers

Applying

- ▶ Go to career fairs (happens *early* in the year) & use CCNet

- ▶ Join the ACSU mailing list and Facebook group

- ▶ Research companies on the internet, don't be afraid to email ones that you're interested in even if they don't have job postings

- ▶ Information sessions

- ▶ Past experience most important

- ▶ High GPA can help you get to the interview stage
  - ▶ Side projects are awesome and can generate inbound recruitment
  - ▶ Mention relevant courses

Interviewing

- ▶ Review data structures, algorithms and techniques

- ▶ Practice, practice, practice

- ▶ Trade questions with friends, make it a game

- ▶ Fail a few interviews first
  - ▶ Interviewing well takes practice and experience
  - ▶ Even Superstars fail interviews, many times!

Choosing Among Offers

- ► Location

- ► Salary, Stock, Signing Bonuses

- ► Type of position and technologies used

- ► Company Size and Culture

- ► Negotiate!
    - ► Chance at larger salary with minimal effort ($5-$20k more in some cases)
    - ► Phrase nicely in a way they can decline without rescinding offer, along the lines of: "I'm really interested in working at your company but I also have offer X from company Y... it would make my decision easier if you could offer me $$Z$ more"

Graduate School

Graduate School

The common options:

- ▶ M.Eng in CS at Cornell

- ▶ M.S. in CS

- ▶ Ph.D. in CS

M.Eng. in CS at Cornell

This is primarily a terminal degree targeted at industry.
What it entails:

- An additional year (or semester) at Cornell

- A large project or independent research

Why you should do it:

- You want skills from extra advanced courses

- You want to improve your job prospects

- You want a higher starting salary in the industry.

M.S.

These are typically two year programs that are likely targeted at industry, but can also lead to a Ph.D.
What it entails:

- ▶ Usually significant coursework component

- ▶ Also could be research-focused MS ending in thesis

Why you should do it:

- ▶ You want to significantly improve the breadth and depth of your CS knowledge through more classes and/or research.

- ▶ You're thinking about doing a Ph.D. but didn't do much/any undergraduate research.

Ph.D.

Best described in one word: **research**

What it entails:

- ▶ Likely 5-6 years of primarily working on research

- ▶ Coursework component typically quite small

Why you should do it:

- ▶ You really love research and/or are interested in pursuing a career in academia or an industry research lab. (But can also help for normal software development)

Preparation for a Ph.D. Program

As a sophomore or junior, just do research!

- ▶ Finding a professor
    - ▶ Course you enjoyed
    - ▶ Check webpages, send emails
    - ▶ Don't be discouraged if you don't get replies
- ▶ Make sure you're making meaningful contributions
- ▶ Work towards a publication
- ▶ Let professor know from beginning you are interested in applying to PhD (they will work more to ensure two above)

Applying to a Ph.D. Program

Application requirements (roughly by importance):

- ▶ Three letters of recommendation
- ▶ Statement of purpose (**research statement**)
- ▶ Honors/publications (optional)
- ▶ Transcript
- ▶ GRE scores (general only, don't take CS subject)

Also, apply to fellowships:

- ▶ Looks good
- ▶ Possible to be admitted without funding

More information on earning a Ph.D. in CS

The best people to ask about the Ph.D. journey are those who've already completed it. A few useful resources:

- Document out of CMU covers all the bases, from deciding whether a Ph.D. is a good choice to succeeding as a graduate student.

  - http://www.cs.cmu.edu/ harchol/gradschooltalk.pdf

- Video from Cornell's own Ross Tate debunking common misconceptions about the Ph.D.

  - https://www.youtube.com/watch?v=HkmlqeeBbZ0

- Video from Philip Guo describing the Ph.D. grind

  - http://vimeo.com/80236275

Questions?