Finding Your Dream Job with a PhD

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my background:

• Assistant Professor at MIT since 2017 (almost 3 years now!)
• I’m from Germany where I also did all my degrees (including PhD)

what I do in my job:

• do research with a group of ca. 20 students (8 PhD+ Masters/undergrads)
• raise money from grant proposals (annual budget ca. 1 million dollars)
• teach two courses per semester (both undergrad, 300 students + 60 students)
• conference service, university service, outreach
• recommendation letter writing, invited talks….
• good news: much of this is my own choice (or yours once you get there :))
Raquel Romano

What I do:

- Software engineering & architecture; product, people, and project management; strategic planning

Past:

- Lawrence Berkeley Lab, Google, US Digital Service
- PhD/MS Computer Science (MIT AI), BA Math (Harvard)

Current:

- Building a startup to connect people who are passionate about their hobbies and interests

[Image of Raquel Romano]
Deb Agarwal

Education: PhD/MS Computer Eng (UCSB)  
BS Mech Eng (Purdue)

Past role: General Motors Engineer

Current: Senior Scientist – Berkeley Lab

What I do:

- Lead research projects
- Lead data management efforts supporting science
- Manage a department (~48 people)
What is your *dream* job?

What matters the most to you about your job?
Some questions to ask yourself

● What kind of work do I want day-to-day? teaching, thinking, coding, inventing, architecting, designing, collaborating, brainstorming, writing, planning, speaking...

● In what direction do I want to develop and grow?

● What do I want to be poised to do next?

● What should I learn?

● What do I want this job to prepare me for?

● What are my best types of contributions?

● Where do I want to live?
What are some other factors?
Faculty - one of the most **rewarding** jobs you will ever have!

but also one that is incredibly **tough** for the first 2-3 years…
Tech industry - build things that millions of users rely on every day

The accessibility team helping make our products work for everyone

**Teamwork**: The point is to create something great together and not care who gets credit
National Lab - Making a difference, teamwork, opportunities, travel and location
Getting Your Dream Job
Types of roles

Industry
- Engineering: Generalist, Front End, Back End, Full Stack, Mobile, Security, Machine Learning, DevOps, Data, ...
- Research: Research Scientist, Data Scientist, Quantitative Analyst

Academia
- Professor or Faculty at research university
- Research scientist or lecturer (teaching optional)
- Professor of practice or teaching faculty

National Labs
- Postdoc
- Research Scientist/Technical Staff
- Software engineer
Applying for Jobs

Your network will matter. Be known.

○ Volunteer at local events and conferences.
○ Go to talks by people from industry and academia visiting your school. Meet with them.
○ Give polished presentations at conferences.
○ Participate in networking opportunities at conferences.
○ Stay in touch with school alumni.
○ Attend events: GHC, career fairs, meetups, workshops, CRA-WP
○ Meet individuals who are hiring for their teams
Engineering Roles: Application Stages

- Resume preparation
- Referrals help
- Phone or video screens
- On-site Interviews
- Offers (and rejections)
Engineering: Resume and Referrals

Resume

- Separate school project work from internship work
- Include outside projects, github repos

Referrals

- Smaller companies and teams may prefer hiring “in-network”
- Larger companies: employee referral bonuses
- The Regular Way: <company>.com/jobs
Engineering: Technical Phone Screen

- **Company perspective:** “Should we bring this person in for an on-site?”

- **Practice coding**
  - On your own: write working solutions to practice problems in a real language (not pseudo-code)
  - Implement basic algorithms and data structures
  - Mock interviews with engineers who regularly interview
  - Practice on a whiteboard
  - Practice in a collaborative code editor: CoderPad, CodePen, repl.it (even a plain old shared doc)

- **Do your homework**
  - Research the team/group/company: generalist or specialist role?
Engineering: Why Am I Being Asked to Code?

- Companies need to build stuff.
- Writing scalable software for complex problems is hard.
- You may need to take a new approach or technology from the academic literature and implement a solution that works on large-scale real data.
- Earn your chops before moving into more strategic role.
- If you think coding is beneath you, don’t apply for an engineering role!
Engineering: On-site Technical Interview

Congratulations! This company has high hopes for you (otherwise they wouldn’t bring you in!)

Things to ask beforehand:

● Will I be giving a talk? Discussing my thesis work?
● Will I be doing whiteboard interviews? A longer coding exercise?
● Will I be doing remote interviews with another office?
● List of people I’ll be talking to? (may or may not be possible)

Same prep as for technical phone screen but do more in-person mock interviews and whiteboard practice
Engineering Role: Lunch, Dinner, End of Each Interview and Phone Screen

● Interviewer: “Do you have any questions for me?”
● Yes: always have some interesting questions ready.
● The more specific to the company/team, the better.

● Be curious about
  ○ the problems the team is trying to solve
  ○ the team dynamics
  ○ the solutions they’ve chosen or are considering
  ○ the space and ecosystem the work fits into
Rejection? Lots of talented people at a well-known company were rejected the first time they applied. Don’t let it define you.

Got an offer? Yay! How to evaluate or negotiate?

- Know your priorities: base vs. equity vs. bonus vs. perks
- Passion, People, Pay: ideally have all 3, but which matters most to you?
- Ask about leveling and promotion, not just compensation
- Take some time to decide but communicate consistently while considering.
Engineering: Salary Questions

- Research market rate for type of role, location, size of company, stage of funding, seniority of candidate.*
- Ask what the company’s salary range is for the given level (may not get an answer)
- *You* get to decide how specific to be when asked what your compensation needs are. Don’t need to be exact but can’t completely ignore the question.
- Asked about competing offers?

  “The best way for me to understand how you value people is to hear your offer unbiased by info on competing offers. The highest number is not my goal, but the best understanding of how your company thinks is. Your offer gives signal that nothing else can replace.”

  Mark Hedlund  https://twitter.com/marcprecipice/status/991846451792629761

* Don’t trust everything you read on reddit, quora, teamblind, etc.
how to apply for Academic and National Lab Research jobs
Academia and National Laboratories

- Jobs posted
- Apply
- Skype interviews
- Campus invitations
- On-campus interviews
- Offers
- Negotiate
- 2nd visit
this is a one-year long process:
#1 prepare job materials
search committee:

- 4-8 people from the department
- don’t necessarily have *your* subarea background
- they preselect the applications / decide who gets campus/lab interviews
- often consult their subarea person
- (or neighboring subarea if they don’t have yours)
application materials

- you can download Stephanie’s here (I keep the link on the next slides):

typical documents:

- Cover Letter (1-2 pages)
- CV
- Research Statement (1-4 pages)
- Teaching Statement (Academia only) (1-2 pages)
- (Diversity Statement) (1 page)

which one do they read first?

Example: https://bit.ly/2kEajO1
ask friends who just got a job

- but take their materials with some caution
- read the ‘professor is in book’ for more info

buy this book
and read her blog!

(I will write one when I have tenure ;))
#2 finding recommendation letter writers

- June: prepare job materials
- July: find recommendation letter writer
- Aug: prepare job talk, abstract
- Sept: apply
- Oct: jobs posted
- Nov: skype interviews
- Dec: campus invitations
- Jan: on-campus interview
- Feb: negotiate offers
- Mar: 2nd visit
how many letters do I need?

- up to 5 letters! (most often 3 letters)
- notify letter writers at least 2 months ahead (June/July)
- don’t be afraid to ask people if they want to be your letter writers
Selecting Letter Writers

- make sure other people know your letter writers
- well networked individuals who know your work well
- bigger coverage if letter writers have slightly different backgrounds/networks
- example from me: hiring PhD students
letter writers need to be reliable!

- they upload/send the letters, not you
- if they don’t upload/send, your application is incomplete
- Assistant may handle it for them

Note: For National Labs, letters are requested only if you pass the first round
#3 prepare job talk

- Jobs posted
- Prepare job talk, abstract
- Find recommendation letter writer
- Prepare job materials
- Skype interviews
- Campus invitations
- On-campus interview
- Offers
- Negotiate
- 2nd visit
Job Talk

• has to appeal to broad Computer Science audience
• don’t use lingo from your subfield!
• why would a theory person care about your work, why a database person, why a machine learning person? why is it important?
Do not go overtime! (40 min max)

- talk slot is 60 minutes
- At MIT we start 5 min late, end 5 min earlier (people may have to go to other meetings)
- That’s 50 min if everyone is on time!
- Your talk: 40 min + 10 min Q&A
#4 finding job postings

- jobs posted
- prepare job materials
- find recommendation letter writer
- prepare job talk, abstract
- apply
- skype interviews
- campus invitations
- on-campus interview
- negotiate offers
- 2nd visit
Job Mailing List

- CRA mailing list

Faculty Positions

Professional  Charlotte, North Carolina  Posted 3 months ago  Expires on: –

UNC Charlotte
Department of Computer Science

The Department of Computer Science at the University of North Carolina at Charlotte (http://cs.uncc.edu) seeks candidates for multiple positions at the rank of assistant or associate professor:

1. Data management (scalable/mobile/web/crowd-sourced data management, VLDB, data warehousing, knowledge discovery), computational statistics (exploratory methods, analysis of very large datasets, stochastic modeling, and other computationally-intensive methods) or financial analytics (data and text mining, simulation and predictive modeling, risk models with applications in financial services). This is a tenure track position.

2. Cognitive science with research interests in computational modeling of the influence of cognitive and affective processes as they relate to health, education, robotics, etc. Cognitive Science program at UNCC is organized as a collaboration between Computer Science and Psychology departments. This is a tenure track position.

3. Cloud Computing with research interests in distributed computing, virtualization, resource management, programming and application models, data-intensive cloud infrastructure or dependability. This is a tenure track position.

4. Assistant / Associate Teaching Professor will engage in curricular and instructional innovation, scholarship of teaching, student recruitment, advising and service. The appointment will be for three or five years, depending on rank, and is eligible for renewal. The position is not eligible for tenure.

Anticipated start is Fall 2016, with application review initiating in early January 2016. Applications must be made
How many jobs should I apply to?

- I applied for a lot (43).
- I think normal number is 20-30.
- my personal opinion:
- **apply to as many as you can.**
the job market

- it’s called a job market because it is one.
- people know where you are interviewing...
Interacting with Personal Fabrication Machines | Human-Computer ...
Stefanie Mueller. PhD Student, Human Computer Interaction Lab, Hasso Plattner Institute. When: Friday, November 13, 2015 -. 1:30pm to 3:00pm. Where: NSH ...

Stefanie Mueller: "Interacting with Personal Fabrication Machines"
https://calendar.csail.mit.edu/events/163519 ▼
Dec 29, 2015 - Stefanie Mueller: "Interacting with Personal Fabrication Machines". Speaker: Stefanie Mueller, Hasso-Plattner Institute. Date: Monday ...

Interacting with Personal Fabrication Machines | Harvard John A ...
www.seas.harvard.edu › News & Events › SEAS Events ▼
Interacting with Personal Fabrication Machines. 7 Mar. Computer Science Colloquium Series. Stefanie Mueller, Hasso Plattner Institute. Monday, March 7, 2016 ...
But they don’t list my area as a search area

• still apply!
| A            | B                | C          | D                        | E                    | F                        | G                        | H                        | I                        | J                        | K                      | L                                      | M                                             | N                        | O                        | P                        | Q                        | R                        | S                        | T                        | U                        | V                        | W                        | X                        | Y                        | Z                        |
|------------|------------------|------------|---------------------------|----------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|---------------------------------------------|---------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Job Opening | Deadline         | Ranking    | What they look for:      | where to submit the cover letter: | please make a cross after you send your letter: | Link to the call:        |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 3          | Stanford ME      | Oct 1      | 3                         | manufacturing        | five references, no fixed deadline | http://me.stanford.edu   |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 4          | University of Copenhagen | Oct 13 | 82                        | cs with focus in hci | contact information of three references, no letters directly | -                       | http://cra.org/job/     |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 5          | Georgia Tech Industrial Design | Oct 26 | 41                        | product development and innovation | contact information of three references, no letters directly | -                       | http://indeed.com       |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 6          | Cornell Tech Jacobs Technion Institute | Oct 26 | 18                        | all areas            | upload three letters until October 30 | X                       | https://academic.in       |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 7          | Max Planck Technical University Munich | Oct 28 | all areas                | upload two letters until October 31 | X                       |                          |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 8          | USCD ECE         | Oct 31     | 39                        | all areas, human centered design | upload four letters until October 31 | X                       | https://cancers.in       |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 9          | Georgia Tech Interactive Computing | Nov 1   | 41                        | HCI, Robotics, Visual Computing | five reference letters. no fixed deadline but upload until November 11 would be great. | X                       | https://academic.in       |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 10         | University of Colorado Boulder ATLAS Creative Technologies and Design | Nov 1  | 127                      | all areas, but also invent technologies that transcendent virtual and physical space | contact information of three references, no letters directly | X                       | https://www.jobs        |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 11         | IST Austria      | Nov 3      | 3                         | computer science     | contact information of three or four references, no letters directly |                          |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 12         | Stanford CS      | Nov 15     | 3                         | computer science     | contact information of five references. |                          |                          |                          |                          |                          |                          |                          |                        |                              |                              |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
#5 applying

- Prepare job materials
- Find recommendation letter writer
- Prepare job talk, abstract
- Jobs posted
- Skype interviews
- Campus invitations
- On-campus interview
- Offers
- Negotiate
- 2nd visit
average time for preparing one application package:

- first 5 applications: 1 day per application
- all the rest: 2-3 hours.
#6 Skype Interviews

- Find Recommendation Letter Writer
- Prepare Job Materials
- Prepare Job Talk, Abstract
- Jobs Posted
- Apply
- Skype Interviews
- Campus Invitations
- On-Campus Interview
- Negotiate Offers
- 2nd Visit

Timeline:
- June
- July
- Aug
- Sept
- Oct
- Nov
- Dec
- Jan
- Feb
- Mar
- Apr
- May
basically a quick check
that you cannot only write good application materials
but you can also talk…
skype interviews are becoming more popular…
but I still only had 4 of them (out of 20 campus invites)
Videoconference format can vary widely

• Interview #1 (15 min): faculty, give 8 min talk over skype, answer 7 min questions
• Interview #2 (45 min): faculty + students, just questions
• Interview #3 (20 min): faculty, give 8 min talk + questions
• Interview #4 (30 min): faculty, give 5 min talk + questions (had received them before)
• Interview #5 (30-45 min): 1-2 members of search committee. Answer screening questions
How to Prepare:

- ask who’s going to be in the call.
- google everyone
- think how you can address the people in the call personally
- write notes about typical questions on paper sheets
- distribute them on the table so you can take a brief look
- there is more advice in the book.
#7 campus invitations

- Find recommendation letter writer
- Prepare job materials
- Prepare job talk, abstract
- Jobs posted
- Apply
- Skype interviews
- On-campus interview
- Campus invitations
- Negotiate offers
- 2nd visit
When are academic interviews?

- February / March / Early April
- typically 2 day visit, either Monday/Tuesday or Thursday/Friday
Buying flights / hotels / meals

- the university or lab will typically book this for you
- But you will pay for meals first (before getting reimbursed later)
- This can get expensive since you are eating at hotels
job outfit
#8 on-campus interview

- Find recommendation letter writer
- Prepare job materials
- Jobs posted
- Apply
- Skype interviews
- Campus invitations
- On-campus interview
- Offers
- Negotiate
- 2nd visit

Timeline:
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Day #1

08.00 - 10.00 breakfast with the department chair

10.00 - 10.30 faculty member #1
10.30 - 11.00 faculty member #2
11.00 - 11.30 faculty member #3
11.30 - 12.00 faculty member #4

12.00 - 13.00 seminar (aka: your job talk)

13.00 - 13.30 faculty member #5
13.30 - 14.00 faculty member #6
14.00 - 14.30 faculty member #7
14.30 - 15.00 faculty member #8

15.00 - 16.00 grad student meeting

16.00 - 16.30 faculty member #9
16.30 - 17.00 faculty member #10
17.00 - 17.30 faculty member #11
17.30 - 18.00 faculty member #12

18.00 - 22.00 dinner (faculty member #13-16)
Day #2

08.00 - 10.00 breakfast with the dean (if you are important enough)

10.00 - 10.30 faculty member #17
10.30 - 11.00 faculty member #18
11.00 - 11.30 break (aka: nobody signed up, breaks will not happen anyways)
11.30 - 12.00 faculty member #19

12.00 - 14.00 chalk talk (optional, otherwise lunch with faculty members)

14.00 - 14.30 faculty member #20
14.30 - 15.00 faculty member #21

15.00 - 16.00 meeting with diversity people

16.00 - 16.30 faculty member #22
16.30 - 17.00 faculty member #23
17.00 - 17.30 faculty member #24
17.30 - 18.00 faculty member #25

18.00 - 22.00 dinner (faculty member #26-30)

NOTE: National lab interviews are typically one day only
Don’t expect to get your schedule in advance

- you can be lucky if you get it 2 days earlier…
- you can increase your chances of getting at least a rough sense of the whole thing if you kindly ask for a ‘preliminary’ version.
- this at least allows you to start googling the people
- who already signed up.
1:1 with faculty
Get yourself a watch!

• if professors/researchers start talking… they can talk a lot..
• worst things that happened to me:
  • missed the meeting with a Turing Award winner
  • (who was also the search chair)
what are people looking for?

• did you do your homework?
• are you a nice colleague?
• can you talk and be intellectually engaged in a discussion?
• can they collaborate with you?
Have a conversation starter ready!

- You will be in control if you start the conversation!
- think about it from the perspective of the other person who just has a regular day
- don’t expect anyone to have read your materials or attended your talk
How do you memorize 20+ people?

- make a list of people (photo + 2-3 key facts)
- save on your phone
- every 2-3 meetings, ask them to take a restroom break
- (aka: check your phone for the next 2-3 meetings)
Unnecessarily offensive question during talk or 1:1

• there might be a split in the department which person (or area) should be hired.
• apparently the 3-4 faculty who annoy you to hell during you talk like that other person more and want to embarrass you (aka make you ‘unhireable’ by squeezing out an unprofessional answer from you or making you feel insecure).
• ignore them and look at friendly people.
• answer their questions briefly or say great questions but you would like to answer them at the end of your talk, then never mention them again.
#9 receiving offers

- 2nd visit
- negotiate offers
- on-campus interview
- campus invitations
- skype interviews
- apply
- jobs posted
- prepare job talk, abstract
- find recommendation letter writer
- prepare job materials

June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May
the department chair (or search chair) will typically write you an email and say something like:

‘We really enjoyed your visit. I have good news for you, do you have time for a call?’

this basically means they want to make you an offer.
‘We enjoyed your visit, can we talk more?’

in rare cases the department chair does not yet make an offer, but want to talk more about e.g. the equipment and space needs (if they are not sure if they have the resources to make you a successful person at their institution)

if you have no offer so far, you are doing best to be cooperative on the phone and don’t pull out the biggest equipment list you can imagine.
Should I decline offers if I have multiple?

if you are lucky and receive multiple offers only stick with your 2-3 top choices and decline the rest.

it is only fair because the department cannot offer the slot to somebody else while you have not said ‘no’.

this also means that the candidate ranked behind you will not get the offer until you say ‘no’.
#10 negotiate

- 2nd visit
- negotiate
- offers
- on-campus interview
- campus invitations
- skype interviews
- apply
- jobs posted
- prepare job talk, abstract
- find recommendation letter writer
- prepare job materials

Timeline:
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#11 second visits

- Jobs posted
- Prepare job materials
- Find recommendation letter writer
- Prepare job talk, abstract
- Apply
- Skype interviews
- Campus invitations
- On-campus interview
- Negotiate offers
- 2nd visit
Let me know when you made it to the offers stage and I’m happy to coach you through the rest!
What is CRA-WP?

**Individual & Group Research Mentoring**

**Undergrads:** Undergraduate Research Experiences (CREU & DREU), Research-Focused Scholarship opportunities at GHC (GHC Research Scholars)

**Grad Cohort:** Group Mentoring of Graduate Students (Grad Cohort for URMD & Grad Cohort for Women)

**Grad Students & Academics/PhD Researchers:** Mentoring Tracks @ GHC, Returning Scholars @ GHC, Group Mentoring for Early & Mid Career @ CMW/

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**Web:** cra.org/cra-wp  
**Twitter:** @CRA_WP,  
**Facebook:** CRA-WP  
**Linked-in:** CRA-Widening Participation
CRA-WP Events at GHC

• Visit the CRA-WP Booth in the EXPO to learn more

• Attend another CRA-WP Session
  Building Your Professional Persona Session, 4 – 5 pm, OCCC W308D

Stay in touch: https://cra.org/cra-w/, Twitter: @CRAWomen
Facebook: CRA-W, Linked-In: CRA-Women