A long, rambling, mostly personal corpus of advice on applying to Computer Science grad school (for UWCSE students)

[redacted]

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1 Introduction

Okay, team UWCSE undergrads, here is a long, rambling, mostly personal set of advice on applying to grad school. Take or leave any of it, but it's what I've come up with over the last year on the road from deciding to apply to actually accepting. This is really long, but there are two primary lessons you should come away with:

1. You are probably a lot better than you think you are. UWCSE is a very chill place, but don't let this fool you: you are in a top-10 department. You have already been exposed to world-class research, your advisors really really know what they are doing, and your peers are all very smart.

2. The faculty and grads at UW will help you figure out what to do. Don't be afraid to ask them for help. They know all about other schools and faculty in their research areas, and if they know you, they will help you find exactly the right place for you to go to grad school.

Now, relax. Mostly what you need to do is fill out some forms :) Here we go....

2 What is grad school?!

You should know for starters that grad school is about **research**. If you just want to take more classes, you should just do a Masters degree. I highly recommend the 5th year Masters here, because UW is awesome. If you want to do a lot of research, become the world expert in something, and be a professor or industrial researcher or mad computer scientist someday, then a PhD program is the right place for you.

3 You need to do undergraduate research

So, you should get involved in undergraduate research. Now. Right now. It's never to early to start, but it can be too late. Grad schools basically expect students to have some sort of research experience these days. To find a project, you should

- Follow the undergrad news blog, because research announcements go there.

- Go to the Fall or Spring Undergrad Research Night
- Look up students or faculty homepages and find people you think are interesting - even if they themselves aren't looking for someone to work with, they will know people in their research groups who are (and trust me, all the grads and faculty in our department are phenomenally nice and will totally hook you up if you just ask them).
- Email the undergraduate advisors (ugrad-advisor@cs)
- If all else fails, email me (justine@cs) and I'll bounce your email to someone in the know.

I can go on and on about how awesome undergraduate research is. Even if you are not sure about this whole grad school thing, it is an amazing experience to undertake. Undergraduate research taught me how to take myself seriously as a computer scientist, to present work in front of people who I thought were way smarter than me and to not be afraid, to consider myself an expert at something (small), to do technical writing that matters, and (of course) I learned sweet things about computers.

4 Your advisors at UWCSE have got your back

Once you are involved in your research, you should inform the people you are working with that you are interested in going to grad school. Depending on your personality, this may or may not be hard. For me, I had this idea that everyone was going to tell me "that's a stupid idea" so I didn't say anything for a while. But, the minute I opened my mouth and said I wanted to go to grad school, the grad student I worked with and our professors did everything possible to help me out - giving me advice, telling me what I needed to do, helping me decide where to apply, etc. So, don't wait. Your advisors are critical!

More on that: really really, your advisors are critical. Go ask questions - tons of them. I had a cohort of advisors: a grad student mentor (Ethan) and two faculty advisors (Arvind and Tom). It turns out that people go into professorships in some part because they **like giving advice to students**, and furthermore, when you tell them you want to go to grad school, you are telling them implicitly that you **aspire to be like them**. So they will talk a lot, and have tons of things to say. All you really need are two or three questions, and you will get like an hour's worth of advice, almost all of which will be completely useful and interesting, I swear.

You may also want to go beyond your research advisors - they will have lots to say, but other people will have good thoughts, too. For starters, the undergraduate advising staff is phenomenal (ugrad-advisor@cs). You're a CS major, I'm sure you've figured this out by now. Someone you may not have met yet is Lindsay Michimoto (lindsay@cs). She is like Crystal Eney, only to the grad students, and she knows quite a bit about how grad admissions go at UW and may also have valuable answers about the application process. Finally, you might want to find people with similar interests/backgrounds as you other than research - I met with some female faculty to get "the girl talk," and I also talked a lot with people who had simply visited schools I was applying to and had thoughts on whether or not they were nice places to live!

5 The grad school applications

On to the nitty gritty: the application itself. You should not work on these alone - ask around in the labs (002 is a good place) who else is applying, and make plans to swap essays and read over each other's statements. Keep each other accountable for getting things done. Email the ACM officers (acm-officers@cs) and ask them if they've scheduled a Statement of Purpose editing party yet. There will not be many of you (my year I think there were nine), but you should stick together and check up on each other.

As for your application, you will need:

- **A Curriculum Vitae.** This is like a resume, only longer. My CV was about two pages when I applied. Also, research goes at the top of a CV, while as it probably goes on the bottom of your resume. You can look at the homepages of people you know to see what a CV looks like, there are also a bunch of guides online. Make sure you search for "academic curriculum vitae" and you might even append a "computer science" as well - in European countries they use CV's for regular jobs, but you want yours to be tailored to an academic environment. If you're stuck looking for examples, you can email me and ask for mine - or anyone grad student you know.

- **Your transcripts.** Make sure you have taken a bunch of CS classes - schools will look specifically for classes like Algorithms and Operating Systems as well as classes in the area you say you are interested in (if you say you like Vision, you should probably have taken Vision). As a side, things that are not necessary, but cool: you might also consider taking a grad class in your area if you've already taken the undergrad one, or the research seminars for your area as well (those are the 590's in the course catalog - email the professor and ask if you can just sit in and you can see what they are like. I think they are really cool; it's just a room full of professors and grad students - all of them! - talking about some new hott piece of research for an hour each week).

- **The GRE.** There is not much to say here. Don't fail it, but you're also not going to impress people by doing really really awesome. As far as I can tell, it's only part of the application as a weed-out - if you do poorly, they probably won't read the rest of your application, but if you score a 1600, you're not earning any bonus points. Most people do very very well on the Math - many of my friends got 800's. But, like I said, it's not necessary to do perfect.

- **Your Statement of Purpose.** This one takes thought - it's very different than what you wrote for your undergrad applications. It should reflect something of your personality, but it should also be more of a research statement than anything else, discussing what kind of things you have worked on, and what you might like to work on in the future. I have a set of examples if you'd like to see them - go ahead and email me (justine@cs) for them. I'll even send you mine. Most importantly though, have people read them for you and give you feedback, several times.

- **Three Letters of Rec.** These are THE MOST IMPORTANT PART OF YOUR APPLICATION! You should get letters from professors who have seen you in action! It is most important that you get letters from people who have seen you do research (or a capstone!), but people who have seen you teaching or in leadership positions are also valuable. Letters that are just from people you took a class from are not as valuable -

schools can see from your transcripts that you did well in classes. They want to get a feel for you as a person, from people they trust.

You should ask your faculty letter writers a month or so in advance, and remember to remind them often. They are very busy people and it is easy to forget to submit your n^{th} letter, but it doesn't take too much time for them once they've written the letter once - it's just copy/paste. Make sure to thank them at the end, of course (I baked cookies)!

- Any papers you may have published (don't worry, these are not necessary if you don't have them!)
- Some other stuff like your name, birthday, social security number, blah, blah, blah.

All the apps are basically the same.

6 Where to apply

As for which or how many schools to apply to, this is something that you really need to ask your faculty advisors about. Professors will have a better idea about this than anyone else, because they know both your research potential and the research programs at other universities better than anyone else. In about two minutes, they will give you an informed list that you never ever could have come up with, even with hours worth of Googling. I literally asked Tom and Arvind, "where should I apply?" and wound up with a list from safety schools through reach schools.

Oh, but one thing that is peculiar about grad school vs. undergrad: this notion of "safety school" doesn't actually make as much sense as it did in undergrad. The non-top tier schools all actually have very good research groups in some areas. Your goal is to find the lower-tier schools with very specific research programs you might be interested in - so your "safety" school can still wind up a very very good place to go. What you lose with those schools is the ability to switch areas easily if you so desire - they may have excellent Machine Learning, but their HCI is not so hott. But if you have an idea of what you want, a safety school isn't at all like going to the local community college was for undergrad.

Also: on applying to UWCSE. Just don't do it. You know you shouldn't go here - it's better to branch out and meet new people. If you apply to UW, it will just break your heart later when you realize you really should leave. Better to just make the decision early.

Okay, so send off your applications. They're all (mostly) due December 15th.

7 Fellowships are like scholarships, only for grad school

In the mean time! You should be thinking about FELLOWSHIPS. Fellowships are like scholarships for grad school. Lindsay has a big list of fellowships you should apply for - the big names are NDSEG and NSF - so email her and ask for "the list." Actually, some of these are due before grad school apps, in like November. Either way, you should totally apply for them, because money is awesome. However, you should not /worry/ about getting a fellowship either. You will almost definitely be fully funded at your grad school, either with an RAship (getting paid for your research) or a TAship (getting paid for your teaching). Money is basically not something you should actually have to worry about very much, but fellowships are nice to have because then you have a little

more flexibility, e.g. you get to decide whether or not you'd like to teach this semester, rather than doing it out of necessity.

NSF was a lot of work for me - there are three essays you have to write! But, it was a really valuable experience just to write the essays.

- The first is a research statement, in which you summarize the work you have done in the past. This is something you should get a lot of practice doing - it takes time and effort to learn how to sound really smart when you're talking about something that feels like a silly piece of code after you've spent so long working on it. When writing, make sure you emphasize: what you did, why it was hard, and why it was important.
- Second is a personal statement/impact essay. This one is kind of mysterious for me; I'm not quite sure what it's for...
- Third (this was the hardest one) is a proposal for what you want to work on. One thing to know about this is that you are not actually committing to working on whatever it is you propose, so don't fret too much about it. But, it is probably the first time anyone has every asked you to propose anything computer-sciencey in your area (at least it was for me). I thought it was pretty hard - I read a lot of papers on different topics, came up with a lot of ideas, talked with a ton of people. In the end, my proposal was not really a work of genius, but I felt very good about having been able to research the current state of research on a particular topic and then come up with ideas for how to make it better.

8 Don't read this section

Also, in the mean time... I shouldn't be telling you kids about this but I know you'll just find it anyway:

http://www.thegradcafe.com/survey/index.php?q=computer+science

This is a horrible, horrible page where people post when they hear back from schools, and it will have you biting your nails for weeks. So don't click the link.

9 Take a chill pill, and wait to hear back. Relax.

I started hearing back in January/February. Everyone know had heard back by early March. Relax!

(for a while)

10 After you've been accepted

Okay, so you will get in to some schools. Perhaps several. The schools you hear from will offer to fly you out for "Visit Days." From here on out, they are trying to impress you! You have already impressed them, and they know you are very smart, so now you get to take your time and judge them. Enjoy the moment, because in a few months you will be just another student again.

The basic structure of visiting is like this: you buy plane tickets, come out to the school, stay in a hotel or with a graduate student, attend some talks, have a lightning series of meetings with about 4-7 faculty, meet students, have a party, and then go home. It will be a lot of information all at once; it might help to keep a set of notes while you are visiting schools so that you can remember

things you thought about while you visited. Each school will contact you with information about visiting, just kind of follow along; they'll tell you what you need to do from there.

One thing the schools will ask you for is a list of faculty you'd like to meet with. Email a bunch of faculty here and ask who they'd recommend, and then read through those lists and filter it down. I asked my advisors (for people in my research area), but I also asked some other faculty (like Ed, because he knows every computer scientist in the country) and several grad students (because they have friends at other schools who know what these faculty are like as advisors).

11 Visiting the schools

You are going to come up with your own formula for what you are looking in for at the different schools. I came up with my formula while I was visiting, because before I had visited any of the other schools, they only world I knew was UW (as far as I was concerned, the way we do research at UW is the way everyone does research!). After you see how other schools can be different from what you know, you can decide what you like or don't like.

Here are a lot of bullet points; stuff I thought about while visiting different universities:

- One thing that weirds undergrads out sometimes (mostly from other schools, not UW because we are super chill) is that you get to casually meet for a half an hour with some awesome professor who is probably famous for something. Over and over again. You will have a series of like 4-8 meetings with faculty at each school you visit. Furthermore, you get to call them by their *first name*. I know. Seriously. "Nice to meet you, John," instead of, "I cower before you, Professor Smith." Don't freak out, enjoy the experience - it's pretty much awesome.

- Be prepared to talk to lots of faculty, even outside of your area of interest. I learned awesome things about crypto during my unexpected meeting with a crypto professor.

- It is good to look up the faculty before you meet them and find out what they are working on (so you can ask them about that), but you might also just wind up talking about other stuff, particularly if that faculty member is not really a potential advisor for you. One super famous professor and I had a great conversation about undergraduate education, even though I knew damn well that he was famous for a billion other things.

- Don't just ask the faculty about their research programs - ask them how they feel about their students, why they do research, what they think makes their work "cool" or important. Everyone you are going to meet is going to be very smart and at the top of their field - what you need to try to get a feel for is whether you want people in this department to be your advisor, which is a weird combination of both boss and mentor.

- Ask the students whether or not they are happy. Don't be afraid to be blunt (on anything you are concerned about).

- Among the students, seek out: married people, minorities, international students, women, people with kids - even if you don't fit into these categories. These people are going to have very good insights on how flexible/supportive/understanding/etc a program is. A lot of issues that effect them most visibly are actually things that are important for everyone (think of them like canaries in a mine). If there aren't people in those categories, it may be an indicator that something is wrong with the department.

- Go out and have fun with the grad students. You want to know whether or not you can be friends with your future co-workers. You will be tired when they try to take you out for beer... at least show up for a few hours.
- Find students of the faculty you met with, and ask them how they like working with them, and what kind of an advisor they are. Some key things to ask: Are they 'hands off' or 'hands on'? How often do you meet? What are they very good at? What are they like around conference deadlines? How have they helped you develop your own interests and research agenda?
- It is exhausting to visit schools back to back, if you attend more than one. If you think that some segment of the visit schedule isn't completely necessary, **feel free** to ask if there is a quiet room or if you can go back to your hotel and take a nap. They'll understand.
- Mention your advisors, people you know in common, etc. You'll find out how small the community you are entering into really is.
- Wander around the campus and neighboring areas and get some idea of whether or not you'd like living there.
- Don't forget to grab envelopes for your receipts. Traveling is expensive and you want to make sure you get reimbursed for everything.
- Make friends with the other prospective students! These are your future colleagues, and many of them will have gotten in to exactly the same schools as you, so you will basically be on tour together for the month of March.

12 After your visits

- Write thank-you notes to the people who hosted you or met with you.
- Debrief with your professors here - they will want to know your thoughts on the schools, and might be able to fill in any lingering thoughts or questions you have.
- Follow up with people you met if you have any questions or thoughts - they will take the time to talk to you if you need anything. Remember that they are still trying to recruit you!
- Make sure to follow up once you decide and let people know what you have chosen, and thank them again.

I don't have too much advice on actually deciding. Go with what feels right for you. Don't freak out too much. That's about it.

13 The end!

Good luck!

Looking back, I am amazed that it is all over. You will be here in the near future too, and then you can give out your words of wisdom to another generation of lost and confused undergrads! Remember that for all you depend on people right now to help you figure out what to do, the next batch of students should be able to depend on you as well.