Grad School Stuff for Undergrads

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Spring 2006
This Talk

1. Should you go to grad school?
2. How to get into the right grad school?

- Motivation
  - Nobody else seems to be telling you this stuff...
After Graduation

- Your choices:
  - Get a job
  - Go to grad school
  - None of the above
    - Ski bum
    - Stay-at-home parent
    - ...
Some Things are Obvious

◆ If you aren’t enjoying college, don’t go to grad school
  ▶ MS == More of the same
  ▶ PhD == Piled higher and deeper

◆ If you aren’t doing well in college, don’t go to grad school
  ▶ You’ll have a hard time getting into a good one
  ▶ It’s more competitive than being an undergrad

◆ Grad school can be a lot of fun
  ▶ But it’s not for everyone
CECILIA COMES OUT OF THE GEEK CLOSET...
I... I ALWAYS KNEW I WAS DIFFERENT...

EVEN AS AN UNDERGRAD, I KNEW I WAS DIFFERENT FROM THE OTHER STUDENTS...
THIS HOMEWORK STINKS!
I HATE THIS CLASS!
THIS IS SO COOL!

AND THAT'S WHEN YOU APPLIED TO GRAD SCHOOL IN SECRET?
SOB... YES! ALL MY FRIENDS WERE GETTING JOBS... I ONLY PRETENDED TO INTERVIEW!
Less Obvious…

◆ Salary tradeoffs for an advanced degree are unclear

◆ You will lose 2 (MS) or 4-7 (PhD) years of your life

◆ As an MS or PhD student you write a thesis
  - You MUST be able to, or learn to, write clearly and fairly rapidly
  - Bad writing or too much writers block == no degree
  - MS == 50-100 pages
  - PhD == 100-250 pages
Grad School Tradeoffs

◆ Costs
  - Time
  - Effort
  - Expense
  - Opportunity costs
  - Potential for failure

◆ Benefits
  - Enjoyment
  - Possible increased earning power
  - Opens doors to different kinds of jobs
  - Possible outsourcing-proofness through specialization
Why get an MS in CS?

- To be:
  - A software developer
  - A research programmer
  - An instructor at a two-year college
Why Get a PhD in CS?

◆ To become a:
  - Professor at a university
  - Researcher in an industry lab
  - Manager of research projects
Essential PhD Information

◆ Being a PhD student is very different from being an undergrad
  ➢ As an undergrad your job is to get good grades
  ➢ As a PhD student your job is to learn to do research and write papers
    • Classes largely a distraction
  ➢ Many new grads take a few years to internalize this
    • Don’t be one of them

◆ Being an MS student is more like being an undergrad than like being a PhD student
  ➢ Especially if pursuing a course-based MS
Should You Work First?

- Often people want to get some work experience before returning to grad school.
- Can be beneficial:
  - Increased maturity
  - Better perspective
  - Particularly useful for some research areas, e.g., systems
- In practice few people return for advanced degree:
  - Hard to take the huge salary cut
  - Homework and exams start to look unattractive after a few years “out there”
That’s it for Part 1

Questions?
Parts of an Application

- **Grades**
  - Bad grades hurt but good grades don’t get you in
  - Should have As and Bs in core courses

- **GRE scores**
  - Bad scores hurt but good scores don’t get you in
  - Straight 800s not uncommon in applications to Stanford
  - Attend our review sessions

- **Prior research experience**
  - Required at top graduate schools
  - Makes any application (possibly much) stronger

- **Research statement**

- **Letters of recommendation**
Research Statement

◆ Also called “personal statement”
  ➢ Don’t be fooled – it’s a research statement

◆ Include:
  ➢ What general research areas interest you and why
  ➢ Research projects you have worked on
    • Approaches that you tried
    • What worked, what you learned
  ➢ Why do you want an MS / PhD?
  ➢ Why do you want to attend the particular school?
  ➢ What professors might you want to work with?

◆ Take this seriously
  ➢ Get people to read over it, especially professors
  ➢ Bragging, exaggerating, cheesy stories do not help
Letters of Recommendation

- Letters from professors count the most
  - Letters from postdocs, lecturers, employers, etc. are a distant second
- Letters about your grades and exam scores are worthless
  - If someone wants to know how you did in class they’ll look at your transcript
- If the professor doesn’t know you well, she cannot write you a strong letter
- A good letter says things like
  - “independent thinker”
  - “motivated and driven”
  - “strong research potential”
How to Ask for Letters

◆ Ask in person
  ➢ Be specific: “Can you write me a strong letter?”

◆ Provide each letter writer with a packet containing:
  ➢ Your resume
  ➢ Your research statement
  ➢ As much paperwork filled out as possible
  ➢ Anything else that may be helpful
  ➢ Specific instructions – Which letters are due when?
  ➢ Addressed, stamped envelopes
  ➢ Request for email confirmation when letters are sent

◆ Assume professors are overworked and forgetful
  ➢ Give them at least three weeks to write and send letters
  ➢ Check to see if schools have gotten your letters
Getting Into a Good School

◆ Basic problem #1
  ➢ Acceptance is highly random

◆ Solution
  ➢ Apply to many schools
    • At least 10, if you’re serious about it

◆ Basic problem #2
  ➢ You have no idea how you stack up against “the competition”

◆ Solution
  ➢ Apply to departments with a wide range of rankings
    • E.g. apply to both Berkeley and Western Kentucky Tech
Will You Be Accepted?

◆ Algorithm used by admissions committee:
  1. For each area, decide how many MS and PhD students to accept
  2. Accept the N strongest MS students and M strongest PhD students who listed that area as their main interest

◆ However:
  ➢ “Strongest students” is both random and subjective

◆ Good for you:
  ➢ Domestic applicants preferred over foreign applicants
  ➢ Applications from China, India, etc. are numerous and hard to evaluate
Will You Be Offered Support?

- Algorithm used by admissions committee:
  1. For each area, decide how many students can be offered support
  2. Support the N strongest PhD students who listed that area as their main interest

- MS students rarely offered financial support
Kinds of Support

- **TA – teaching assistantship**
  - You help teach a course
  - Somewhat desirable

- **RA – research assistantship**
  - You are paid out of a grant
  - You have to contribute towards the grant
  - More desirable
    - Work towards the grant should also move you towards a degree

- **Fellowship**
  - Most desirable
  - Some are offered to you, some have to be applied for

- **Single-year vs. multi-year offer**
So You Have Multiple Offers

◆ Find out:
  - How many professors are looking for new students?
  - How many professors are doing research you are excited about?
  - The intersection of these sets is your pool of potential advisors

◆ Pick a well-ranked school
  - U.S. News and CRA rank CS departments
  - Good ranking == well-perceived department
  - Good ranking makes it easier to get a good job
  - Good ranking != quality education, fun place to be
Choosing a School Cont’d

◆ Visit
  - If they care about you, they’ll fly you out
  - Bad sign if they won’t do this
  - Are current grads there:
    • Happy and being treated well?
    • Working hard and publishing?
    • Getting good jobs?
  - If you get bad vibes, don’t go there

◆ Pick somewhere you don’t mind living for a while
  - Evaluate salary vs. cost of living
  - $1700 / month in Boston or NYC will get old after 6 years
Application Timeline

- **Freshman, sophomore, junior year:**
  - Get good grades
  - Get research experience
  - Find research areas that excite you enough to devote 2-7 years of your life to them

- **Early Fall of your senior year:**
  - Decide where to apply
    - Do lots of web surfing
  - Take GRE

- **Late Fall of your senior year:**
  - Fill out applications
  - Request letters of recommendation
Almost Done

- There is a lot of good information on the web
  - Google is your friend

- This talk is “Part 1”
  - Part 2 is targeted towards new grad students
    - I give this each Fall
    - Basically, how to succeed as an MS / PhD student
    - PDF is linked to my “research” web page
Questions?