Everything* You Always Wanted to Know About Graduate School?

*more or less

entirely through Pacific rim metaphors!

making sense of the grad school experience...
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making sense of the grad school experience…
Overview

• What is (CS) grad school all about?
• Perceptions of grad school...
  • Preparation for graduate school
  • Choosing where to apply
  • The application process and procedures
Words sometimes associated with "grad school"?

Exciting, fun, stimulating, challenging...

Sometimes these extremes are surprisingly close to each other...

... daunting, frustrating, #!&$!**&

You already know this!
Two tracks

- **Master’s**: typically 1-2 years
  - May be exclusively coursework
  - Or, may have a thesis
  - Preparation for industrial R&D, management, some teaching venues
  - Financial support is *not* the norm
  - Some employers will pay for MS programs and/or release time for studies
Two tracks

- **Ph.D.** typically 4 – 6+ years
  - Coursework + exams ("quals") + significant research and thesis
  - Earn a master’s along the way
  - Preparation for industrial research and academic careers
  - In CS, generally full tuition waiver + stipend for TA’ing or RA’ing ~ $24-36k / year

[Teaching Assistant](#)
[Research Assistant](#)
POINTS OF VIEW

OPTIMIST
"The glass is half-full."

PESSIMIST
"The glass is half-empty."

REALIST
"Yep. That's a glass, alright."

IDEALIST
"One day, cold-fusion from a glass of water will provide unlimited energy and end war."

CAPITALIST
"If I bottled this and gave it a New Agey sounding name, I could make a fortune."

COMMUNIST
"This drink belongs to every single one of us in equal measure."

NIHILIST
"The glass does not exist, and neither do I."

OPPORTUNIST:
"There's a funny t-shirt in here somewhere."
Two tracks

Master’s

helpful credential that will set you apart
broaden your background; improve your salary
test grad-school waters

Ph. D.

Advocate’s view

Cynic’s view

That this box is the smallest of the four is totally accidental – really!

$ for universities
4 years of undergrad wasn’t enough?
try something else first...
Two tracks

<table>
<thead>
<tr>
<th>Master’s</th>
<th>Ph. D.</th>
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<tbody>
<tr>
<td>helpful credential that will set you apart</td>
<td>deeply pursue - and expand on - a compelling field</td>
</tr>
<tr>
<td>broaden your background; improve your salary</td>
<td>it's “free”</td>
</tr>
<tr>
<td>test grad-school waters</td>
<td>profess!</td>
</tr>
</tbody>
</table>

Advocate’s view

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<th>$ for universities</th>
<th>labor for universities</th>
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<tr>
<td>4 years of undergrad wasn’t enough?</td>
<td>know a lot ... about a little</td>
</tr>
<tr>
<td>try something else first...</td>
<td>2013 ~ CS research's golden age</td>
</tr>
</tbody>
</table>

Cynic’s view
Matt Might's illustrated guide to a Ph.D

matt.might.net/articles/phd-school-in-pictures/
What is Grad School like?

Grad school rhymes with school. Other than that, there's really no similarity.

- Susanna Ricco

- HMC '06
- Ph.D., Duke '13
What is Grad School like?

As a first + second year student...
- Take two or three courses ~ perhaps two lectures and a seminar
- Attending colloquia
- Joining a research group
- Possibly being a TA
- Donuts...

not so different than HMC
What is Grad School like?

As an N\textsuperscript{th} year student...
- Attend colloquia
- Attend a seminar in your field
- Read articles in your field
- Work on your research project/problem
- Meet with your advisor "often"...

... can be a \textit{dance} of sorts
Lilian's thoughts...

these are 100% biased-Lillian-opinions, especially since I didn't reference anything when spouting out my thoughts and experiences.

The gist of grad school: If you're wondering what grad school is like, it's probably not too different from your summer research at Mudd (at least, that was true for me). The main difference is that these lectures, seminars, course assignments, and emails keep getting in the way of research, so research goes even slower! But I want to do these other things too, so it works out for me.

Abstracter deadlines: I mentioned that research projects are much longer hauls than problem sets. That means I can't get that same "oh snap this is due on Thursday" motivation that I would for homework sets -- or at least not as directly. My research project might not even have a real deadline at all; it's this thing I work on, which will result in some papers along the way, but the papers are more like milestones than destinations, so this "destination" is a pretty amorphous and distant target. It's a simultaneously big and subtle shift in mindsets from undergrad.
Is grad school difficult?

Not if you scoff at the mere idea of difficulty!

Not if you carry around this terrifying pike!

What is Grad School like?
Is grad school difficult?

Not really.

It requires...
- Organization
- Persistence
- Creativity
Where to go?

- Talk to advisor & other CS professors
- Look at departmental web and research pages
- E-mail graduate students... (+ then professors)
- Look at rankings ~ cautiously
- *For specific research areas, look widely!*


USN Rankings:

1. Stanford, MIT, Berkeley, CMU
5. Cornell, Illinois (Urbana-Champaign)
7. U. Washington
8. Princeton, UT Austin
10. Georgia Tech
11. Caltech, Wisconsin
13. Michigan
14. UCLA, UCSD, Maryland

... but the right school may be ranked 17+
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... but the *right* school may be ranked 17+

*UCSB (35) comp vis.*

*UCSC (53) games*

*CSU Fresno MFT*

Steve D.

Peter M.

Elaine S.

Hannah Hoersting, Tim Yee
Lilian's thoughts...

Where to go: I did my research on deciding where to go for grad school, and chose a place based on how well it fits me and my interests/needs, rather than just its reputation. Even though people would question why I'd turn down a higher-rank school for some place they might not have heard of, I'm very happy with my decision and know I'll be fine after graduation regardless. But you go to Mudd, so you know all about getting a great education and experience at a place "you never heard of." I'm probably preaching to the choir here.
Applying

- GRE general test; there is no GRE CS subject test
- Letters of recommendation
- Personal statement

Grad school vs. Job... Why choose one?

do both!

Calvin
Will
Letters of recommendation

- Typically need 3
- *Most* valuable from research supervisors
- Or, folks who can say more than *DWIC*
  - *do provide your accomplishments!*
  - *we'll choose the superlatives...*

Read Matt Might's post:

**How to get a great letter of recommendation**
HOWTO: Get into grad school for science, engineering, math and computer science

Juniors and seniors often ask me how to get into a Ph.D. program. Having looked at applications for three years now, I feel like I can offer some good advice. [This advice applies for masters students too.]

The one-word version of that advice is: PUBLISH.

Read below for my full set of recommendations.

Update: I updated this with more on low GPAs, lacking publications, good examples and what to do if you get rejected from grad school.

Feel free to email me if you're considering applying to the University for graduate work, but please read my post on how to send exams.

See Matt's many excellent posts:
- 10 ways to fail a Ph.D.
- the illustrated guide to a Ph.D.
The personal statement

- *Not*, in fact, a personal statement!
- "A letter to a possible Ph.D. advisor"
- Highlight your summer/project/indep. work...
- Goal: *show your potential to contribute to research*

*Read, review, repeat!*  
- Steve Matsumoto
Fellowships

- School-specific fellowships and internships are often available.

- Consider applying for an NSF Graduate Fellowship:
  
  **GRFP Fellows Receive the Following:**
  
  - Three years of support
  - $32,000 annual stipend
  - $12,000 cost-of-education allowance to the institution
  - International research and professional development opportunities
  - XSEDE Supercomputer access

  funding rate: ~10-20%
To do list

(1) Explore: Google around

(2) Click on "Life After Mudd"
To do

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(2) **Click on** "Life After Mudd"
(My) final thoughts...

**Reasons NOT to consider grad school**
- You’re not sure what else to do.
- To better position yourself for another career
- The free coffee + donuts!

**Reasons to consider grad school**
- You thrive on academic freedom.
- You enjoy research and/or teaching.
- You enjoy the field for its own sake.

The circled ones were *my* reasons...
Other thoughts

Questions or ideas...