Grad school.
Two flavors of graduate school

Flavor I: Course-oriented

- M.S. only
- What you've been doing for 17 years
- May help you...
  - Get a better job
  - Progress further in some job
  - Make more money

Flavor II: Research-oriented

- Available as Ph.D. or M.S.
- Fundamentally different than UG
Imagine a circle that contains all human knowledge.
By the end of elementary school, you know a little...
By the end of high school, you know a bit more:

Credit: Matt Might's Illustrated Guide to a Ph.D.
http://matt.might.net/articles/phd-school-in-pictures/
With a bachelor's degree, you gain a specialty:

http://matt.might.net/articles/phd-school-in-pictures/
A master's degree deepens that specialty:

Credit: Matt Might's Illustrated Guide to a Ph.D.
http://matt.might.net/articles/phd-school-in-pictures/
Reading research papers takes you to the edge of human knowledge:

Credit: Matt Might's Illustrated Guide to a Ph.D.
http://matt.might.net/articles/phd-school-in-pictures/
Once you're at the boundary, you focus:

http://matt.might.net/articles/phd-school-in-pictures/
You push at the boundary for a few years:
Until one day, the boundary gives way:
And, that dent you've made is called a Ph.D.:
Of course, the world looks different to you now:

Credit: Matt Might's Illustrated Guide to a Ph.D.
http://matt.might.net/articles/phd-school-in-pictures/
So, don't forget the bigger picture:

Ph.D.
Keep Pushing!
Why is so great?

- You get to discover and do something no one has ever done before
- You get to contribute to human knowledge
- You get to never be able to explain to your family over Thanksgiving what you actually do
What does it take to get a Ph.D.

- It takes a mix of:
  - Perseverance
  - Tenacity
  - Cogency
  - ...oh and some smarts (perennially overrated)

- It's not:
  - Ability to take courses/pass exams
  - $$$
Where to apply

- Anywhere you would consider going
- Easy answer is the US News top-K list
  - Boooooring!
  - (see next slide about personal statements)
- Skim proceedings of conferences
  - in the area you most care about
  - find out who does interesting work
  - apply wherever they are
How to get in

- Demonstrate that you can do research.
- Have outstanding letters of recommendation from faculty who can say specific things about you.
- Write a compelling statement that demonstrates your perseverance, tenacity and cogency (oh, and smarts...)
- And don't botch up the obvious things like grades, GRE scores, TOEFL, etc...
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Warning

If you ask 10 faculty members what function they use to combine different parts of applications, you will get 10 uncorrelated functions.
One slide for non-seniors

• Silver bullet to a top-K university?
  • A published paper at a reputable venue
  • Shows you can do research
  • Will likely make >=1 letter of rec very strong

• But you'll still need 2 more, so get to know your professorate (we're here for you!)

• Get involved in research now
  • … at the very least you can find out if it's right for you!
Some other notes...

• Apply for fellowships
  • They give you *freedom*
  • e.g., NSF grad fellowship: deadline Nov 27

• Grad school is hard work...
  • ...but the personal rewards are great

• Contact professors you want to work with
  • But be brief, specific and intelligent (no form emails)
  • You may not hear back, but that's *okay*
Additional resources

- Dianne O'Leary made extensive notes:
  - www.cs.umd.edu/users/oleary/gradstudy

- Matt Might has some excellent guides:
  - matt.might.net/articles/how-to-apply-and-get-in-to-graduate-school-in-science-mathematics-engineering-or-computer-science
  - matt.might.net/articles/how-to-recommendation-letter
  - matt.might.net/articles/ways-to-fail-a-phd
  - matt.might.net/articles/successful-phd-students

- These slides: hal3.name/ug2grad.pdf