FINDING A RESEARCH TOPIC

Julia Hirschberg, Columbia University
Some Personal Stories

- My own: I found my thesis topic in a linguistics class when I was planning to get an MS in DB

- My students’:
  - Student A: spent 2 years designing and collecting a corpus to work on one topic but found it also supported 2 other exciting topics which he put together for his thesis
  - Student B: Came from working on a topic in a major research lab...and after 4 years ended up with a new spin on the same topic
  - Student C: Spent over a year working on a topic with no results but finally got some great ones
  - Student D: Wanted to work on a topic I thought had been done to death... and came up with a new approach that beat all previous results
What Interests You?

- When you attend a talk about X
  - Do you start looking at your phone?
  - Do you think “wow, I could do that better?”
- What if you can’t find anything?
  - Take a course, go to more talks, talk with your advisor and your friends
- What if you are excited about everything?
  - Your PhD is not the end …
Think “Out of the Box”

- Great things are not incremental advances
- Examples:
  - Our field thought $X$ but in fact $Y$ is true
  - No one thought we could do $X$ but in fact we can
  - No one thought of doing $X$ but here are reasons why it is crucial
7 Ways to Find a Good Research Topic
Flash of Brilliance

You wake up in the middle of the night with a wonderful idea or a new approach to solve an open problem.

Warnings:
- It may not seem so wonderful in the morning.
- Even if it does, you may not be able to convince others.
The Apprentice

- Your advisor has a list of topics/funded projects that need to be worked on
- A fairly common, easy method
- Warnings:
  - Several people may be working on the project: you have to find your own angle
  - Don’t work long on something that isn’t really exciting
The Extended Course Project

- You do a project in a course that turns out to be great – you want to do much more
- Another pretty good method

Warnings:
- Check with your advisor
- The project may not be extensible to a PhD thesis
A Talk Inspires You

- You hear a talk in your area and think “I could do that better!” or “Why didn’t they think of X?”
- You start a discussion with the speaker…
- Warnings:
  - Your idea may have already been done
  - Your idea may not work
Data Needs Answers

- You participate in a data collection/analysis effort with another student or in industry
- You become fascinated with the potential to answer questions no one is asking
- Warning:
  - If industry, make sure you can access the data and publish
  - There may be a question of who gets to answer those questions
The Stapler

- You work on multiple topics and publish papers that are good and interesting to you.
- Can you somehow put it all together into a dissertation?
- Warning:
  - It could be impossible to find a common theme that makes sense.
The Interdisciplinarian

- You learn about a problem in another field that you think you can help with (e.g. history and computer science)

- Warning:
  - You will need real collaboration with someone in the other field
  - You’ll need to make the case that this really is a contribution to both fields (especially to your own)
Useful Things to Consider

- Is your topic doable?
  - Do you have the tools? the data? the skills?
  - If not, can you get them?
- Do you have a story to tell?
  - Why my topic is new
  - Why my topic is scientifically exciting
  - Why solving my topic will help the world
Once You Find a Topic

- When you tell your story
  - Does your advisor like it?
  - Do your friends think it’s cool?
- What if no one likes it?
  - Maybe you’re wrong: Consider it
  - If you still think you are right, try to convince your advisor
- Personal story: Advisors can be wrong but you need to gain their support or find another
Now for the practical side

- Is it doable in the amount of time (5-7 years total for the PhD) you have?
- Is it fundable?
- Is it something you can get a job you like with?
Take-Aways

- Find an **advisor** you like and trust: they will be your mentor and champion for your career.
- **Don’t worry** if you don’t have a thesis topic for a year or two: explore but with a purpose: what do **you** want to do.
- **Talk to lots of people** (students and faculty) about ideas you’re considering – and listen.
- **Take interesting courses** in areas you are really excited about to find out what’s done and what’s not done yet.
A Great Article for Every Grad Student (and Advisor)

“How to Succeed in Graduate School: A Guide for Students and Advisors,” ACM Digital Library
Resources

CRA-W Career Mentoring Workshops:
- http://www.cra-w.org/ArticleDetails/tabid/77/ArticleID/50/Career-Mentoring-Workshop-CMW.aspx

On Academic Life:

On Post-Docs:
- http://cra.org/resources/bp-view/best_practices_memo_computer_science_postdocs_best_practices/

Tips on doing an academic job search:
- http://matt.might.net/articles/advice-for-academic-job-hunt/
- http://people.mills.edu/spertus/job-search/job.html

Job Ads:
- http://cra.org/ads/
FINDING A RESEARCH TOPIC:
TIME FOR OPEN DISCUSSION!!
How many of you have topics you’re happy with?
  - How did you find them?

How many have topics you are not so happy with?
  - How did you find them?
  - What are you going to do about it?