HOW TO CHOOSE A RESEARCH TOPIC?

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Start With Breadth

• Take a course in an area of interest early on in your graduate program
  • If you can’t take the course for credit, consider sitting in

• Attend **ALL** of the colloquium talks you see scheduled in the department
  • You may not understand all of them, but the exposure is invaluable

• Read survey papers in some areas of interest

• Attend a nearby conference
  • Conferences often offer reduced registration rates to students

• Talk to faculty members in the area
  • Faculty usually aren’t difficult to talk to once you find them!
Then Develop Some Depth

- Conduct a literature search
- Discover latest research in recent conferences
  - E.g., Big 4 security conferences - CCS, SSP, USENIX Security, NDSS
  - Journals such as ACM TISSEC, Journal of Computer Security, Computers & Security
- Find papers in Google scholar – then follow citations links

  Automated trust negotiation
  Abstract Distributed software subjects face the problem of determining one another's trustworthiness. The problem considered is managing the exchange of credentials between strangers for the purpose of property-based authentication and authorization when ...

  Cited by 509 Related articles All 9 versions Import into BibTeX More ▼

- Read a research paper each day and summarize it
  - Write an annotation for an annotated bibliography
  - There are tools to help you manage research papers
    - Mendeley
    - Zotero
- How to review a research paper?
  - The Task of the Referee, Adam J Smith, 1990
    http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.108.2376
Define a Research Topic

When you can answer the following questions, you are ready to conduct research that leads to a paper

• What problem do you want to solve?
• Who cares about this problem and why?
• What have others done to solve this problem and why is that inadequate?
• What is your proposed solution to this problem?
• What is new about your approach?
• Who will care if you succeed?
• How long will it take?
• How can you demonstrate that this is a good solution?

Cf. The “Heilmeier Catechism” (Use Google/Bing)
Things to Consider

- What do you feel passionate about?
- What are your strengths?
- Collaboration
  - Join a productive group where more senior students mentor new students
- Selecting your own problem vs. having a problem handed to you
- Ask other students about faculty – what are their styles of interaction, what are their expectations