

# HOW TO CHOOSE A RESEARCH TOPIC?

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Dr. Kent Seamons  
Brigham Young University

With additions by Gene Spafford, Purdue  
University

# 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](#)

WH Winsborough, KE **Seamons**... - ... and Exposition, 2000. ..., 2000 - [ieeexplore.ieee.org](#)

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