

How to Identify a Good Research Topic?

(A personal view)

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How To Identify a Good Research Topic?

Overview

- Finding a research topic
- Finding a dissertation topic
- Concluding remarks

(The content of this talk is gratefully inherited from my teachers and, whenever I was stupid enough not to ask them or not to listen to them, learned painfully over the years.)

How To Identify a Good Research Topic?

Finding a research topic

A hard problem, but some heuristics may help:

Subject candidate topics to four basic questions [Herb Simon]:

1. Will anybody care about the answer?

Is there any utility in answer? Sometimes we care about the answer even without utility (e.g., DNA structure, structure of the Universe).

2. Is this problem solvable within the given amount of time?

Is this the right time to start with it? Can I finish it in less than three to four years that it takes to write a dissertation?

3. Will I be the first to answer this question?

This includes the past, but we can insure ourselves by doing a good job on library search. Are other people working on it now?

4. Do I have good tools to address this question?

How To Identify a Good Research Topic?

Finding a research topic

What makes me think I will be successful?

“Because I’m smarter than others”

bad answer ... There are scores of smart people around.

“Because I’m a hard worker”

better ... But everybody who wants to succeed works hard.

“Because I have a secret weapon”

Much better!

How To Identify a Good Research Topic?

Finding a research topic: Secret weapon

What is a secret weapon?

A comparative advantage over your competitors to glory:

- A good problem that nobody has thought about before.

Maybe you are the first to think about this problem because of personal experiences (e.g., Fleming, echo-therapy)? Don't look for research ideas in journal articles.

- Special instruments, tools or a piece of knowledge that others don't have.

Is there anything that I have around me? Powerful theoretical tools (e.g., Newton). Biggest, most powerful machine of a certain type (e.g., a powerful accelerator, an excellent networking lab). Software tools (e.g., GeNIe and SMILE).

- Training in a discipline that other people are not trained in.

What is my background? Can I combine my knowledge of music, my interests in biology, art, architecture, my concern about cancer or Alzheimer's disease, etc., with information science?

How To Identify a Good Research Topic?

Finding a dissertation topic

Similar to the problem of finding a research topic, although you are not completely on your own here ...

- Listen to your advisor: He/she is (or should be) one of your secret weapons.
- What is (or is likely to be) funded? After all, you need to pay the rent and buy bread.
- What are the strengths of this group, department, school, university, city? Who are the people I can rely on (my other secret weapons).
- Be careful who you are listening to.
- Think, think, and once again think. This is what you do best.
- Play actively with the knowledge that you are gaining, lay links between facts, be critical and ask questions.
- Take a real problem, preferably with high payoffs, find a good solution, do something practical. Best research ideas come from real problems.
- Test market your ideas (spouse, friends, advisor, other faculty).

How To Identify a Good Research Topic?

Concluding remarks

- Creativity is very important in finding research topics
- How do you become creative?

That's it

