

How To Do Research, As a Ph.D. Student

Nan DUAN

Natural Language Computing

MSRA

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About This Talk

- What is it talking about?
 - How to do research as a **Ph.D. student**
 - Some tips I learned in the past 4+ years
- Who is supposed to be a listener?
 - Graduate students, esp. fresh Ph.D. students
- Is this useful?



Stage of Ph.D. Research

- Make up your mind
- Select an area & an advisor
 - Not a topic of this talk
 - But make sure you are **INTERESTED** in research
- Becom**ING** a Ph.D. researcher
 - General knowledge (读)
 - Publication (写)
 - Project (做)
 - Presentation (说)
 - Conference & Group meeting (听)
- Thesis & Defense

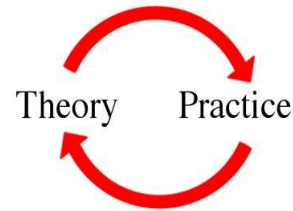


How to Kick-off

- 动脑 （读论文）
 - Papers from recent top conferences
 - Papers/Thesis from area experts
 - Papers from your current group
- 动手 （跑实验）
 - Go through State-Of-The-Art
 - Re-produce existing good results
 - Try to “dirty” (not “improve”) the system
- 动口 （多讨论）
 - Discuss with your advisor and classmates about your ideas
 - Discuss with senior researchers in your research area

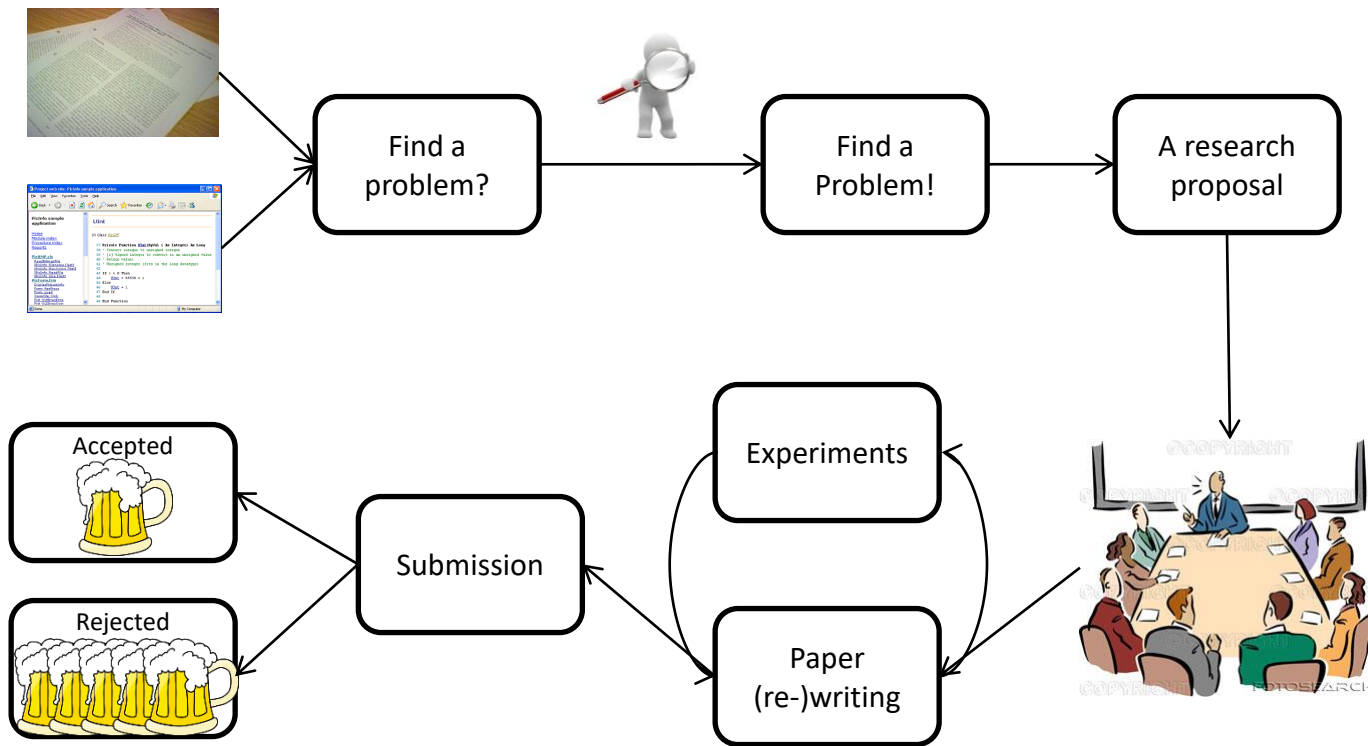
Where Are Good Ideas?

- From mentor/advisor
 - Esp. at the very beginning
- From practical issues
 - Re-implement existing methods
 - Error analysis
- From reading group
 - Take part in reading group
 - Brain storming
- From relevant area
 - One machine learning theory can be used in many domains



Pipeline of Paper Work

- A traditional MSRA-NLC style



论成败，人生豪迈，大不了，明年再投！

Tips for Your FIRST Paper

- Executable idea, not a great one
- Be familiar with related work
- Clear contributions
- Standard data set & evaluation & baseline
- Formal research proposal on group meeting

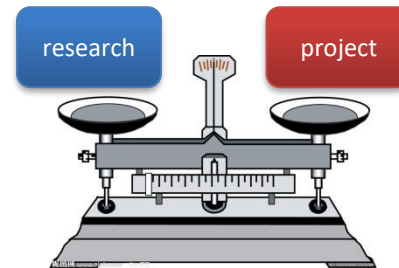
Failure

- You are going to face failure, not once, but many times
 - Paper rejected
 - Ideas perform bad
 - Slow progress on your research
- What you are supposed to do
 - Accept it
 - Learn from it, by figuring out WHY
 - Keep working on multiple things at the same time
- **Failure is just experience on the way to success!**



How to Balance Research and Project

- Your advisor will ask you to do projects
 - Is this a good thing for your research?
- Project is the hotbed for research!



- An example



More than 45 top
conference SMT papers
from NLC group!
(2006-present)

Presentation

- Audiences
 - Know who they are
- Effective slides
 - Clear outline
 - Compact description
 - Convincing examples
 - Backup Q&A
- Rehearsal
 - At least make sure your team members can understand what you are talking about

Conference & Group Meeting

- Attending TOP conferences is exciting
 - Famous guys are around you
 - Let them know you and your work
 - Learn communication skills from them
 - Sometimes, it is a FREE travel 😊
- Attending group meeting is effective
 - Update progress and block issues
 - Obtain suggestions from others
 - Brain-storming
 - Know what others are doing

Thesis & Defense

- Thesis is a summary of your efforts in the past several years, let it be
 - Systematic
 - One publication per chapter
 - The first-choice handbook for your 师弟/师妹
- Defense gives you a time to
 - 展示科研成果
 - 回首过去，展望未来
 - 各种感谢...

Key Points

- 注重知识的积累
- 博士研究系统化
- Ph.D. Research \Leftrightarrow Writing
- Ph.D. Research \Leftrightarrow Project
- Ph.D. Research \Leftrightarrow Presentation

Thank You!

Are You Ready to Pursue a Ph.D.?

- Before say yes, you should know, being a Ph.D.
 - Doesn't guarantee that you can
 - Earn a lot of money
 - Find a beautiful girl friend
 - Find a good job
 - But you can
 - Know how to solve problems
 - Look at things differently than people who did not go through this process



Writing is HARD

- It doesn't matter which part you start writing, start it RIGHT NOW
- Don't expect all experiments can be finished before starting your paper
- Make writing as a habit
- 天下文章一大抄

重视“积累”

- Chapters for Ph.D. thesis
- Slides for Ph.D. defense
- Coding/Communication skills for interview
- Social network for future career