

How to Be A Good Graduate Student

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Seminar Anleitung zum wissenschaftlichen Arbeiten

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SCARE
System Correctness
under Adverse Conditions

Outline 1/2

From Perspective of A Graduate Student

- Doing Research
 - The Daily Grind
 - Staying Motivated
 - Getting to the Thesis
 - Getting Feedback
- Becoming Part of the Research Community
 - Attending Conferences
 - Publishing Papers
 - Networking



Outline 2/2

From Perspective of A Professor

- Advice from Advisors
- Advice for Meetings



Advices and Things Should Be Avoided

- Terrible Graduate Student Assumptions

Doing Research: The Daily Grind

- Read selectively
 - “Classic” papers
 - Top journals and proceedings in your area (last few years)
- Read and evaluate
 - Make sure the described ideas really worked
 - Understand the motivations, assumptions, solutions, future directions for research, etc.
- Manage the papers you read
 - Online bibliography, e.g., BibTeX.



Doing Research: Staying Motivated 1/2

- Realize: insecurity, anxiety, boredom, etc. are normal feelings!
- Try to find a sympathetic ear
- Identify why having the trouble and how to fix it
- Manage your time well
 - Regular meetings with supervisors
 - Balance between life and work
 - Etc.

Doing Research: Staying Motivated 2/2

- Set daily, weekly, and monthly goals
- Try to find people to work with
 - Advisors and fellow students
- The divide-and-conquer strategy on daily work



STAY MOTIVATED

Doing Research: Getting to the Thesis 1/2

- Finding a Thesis Topic
 - A good Ph.D. thesis topic is interesting to *you*, to *your advisor*, and to *the research community*
 - Become and stay aware of directly related research
 - Contact
 - Potential collaboration
 - Focus on your topic
 - Define the *problem*
 - Clarify the proposed *solution*

Doing Research: Getting to the Thesis 2/2

- Writing the Thesis

- The divide-and-conquer strategy on thesis writing
- Start with an organized outline
- Explain your motivations, goals, and methodology clearly
- Be repetitive without being boring
 - by presenting your ideas at several levels of abstraction, and
 - by using examples to convey the ideas in a different way
- Having a “writing buddy” is a good idea!
-

Doing Research: Getting Feedback

- Present your ideas (presentation, etc.)
- Attend conferences and talk about your research
- Learn to listen to valid and constructive criticism
- Try to ignore destructive, pointless criticism
- Give feedback to others and help each other out

Becoming Part of the Research Community

Attending Conferences

- Meet people, discuss your ideas, and hear theirs
- Get a good sense of the current state of research
- Give a talk:
 - Fit the allocated time slot
 - Give enough detail to make it convincing
 - Make sure your slides are readable and simple
 - Try to relax and be confident
 -

Becoming Part of the Research Community

Publishing Papers

- A good paper: significant content + good writing style
 - Workshop, symposium or Journal
 - Recent conference proceedings or current journal issues
- Don't try to put every idea in your thesis into one conference paper
- Invite someone else to review before submit
- Keep trying if get rejected

Becoming Part of the Research Community

Networking

- Meet and build relationships with other researchers
- Talk about your research interests every chance you get
- Bring business cards with your e-mail address
- Maintain the relationships by E-mails and by re-establishing contact at each workshop/conference

How to get on well with your supervisor?



www.phdcomics.com

- **Arrange meetings well in advance**
 - Not able to meet at a short notice;
 - Contact with a short email;
 - Drop by office or try to phone are not good ideas;
 - Succinct and focused emails;

尊敬的教授:

您好，我有一些关于硕士论文的问题想和你讨论，不知您接下来的两个星期什么时候有时间？

非常感谢！

高杨

Dear Prof. Anderson:

It's been a while since I've written because we've been hard at work, but I am very happy to take the wraps off our latest result (or really, Series of results): Real-time Systems Verification Thesis. I know I have been hyping this up for a long time, and you're probably wondering why. It's because I honestly think it is necessary to add a chapter "Proof of soundness" in the thesis. That maybe sound unreasonable, but let me explain:

Firstly, we in the section "Real- Time Model", we claimed that

(500 words)

Anyway, it is better to sit together and have a discussion. I heard you just came from your summer vacation. How was that? Where did you go? So maybe you will be busy with some stuffs. Do you have time in next two weeks, oops, maybe next week is not a good idea, since my sister will come to visit me!

Thank you.

Alexis Sharp

Dear Prof. Anderson:

I hope your summer is going well. I am a candidate for the MS degree in biology, and I write today to request an appointment with you. The purpose of the meeting would be to discuss options for the topic and scope of my master's thesis. Will you let me know of your availability for an appointment in the next two weeks?

Thank you.

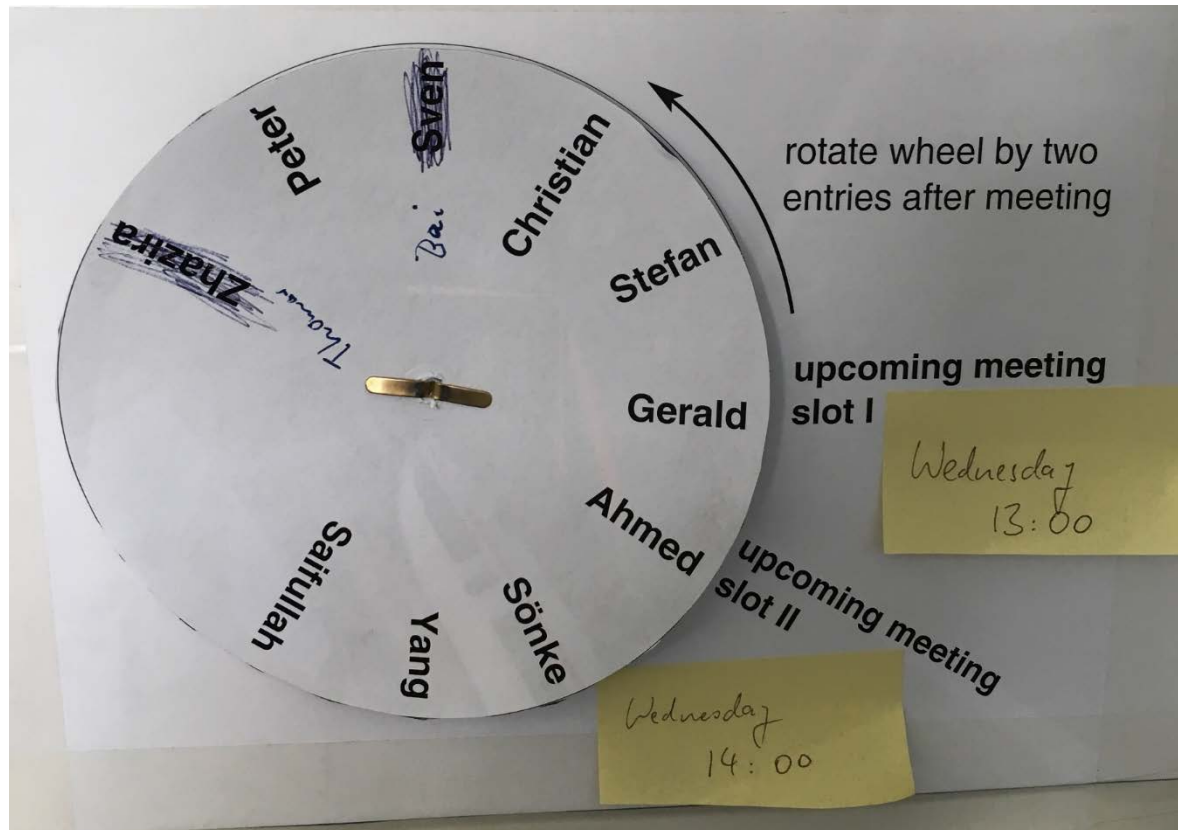
Alexis Sharp

- **Tips for meeting**
 - Regular meeting: 30 min – 1 hour, every 3 – 4 weeks;
 - More frequent initially;
 - Contact in advance if you need urgent advice or help with a technical problem;
 - If meeting has to be postponed then please arrange another as soon as possible;

“Sometimes students ask to postpone supervision meetings because they have not done as much work as they anticipated. This is when I most want to meet them! The purpose is to find out why they are behind schedule and to try to put things right before they get too serious!”

- **Before the meeting**

- Supply written material at least one day before; (a short progress report, a technical note or a draft dissertation chapter)
- Longer material should be supplied several days in advance;



- **After the meeting**

- Email a summary of the main points, especially any actions;

- **About the drafts**

- Change bars and accompanied by the annotated copies of the previous draft;
- Address all comments made on a draft;
- Spelling checker and grammar corrector;
- Name and Date;

estimation according to the narrowing $\rho \rightsquigarrow (x_j \sim b)$ or x_j computed by ICP. Here, we express the possibility of narrowing a bound $(x_i \sim b)$ by stating the new bound that would be obtained by ICP not being hull-consistent ($\not\llcorner_{hc}$, for details, cf. [7]) with the current evaluation bound ρ .

SG: \sim and hull consistent is not explained, does hull consistent means subset of?

YG: Hull consistency has been explained in Martin's part, so I did not give the definition again!

SG: Oops, sorry, I missed that one then. Maybe a reference to the earlier section, but not necessary

YG: reference added!

$$\frac{\rho \overset{C}{\rightsquigarrow} (x_j \sim b), \rho \not\llcorner_{hc} (x_j \sim b)}{H' \cup \{(Q : \Phi, \rho, C)^{(p,q)_i}\} \rightarrow H' \cup \{(Q : \Phi, \text{update}_\rho(x_j \sim b), C)^{\text{renewal}_{\rho_j}(p,q)_i}\}} \quad \text{(ICP)}$$

where

$$\text{update}_\rho(x_j \sim b)(x_i) = \begin{cases} \rho(x_j) \cap \{z | z \sim b\}, & \text{if } x_i = x_j \\ \rho(x_j), & \text{otherwise} \end{cases}$$

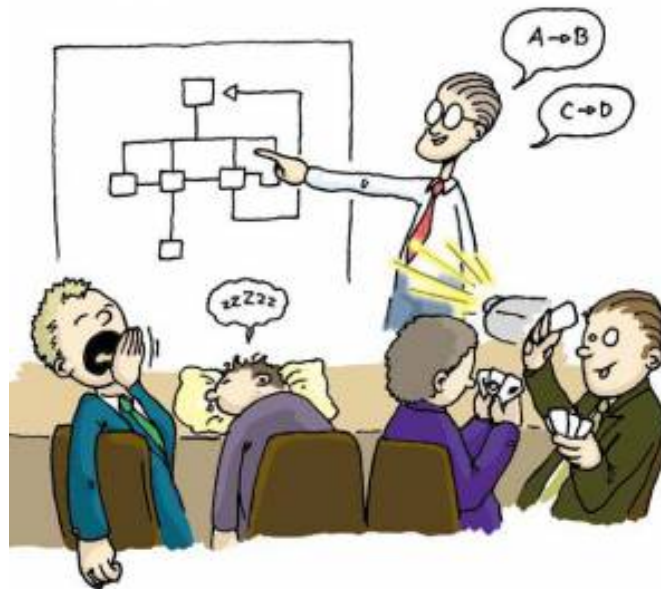
Intuitively, the *update* operator narrows the bound of variable x_j and leaves other variables unchanged. The corresponding change in the probability estimate induced by narrowing a—potentially randomized—variable x_j is reflected by

$$\text{renewal}_{\rho_j}(p, q)_i = \begin{cases} (p, q)_i, & \text{if } x_j \prec x_i \\ \mathbb{P}(\rho(x_i) \times \dots \times \rho(x_j) \cap \{z | z \sim b\} \times \dots \times \rho(x_n))_i, & \text{otherwise} \end{cases}$$

where $\mathbb{P}(I_i \times \dots \times I_n)$ is a safe, interval-arithmetic based probability estimation which returns an interval over-approximating the measure of $I_i \times \dots \times I_n$ under the distributions attached to the quantifiers.

When both rule (ICP) and rule (UP) do not yield further deductions, we say ϕ is inconclusive on ρ . We may then perform the splitting rule (SPL) to split the current computation cell into two cells (Any splitting strategies can be applied as long as

How to be a terrible graduate student?



Come to graduate school only because it allows you to postpone your entry to the real world.



Assume that your advisor acts solely in their own best interests, and never in yours.

Assume that your advisor (being more than 34 years old) doesn't understand current research, and is not (and never was) as smart as you are.



"I'm coordinating five different R&D projects, but SURE, I can spare a minute."

Never come to a meeting with your advisor prepared with an agenda of things you want to talk about, and never take notes during the discussion.

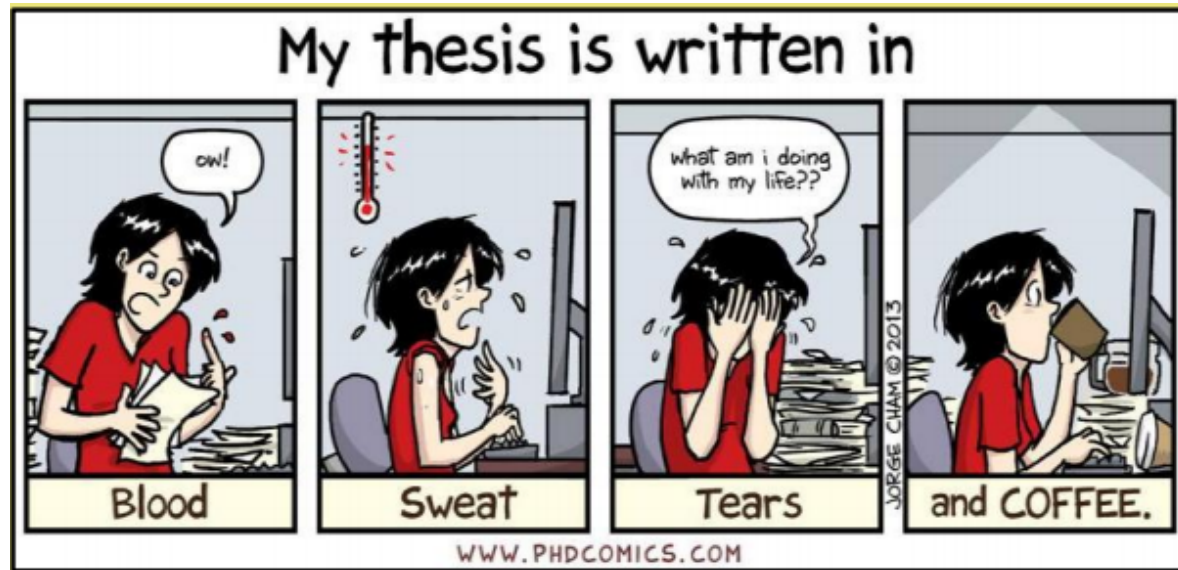
Never take notes when you read a paper or book, or record any of your ideas in a research diary.



Expect your advisor to give you a thesis topic and tell you exactly how to carry out the work, step by step.



Assume that you can write up the final thesis in a month or two.



Reference

- Marie desJardins. How to Succeed in Graduate School: A Guide for Students and Advisors.
<http://www.cs.umbc.edu/~mariedj/papers/advice-summary.html>.
- Graeme Hirst. How to be a Terrible Graduate Student.
<http://www.cs.iastate.edu/~honavar/badstudent.html>.

Thanks for your attention!