The
Thesis/Dissertation Proposal
Disclaimers

Partly based on Henri Casanova’s slides

caveat: everyone’s experience is different
  • depends a lot on your advisor and committee
Outline

- What and When
- Administrivia
- Writing/defending the proposal
What is a Thesis?

- A statement about the world
- that you claim is true
- and you can defend this claim

- A dissertation must include one or more theses
What is a Proposal?

A proposal describes work you intend to do
A proposal must also convince your audience:
- that the topic is relevant and interesting
- that you are capable of doing the work

A proposal is also:
- a preview of your thesis or dissertation
- evidence that you know what the work will require
- evidence that you have studied related work
- an agreement with your committee about what you will do

Not necessarily about results, but about the approach
However, expected results are to be discussed
Why have a Proposal?

- Because you have to! (Form II)

- To get feedback from your committee
  - these people are actually on your side and trying to help you
  - they want you to succeed
  - their ideas may not match yours – this is a good time to find out

- To get preliminary approval
  - most committee members will only require you to do things you have discussed at the proposal
Potential Issues

This proposal sets the stage for the rest of the work your committee is looking for specific issues:

- Is this proposal missing something? Does it demonstrate that the work will be completed, and have interesting results?
- A strong proposal indicates that things are going to go well
Ph.D. Proposal

Ph.D.:  
- A 20-50 page document that you can build on when writing your dissertation
  - Concise is good
- A defense in front of your committee
  - Public defense
  - Public Q&A, Private Q&A with the candidate
  - Private deliberation of the committee
- If all goes well, the committee signs off
  - If not, another proposal defense is scheduled
- The committee may demand a modified/expanded research roadmap
M.S. Proposal

M.S.:
- Less formal
- A 5-15 page document that anticipates your thesis
  - Could be a conference submission with added future work
  - Could even be a full thesis minus one chapter
- The defense is optional (up to your advisor)
- The committee reads the proposal and then signs off on it or not
When Are You Ready?

When your advisor says you’re ready! :)  

For a Ph.D.:
- In ICS, after you’ve passed the quals and the portfolio (see ICS Web site)
- It helps if you’ve published a good paper
  - Makes the committee’s life a little bit easier
- Once you can articulate a vision for future work
- It’s mostly Ok to postpone the proposal
  - Note 5-year Graduate Division deadline
  - Usually better to do a better one a semester later
  - But don’t wait for perfection (get feedback early!)

For a M.S.:
- After you and your advisor have agreed on what the thesis will contain (do not postpone)

Either way: you have preliminary work/results
Really?

When your advisor says you’re ready! :)

Once you know what you’re going to do
  • And have done some of the work
    – enough to know what you will do
    – enough to know what others have done
  • But preferably, before you’ve done it all
The proposal is completed when all committee members sign “Form II” from UH grad division.

All forms must be signed by the Graduate Chair, who then turns them in to Grad Division.

Once it’s been processed:
- Ph.D. student: you can attend only 5 ICS690 sessions a semester instead of 10.
- You can register for ICS700/800.
- You can register for ICS700F/800F and be considered full-time.
The Committee

Ph.D.: **At least** 5 people on the committee
- The chair (your advisor)
- 3 graduate faculty members in your program
- 1 “outside member”

M.S.: **At least** 3 people on the committee
- The chair (your advisor)
- 2 graduate faculty members in your program
- or, 1 graduate faculty members in your program and 1 “outside member”

What’s this **outside member**?
The Outside Member

 Represents the university’s interests
 – Is supposed to be an objective observer
 – Reports problems to the Graduate Dean
   • should never happen!

 Must be a UHM graduate faculty in another program

 Must be tenured

 So whistleblowing will not risk his/her career

 Should be familiar with the university

 If the outside member happens to be in an area related to the research topic, all the better

 **Bottom line:** check with your advisor and with your graduate chair on the viability of outside members
Committee Members

- You want people who are on your side
- You want to consider their potential as letter-writers for jobs
- Some committee members will be involved with your work, some won’t
  - It depends on them and on you
- If there is a dramatic change in your research, you should tell committee members along the way
  - No surprises on defense day!
- You can have additional committee members
  - e.g., ones outside of UH
Writing the Proposal

- Look at past proposals, if at all possible
  - Proposals are internal department documents
  - But your fellow students can give you theirs
  - And your advisor may show you samples as well
- Look at dissertations/theses
  - Don’t read them fully unless they relate to your research
  - But get a feel for the structure and the expected content
  - The “ACM best dissertation award” is probably a good place
- Writing the proposal is easier if you’ve already published
  - Taking words from your own article is recommended
- You’ll go through multiple revisions with your advisor
  - The writing must be 100% your own
What goes in it?

- A **working thesis/dissertation title**
  - And an **optional abstract** (check with your advisor)
- A **significant introduction** with all necessary background
  - Establishes the area/territory
  - Describes the broad foundations of your work with some references
  - Defines the general scope of your research
  - States the problem/hypothesis
  - Briefly summarizes your research approach and objectives
  - **Target it to your committee members if you can**
- A **related work** section (with bibliographical references!)
  - The “lit review” (see “How to write a lit review” slides)
  - Should be articulate and in the end make it clear that there is a useful contribution to be made
What goes in it?

- A research roadmap and an expected list of contributions
  - Details of methodology and approaches
  - Bulleted list of contributions
  - Expected outcomes, if applicable
- A preliminary results section
  - To convince the committee that there is something there
  - Different advisors have different views on how extensive this section should be
- A timeline
  - Including the time for writing
- An (optional) list of publications up to now

For writing style/tips see the “Writing a thesis/dissertation” slides
The Time-Line

- Estimating the time for research is very difficult, and your time-line will always evolve (easier with experience)
- Your advisor may provide some guidance
- The approach is just the same as for everything else:
  - Break things down into small sub-tasks
  - Set (soft) sub-task deadlines
  - Re-assess every 2 weeks
  - Makes it possible to track progress better
- Things rarely go according to plans, especially initially
  - Part of the research is systematic
  - Part of the research simply isn’t
- Your committee knows that your time-line is simply your and your advisor’s best estimate
  - Especially if you’re proposing early
Outline contingency plans

“We’ll first attempt this, which should lead to great results. If, however, it doesn’t work due to x, y, z, then we’ll use this other approach.”

Shows you don’t have potential roadblocks along the way and that your whole work doesn’t hinge on one critical yet-to-be-accomplished step

If there is such a step, it should be part of your preliminary work that forms a proof of concept that it could work

“small” experiments on “small” dataset

prototype implementation

“small” case study
More Advice

Be upfront about weaknesses/limitations

- Bad idea to claim your work solves everything
  - Or to let it be implied by omission
- Bad idea to let committee members uncover limitations themselves
- Doing research means selecting what you do
  - Some interesting problems may be “out of the scope of this work”
- Your advisor and you define the scope (amount of work)
- Make the scope crystal clear in the proposal
- If the committee decides the scope is too narrow, then they’ll let you know
Even More Advice

It’s good to spell out research questions
Explicitly saying “the research questions this work will answer are…”

A thought exercise some find helpful:
Try to write as many (relevant) conference paper topics and 2-sentence abstracts as you can in 20 minutes
Those give you a notion of expected contributions of your work
Yet More Advice

Be clear about your methodology
- What it is that you’ll do to answer your research questions
- Be detailed

How does it all relate to standard practice in your field?
- “Inventing” your own methodology without strong justification is generally a bad idea
- Methodology is typically what committee members complain the most about
Final Advice

Be clear about your goals

- Statement like “we’ll improve xyz” must be clarified
  - According to what metric?
  - Compared to what state-of-the-art?

- Words like “almost”, “very”, “small” are almost always better replaced by quantitative (within 1%, in 95% of the cases, etc.)

General advice for all writing

- But for the proposal it can be nice to point to numbers achieved in previous work to get a sense of the margin for improvement
  - If authors xyz are already within 1% of optimal, your work is likely useless
The Defense

- You need to give the proposal to your committee members at least 2 weeks in advance, and earlier is better.
  - Each advisor has a magic number of weeks.
- Plan a 1-hour defense
  - but reserve the room for 3 hours.
- Remember that scheduling 5+ faculty members is hard.
- Do one or more practice defenses!
  - Graduate seminar
  - Your friends
The Defense

Committee members will ask questions

Some questions can be very detailed about particular points of your methodology

Some questions can be very broad, to see if you will become an expert in your field

“What do you think the future of .... is?”

“What’s one concrete impact of your work?”

“Tells me what’s novel in one sentence!”

Random advice: go for the simple answer first
The End

Questions?

Comments?

Personal (Horror/Success) Stories?