



NTNU

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Publication, key to scientific success!

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IME phd student seminar, 2011

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Structure of the talk

1. Two types of theses
2. Some simple advice
3. Where to publish papers?

 **NTNU**
Trondheim, Norway

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Two types of theses

- Monograph
 - PROS:
 - Easier to accommodate deep arguments and lots of detail
 - Thesis becomes a publication in its own right, separate from papers
 - Better structure, more pleasing to read?
 - CONS:
 - Less synergy between thesis writing and paper writing
 - Need more discipline to control the progress
 - RISK:
 - Early parts (e.g., state of the art) may become dated, especially if you lag behind the schedule
- Paper collection
 - PROS:
 - Dividing the work into smaller, more manageable chunks, clear milestones
 - Stronger synergy between paper writing and thesis writing (getting a longer publication list for free)
 - Paper publication gives early external feedback
 - CONS:
 - Length restrictions for papers prevents long / deep sections
 - Overlap between papers
 - Gaps between papers?
 - RISK:
 - What if you do not get enough papers accepted quickly enough?
 - Problems to synthesize the various papers in the end?

Some simple advice

- On choice of thesis type:
 - discuss this with your supervisors
- But:
 - If you choose a monograph
 - you should still have a strong focus on publishing papers in parallel
 - Gives early feedback; milestones
 - Gives credibility to your thesis
 - You need more publications when applying for a postdoc
 - If you choose a paper collection
 - You should still have a plan for the entire structure of your thesis work
 - How different papers will fill this structure
 - Avoid an arbitrary collection of papers
- Plan to deliver 3 months before your funding ends

Advice (cont.)

- Start writing as early as possible! (papers, thesis)
- Don't be shy to show and discuss early drafts to your supervisor and other people
- Don't be reluctant to publish early stage ideas in peer-reviewed conferences or journals if possible
- But... don't continue publishing just early stage ideas all way through your phd studies
 - Papers must gradually build up to more mature results

Advice, cont.

- Avoid becoming your own worst enemy
 - (Inflated ego / arrogance / stubbornness / sloppines)
 - Lack of self-confidence
 - Fear of writing / putting your ideas on paper
 - Fear of proposing ideas or showing written material to others
 - Exaggerated self-criticism / perfectionism
 - End up spending too much time polishing one chapter over and over again while other thesis chapters still remain unwritten
- Although your thesis should be as good as possible, it is better to deliver one that is good enough than not deliver at all
 - Your most brilliant work could yet come during a postdoc or later

Where to publish papers

- Different publication outlets:
 - **Doctoral consortia:** Research plans
 - NOTE: normally, these papers cannot be part of the thesis collection
 - **Workshops:** Early stage ideas, with limited evaluation
 - Often narrower focus than conferences
 - NOTE: workshop papers may be dubious as part of thesis
 - **Conferences:** Clear contribution, at least some validation
 - Different types of papers: full papers (~5000 words), short papers (~2500 words), posters (~1-2 pages)
 - NOTE: normally only full papers convenient as part of thesis
 - **Journals:** Mature work with detailed validation / survey papers
 - Allowing longer papers than conferences
 - PROBLEM:
 - Your work might only reach this level towards the end of phd studies
 - response time may be long, hard to get accepted within thesis timeframe
 - Possible exceptions: Literature review papers, special issues
 - Many open access journals have shorter response times
- Avoid bogus and poor quality outlets

Publications and scoring points

(The Norwegian system)

- University depts get awarded for their publications
 - Journal paper: 3 points (level 2), 1 point (level 1), 0 points (level 0)
 - Example level 2 journals: CACM, many IEEE and ACM Transactions...; cf <http://dbh.nsd.uib.no/kanaler/>
 - Book section (incl conference paper; workshop paper)
 - 1 point (level 2 publisher, e.g., Prentice-Hall, Erlbaum, MIT Press)
 - 0,7 points (level 1 publisher, e.g., Springer, IEEE, ACM, ...)
 - BUT: proceedings that are part of a series (e.g., LNCS, LNAI, LNI, ...) may count as a level 1 journal and therefore give 1 point
 - 0 points (level 0 publisher, e.g., proceedings just printed by host university or as open access on the web); IDI rule: such publications get no travel support
- Some anomalies:
 - The quality or length of the papers themselves is not considered
 - Points for conference papers: quality of the conference is not really considered, rather who publishes the book

What determines the prestige of publication channels?

- Should be peer reviewed
- Journals
 - Circulation, #subscribers / readers
 - Professional opinion (ranking)
 - Acceptance ratio
 - Impact factor (IF)
- Conferences
 - Circulation of the proceedings, size (#attendants)
 - Professional opinion (ranking)
 - Acceptance ratio
 - Impact factor
- Notice: Acceptance ratios of conferences and journals may not be directly comparable

Submission & review processes

- Stage one: find a suitable publication outlet
 - Journals
 - Submit any time, no deadline (except special issue)
 - Topic list, length restrictions
 - Conferences: **Call for papers**
 - Given deadlines (for submission and notification)
 - Topic list, paper length and format restrictions
 - Paper categories
 - Program committee etc.
- General advice: Read the CFP thoroughly
 - Is this the best place to send your work?
 - Good conference, appropriate topic list, reachable deadline, ...
 - Which category of paper are you going for?

If uncertain...

...whether a publication channel has the appropriate research focus and quality level?

- Read some papers from previous issues of the journal or conference
- Check the topic list
- Check who is on the program committee or editorial board
- Ask your supervisor

Paper categories

- Some conferences have several paper categories
 - Example:
 - Technical solution papers
 - Scientific evaluation papers
 - Industrial experience papers
 - Theory / vision papers
 - Generally: full papers vs. short / r-i-p / position papers
- Advice:
 - Have a clear idea up front what type of paper you are trying to write
 - Be sure to satisfy the evaluation criteria for that category

How to have papers accepted

- The research (and paper) must be
 - Original
 - Both vs. work by others and own previous publications
 - Significant: important findings, useful for somebody
 - Correct: e.g. proper use of methods, statistics, reasonable assumptions, ...
 - Well presented (language, structure)
 - Relevant / within the scope of the particular conference or journal
- Key concerns
 - Make a precise claim
 - Validate the claim in an appropriate manner
 - Good comparison with related work
 - Helps to convince about originality (and maybe also significance)
 - Follow format and length constraints
 - Have someone look over the language if your English is not very good
 - Professional proofreading services also a possibility, but cost money

Shaw: "Writing good software engineering research papers" (Proc. ICSE'03)

- http://works.bepress.com/mary_shaw/4/
 - And hit the "Download" button to find the full paper...
- Contains advice / illustration on
 - How to formulate claims precisely
 - How to validate claims
 - How to write good comparisons with related work
 - Mostly generic advice, relevant also for phd students in other fields than software engineering
- Shows acceptance ratios for different kinds of papers
 - NB: This would differ for other conferences
 - Some would have more evaluation papers
 - Some would have more technical solution papers

CHI guidelines to successful papers...

- <http://www.chi2011.org/authors/archive-guide.html>
- Also contains advice on what a paper needs to get accepted
- + details about the criteria used by the PC
- Although written with one specific research community in mind (human-computer interaction) the advice is again quite generic and potentially useful also for researchers in other areas

IMRAD

- Typically recommended structure for papers, especially in empirical disciplines
 - Introduction
 - Methods
 - Results, And
 - Discussion
- Sections need not have those exact names, and there could be other sections in addition, but this is an overall structure often seen

Literature review and survey papers – what and why?

- Literature review as part of
 - thesis, for instance chapter(s) called "State-of-the-art" or "Related Work"
 - papers with own contributions, e.g. sections called "Background" or "Related Work"
- As a paper in its own right
 - does NOT present new ideas or findings by the author
 - surveys the state-of-the-art within a certain research area, e.g.
 - Available technology within some domain
 - Available algorithms or methods to do some task / solve some problem
 - Existing studies to measure effectiveness or user-satisfaction of some type of IT
 - Most often found in journals

The bad review

- Obvious mistakes
 - Overlooking or omitting relevant works
 - Including irrelevant works (e.g., nepotism)
 - Falsification, fabrication, plagiarism
 - Sloppiness (e.g. incorrect reference details) and poor writing
- Less obvious mistakes
 - List appearance, lack of synthesis
 - Poor prioritization (how much space to spend)
 - Just agreeing or disagreeing, no *critical appraisal*
 - Over-usage of direct quotations, rather than own argument
 - Opinions not substantiated
 - Only shallow comparisons

Ethics and literature review

- All quotes must be specifically marked as such, e.g. "..."
(reference, page number)
 - i.e., just the reference is not enough if the text is identical
 - Never copy source text directly into your own without proper quoting, not even for temporary sketching or internal documents
 - Never pass another person's arguments off as your own (e.g., by minimal rewriting of source text without reference)
- Avoid citing papers you have not read
 - Except in very special cases, e.g., not able to obtain original source, or this is in a language that you do not understand
 - Correct way of indicating this: "[5] (as cited by [6]) argues that..."
- If you have access to somebody's unpublished paper...
 - for instance by reviewing it for a journal or conference...
 - You should not use material / ideas from it
 - Nor cite it without asking permission from the author
 - and in some cases you cannot ask without compromising reviewer anonymity

Avoid too much quoting anyway!

- Direct reproduction of others' arguments
 - makes your text dull and less innovative
 - often gives a fragmented structure and poor flow of argument
 - If you quote large fragments, this could be breach of copyright, even if proper quoting means that plagiarism is avoided
- The same goes for minor rephrasings which are close to direct reproduction
- While proper use of "as cited by" solves ethical issues of citing unread papers, it signals
 - lack of independent opinion
 - laziness (relying on others rather than doing the work yourself)

Example

- Assume our text is
 - According to [1] requirements engineering (RE) can be defined as “(some definition)” (p 5), and is important for the following reasons: (some reasons). [1] considers RE to consist of the following tasks: (list of tasks), and sees (list of problems) as the main research challenges. [2] defines RE as “(some other definition)” (p 11), and stresses the distinction between various types of requirements: (list of types). The importance of a good specification is much stressed (list of arguments). [3] defines requirements engineering as “(definition)” (p 14) *<this def. btw is equal to [1], which is cited in [3] at this point>* and claims that this is vital to any project because (list of arguments) ... etc. (for source [4], [5], ...)
- Assume that there is proper referencing and quoting here, yet what is the problem?
- Better (for example)
 - There are several definitions of requirements engineering (RE), here the one by [1] is chosen: “(chosen definition)” [1] (p 5). Several arguments are commonly made for the importance of RE:
 - Argument 1... (references to sources making this argument, say [1,3])
 - Argument 2... (references to sources making this argument, say [1,2,4])
 - ...

Survey papers - highly relevant for PhD students

- Finding good survey papers within your field
 - May greatly help your own literature search
 - and the writing of your state-of-the-art part of the thesis
- Writing a survey paper yourself
 - High synergy with the state-of-the-art part of your thesis
 - May be the best opportunity to get a journal publication before your dissertation
- Other early stage publishing opportunities are often less prestigious, e.g.
 - Doctoral consortium papers,
 - Posters and workshop papers
 - Research-in-progress papers at conferences

Should you write a survey paper?

- Ideal situation (YES!)
 - Your research topic is hot
 - No existing paper gives a comprehensive survey of the area
 - Maybe the best chance to get a journal paper published during the phd studies
 - Could give you a lot of citations, which would be an asset e.g. in later applications for postdoc positions
- Still possible (yes)
 - One or more survey papers exist, but
 - Are somewhat dated, or not covering all relevant works
 - Provides only shallow comparison, and you have an idea for another angle that might make your paper better
- Dubious (no?)
 - You have no idea how to improve on already published survey papers in the area

#	Author	Paper Title	Publ Channel	Year	Cit
1	Aamodt, Plaza	Case-based reasoning: foundational issues, methodological variations, and system approaches	<i>AI Communications</i>	1994	3801
2	Jenssen, et al.	A literature network of human genes...	<i>Nature Genetics</i>	2001	660
3	Conradi, Westfechtel	Version models for Software Configuration Management	<i>ACM Computing Surveys</i>	1998	579
4	Komorowski, et al.	Rough sets: A tutorial	Rough Fuzzy Hybridization: (book, Springer)	1999	551
5	Rao, Su	A survey of automated web service composition methods	SWSWPC (conference)	2005	514
6	Lindland, Sindre, Sølvsberg	Understanding quality in conceptual modeling	<i>IEEE Software</i>	1994	513
7	Dybå, Dingsøy	Empirical studies of agile software development: A systematic review	<i>Information and Software Technology</i>	2008	295
8	Monteiro, Hanseth	Social shaping of information infrastructure	IT and changes in Org. Work (Chapman & Hall)	1995	281

Most cited IDI papers,
Google Scholar 17.10.2011

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The green ones are
Literature review papers

Should you include your own works in the survey?

- Often, the reason why you want to survey methods A, B, C, ..., is because your ultimate goal is to come up with a method Z which is better than all these
- If you have already done some work on method Z, should this also be included in the survey?
 - NO: if it is yet unpublished, or only presented in research-in-progress type publications
 - no: if it is published but not well known in the field
 - YES: if it is already well known
 - so that a survey will be criticized for not including it
 - BUT: very challenging to remain unbiased !
- General advice: Write the survey paper before you do too much work on method Z itself
 - On the other hand: Dangerous to start the survey without any ideas about Z ?
 - Becomes too bound by previous works, hard to get own ideas afterwards??

The good survey paper

- No "original work" by the author →
- The contribution of the survey paper lies in
 - The collection and systematic presentation of the relevant works within an area in one place (necessary!)
 - Interesting for a reader with limited experience in the field
 - The framework used for comparing and contrasting the various works, ideally providing new insight (great!)
 - Interesting even for an expert in the field
- May also contain directions for future research
 - a "roadmap" paper

Shallow vs. deep comparison (E.g.: a comparison of religions)

Shallow

- Focussing on facts / surface information, e.g.,
 - Year started
 - # followers
 - # deities
 - Main prophets
 - # words holy books
 - Countries where dominant
- Mainly giving info that was known before or could easily have been obtained also by the reader

Deep

- Schopenhauer's classification
 - Optimistic religions
 - Islam
 - Judaism
 - Pessimistic religions
 - Buddhism
 - Christianity
 - Hinduism
- Not more "correct" (probably controversial)
- But giving new insight, not something just gathered from the lexicon, public statistics, etc.

IDI paper examples

(cf. green rows in table two slides ago)

- Aamodt's paper, notice especially
 - The motivation in section 1 why this survey is useful although other surveys of case-based reasoning already exist
 - The descriptive framework in section 3, and how this is used onwards in the paper
 - Each section thereby focuses on some methodological issue
 - better than sections like "The CASEY approach", "The BOLERO approach", ...
- Conradi's paper, notice especially
 - Again, how the focus is on methodological issues
 - How some issues are deliberately given low priority, to make space for a deep discussion of other issues
 - How section 2-5 elaborates a taxonomy which is then used to classify concrete systems in section 6
- Rao & Su's paper
 - Notice generic composition framework in section 2
 - Basis for discussing similarities and differences
 - "unify the terms used in the paper" before surveying various approaches in sections 3 and 4

Summing up

- Start writing early (both papers and thesis)
- Don't be afraid to show early drafts to your supervisor and others who could give good comments
- Investigate early about possible publication outlets in your research area
- Consider publishing a survey paper as a result of your literature review