

# Writing a Literature Review

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# Overview

- Report Writing (for ICT)
  - The purpose of a report
  - Chapter/Section Overview
- Writing a Literature Review
  - How to read efficiently:-)
  - How to use the literature to find literature
  - How to take notes and combine them into a review

# Report Writing

- The purpose of a report
  - To communicate your work to an audience
  - To demonstrate your understanding of a domain and how your work fits into/contributes to/extends (as appropriate) a domain
  - To back up your claims through appropriate evaluation
  - To discuss the significance of the results of your evaluation

# Report Writing

- Implications
  - Report should be free from spelling mistakes and grammatical errors
  - Ideas should be communicated clearly (simple sentences, etc.) and in an appropriate style
  - There should be a logical structure to the way you present your argument
  - Each chapter/section should introduce what's coming up and conclude with the significant points you want to make
  - There should be no secrets! Early disclosure is expected.

# Report Writing

- Implications
  - You are expected to read relevant work of others...
  - ... and report on it (be critical!)
  - Clearly distinguish between your own work and the work of others
  - Reference properly and consistently

# Report Writing

- Implications
  - You must back up your claims (either by citing the work of others, or by referring to the results of your own evaluation)
  - Results should be presented in a manner appropriate for the domain (e.g., how is relevant work evaluated?)

# Report Writing

- Implications
  - You must demonstrate that you understand how your work fits into the domain
    - both in terms of how it fits into the literature and in terms of the results you obtain
  - Ideally, compare your results to results of other similar work
    - Easiest to do if you have access to shared test/evaluation data or can replicate experiments done by others and compare performance metrics (measurements)

# Report Writing

- Typical structure of a report
  - Abstract
  - Tables of contents (figures, tables, etc.)
  - Introduction
  - Background/Literature Review
  - Design/Implementation
  - Evaluation & Testing
  - Discussion of Results
  - Conclusions and Future Work



# Report Writing

- Abstract
  - To describe concisely the problem you tackled, the method you employed, the results you obtained, and a critical statement about the outcome

# Report Writing

- Table of Contents (figures, tables, etc.)

— ...

# Report Writing

- Introduction
  - What is the problem you're trying to solve?
  - What is your research question?
  - Why is it an important problem?
  - What's your motivation for solving it?
  - What are your objectives?
  - What are your main/secondary contributions?
  - What were your main/overall results?
  - Chapter/Section overview

**NB: CIS students**  
Main Goal and Objectives  
should be a separate  
chapter (c. one page)

# Report Writing

- Background/Literature Review
  - Normally, assume that reader is someone with your experience/knowledge \*before\* you did the current work
  - However, if work incorporates more than one domain, you are likely to have to give a brief background to each domain
- What prior work is relevant to yours?
- And why?

# Report Writing

- Background/Literature Review
  - In your report you are trying to convince reader that your approach is sensible
    - You're going to demonstrate that your approach builds on the work of others, though you shouldn't refer to your current work here
    - You should be critical of the work of others
    - You're also trying to show that you haven't missed anything significant/important

# Report Writing

- Background/Literature Review
  - I like to structure my Lit Review on a ‘model’ (system) architecture to solve the problem I’m working on
  - What significant “processing steps” are needed to solve the problem?
    - What are the different approaches to each processing step, and which systems use each approach? With what costs? success?

# Report Writing

- Background/Literature Review
  - Lit Review should be a cross-section of the literature, rather than a sequential description of systems
  - Keep description of other systems high-level
  - Don't underestimate the importance of the Lit Review
    - Shows that you've thought about the problem; been exposed to different approaches to embrace those that work, avoid those that don't; acquired a certain depth of knowledge; are able to share that knowledge critically
    - Stick to peer-reviewed articles/books. Avoid [wikipedia](#), magazines, newspapers!

# Report Writing

- Design/Implementation
  - Now you can talk about your approach, and reasons for it
    - It can follow the ideal ‘model’ you presented in the Lit. Review
    - You can, and indeed should, cross-reference to the Lit. Review
    - Systems on which you’ve based your approach can be described in more detail here



# Report Writing

- Design/Implementation
  - Remember to justify *every* decision that you make!
  - Remember to adequately reference technologies you use
  - Don't go overboard with system schematics (most of these can go into an appendix), unless it is appropriate to do so
  - Write and describe, don't just draw!

# Report Writing

- Design/Implementation
  - CIS/CSAI:Especially in implementation chapter, talk about major data structures and operations on them, rather than organise it by function! How do major data structures interface?
  - CCE/NME: design issues, compromises, technologies.  
implementation cost
  - \_ What technologies did you use and why?
    - If you've used code developed by someone else, reference it!
  - \_ Do give screen shots (remember to no. figures, tables, etc., and to refer to them in the text)

# Report Writing

- Evaluation
  - What claims are you making, and how are you going to ‘prove’ them?
  - How are these types of system normally evaluated? (Give a small lit review, if there are several acceptable approaches, and remember to provide references)
  - Are you able to follow normal evaluation, or do you have to do things differently (because of cost/time/etc)?

# Report Writing

- Evaluation
  - Describe your evaluation set-up or simulation environment
    - Equipment, participants (how many? What skills? How did you get them to participate? etc.), duration, location, etc.
  - Describe your experiments/simulation and or experimental details, and the results you obtained (be objective! Don't discuss the implications yet)
  - Use tables, graphs, charts, etc. to describe results, but don't present the same results in different ways

# Report Writing

- Evaluation
  - Describe the results, as well as presenting them
  - Draw attention to anomalous results
  - If required and/or appropriate, you should also have a section on testing – discuss with your supervisor
    - This should include a test plan and the test results

# Report Writing

- Discussion of Results
  - Objectively explain the significance of your results
    - Both independently and in comparison to similar systems
  - Explain why you obtained the results you obtained
    - Including any anomalous results
  - If you don't get the results you expected/hoped for, don't be afraid to explain why this may have happened
    - "Ideas do not have to be correct in order to be good; it's only necessary that, if they do fail, they do so in an interesting way"  
- Robert Rosen

# Report Writing

- Conclusion
  - More than just a summary!
  - Draw conclusions from your work (was it a worthwhile approach? What would you do differently? Etc.)
  - In Introduction, you asked your ‘research question’ and you stated your objectives. Answer the question and state whether you met your objectives
  - Future work...

# Writing a Literature Review

- How to read efficiently :-)
- How to use the literature to find literature
- How to take notes and combine them into a review



# Writing a Literature Review

- How to Read Efficiently
  - Read abstract
  - If paper is relevant, read introduction and conclusion
  - If still relevant, read literature review and approach/overview
  - If relevant, read evaluation and results
  - Only if absolutely necessary, read detailed design/implementation

# Writing a Literature Review

- How to Read Efficiently
  - Chicken and Egg
    - If you know the problem you're trying to solve, your reading can be focussed
    - If you're *looking* for a problem to solve, your reading strategy must change (initially)

# Writing a Literature Review

- How to use the literature to find literature
  - If a paper is relevant, it should have a relevant literature review
  - Read it, and track down and read the papers it refers to
  - Use system like CiteSeer to find other papers that refer to:
    - The paper you're reading
    - Significant papers that the paper you're reading refers to!

# Writing a Literature Review

- How to take notes
  - If the paper is relevant, write down its bibliographic reference (entry should be complete) and give it an id
  - Jot down notes of anything (statements/opinions) that is relevant/interesting (in the sections you're reading)
  - Remember to put direct quotations (sentences/phrases/unusual terminology) into quotes!

# Writing a Literature Review

- Based on your research, build a model of the (reasonably high-level) processing steps needed
- Organise your notes around the model
  - You should end up with a series of statements related to each processing step about each paper you read
  - Remember to use the ref id with each statement!
- You can now make statements about groups of papers

# Writing a Literature Review

- Write up your literature review!
  - Length will vary according to publication
    - Short for a (2-page) poster; longer for a (10-page) conference or journal paper; longer still for a research publication (e.g., report, dissertation, thesis), 10% of report length
  - So choose most important/significant claims for shorter pieces

# Writing a Literature Review

- Example... Document Fusion Literature Review...

# Writing a Literature Review

- Referencing your sources
  - Every time you make a claim, you need to provide a reference
    - At the point in your report at which you make the claim
    - And full referencing details of the source in the references list
  - For more information see:
    - [‘Plagiarism... and How to Avoid it’](#)
    - JISC Plagiarism Advisory Service, [“A Quick Guide to Referencing”](#)



# More Links

- [Comrie, A. C., Scientific Report Writing.](#)
- [UW-Madison Writing Center, 2006, Scientific Reports](#)
- [Report Tips](#)
- [Dolphin, W. D., Writing Lab Reports and Scientific Papers](#)