Lecture 3.4

Literature Reviews

UNIVERSITY OF AUCKLAND

COMPSCI 705 / SOFTENG 702

Dr Danielle Lottridge

Thanks to Prof. Robert Amor

Learning Objectives

- Understand what exists in a literature review
- To understand quality indicators for literature
- Know what types of information to identify in a paper
- To know what types of literature exist
- To be able to find literature
- Learn an approach to reading research literature
  - Know what should be understood at each pass
- Learn to quote and reference correctly
- Learn approaches to effective presentations

Literature Review

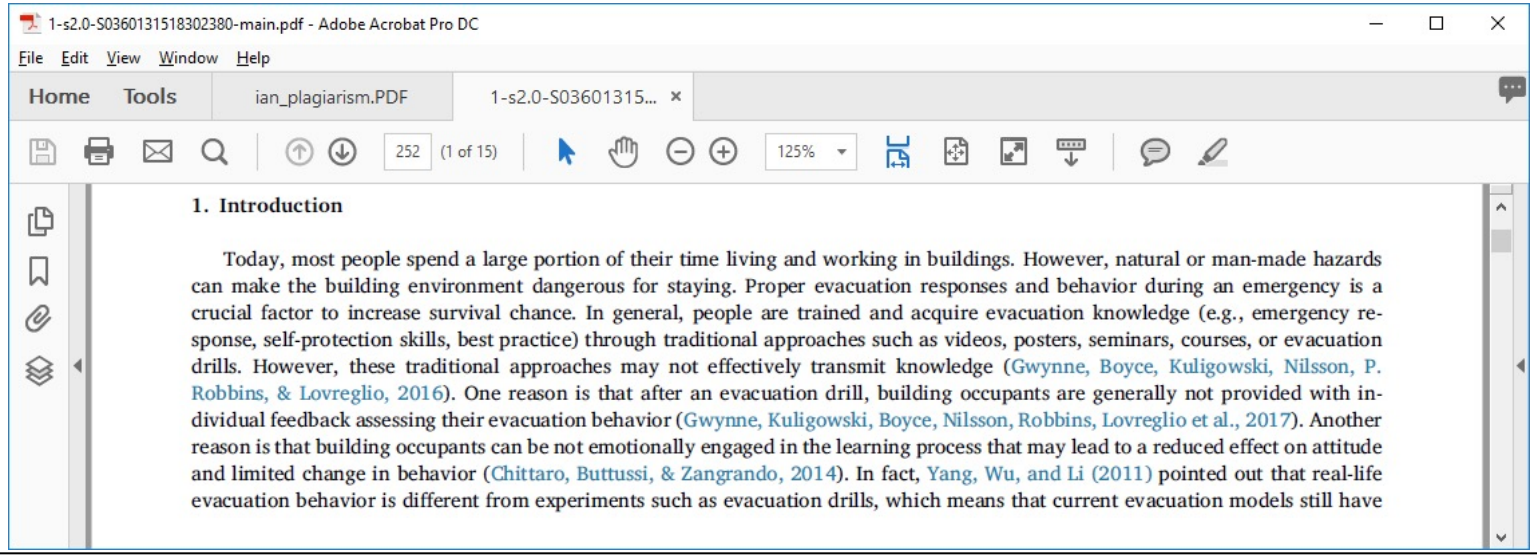
- An account of what has been published on your topic of interest
- Purpose – to critically analyze a segment of a published body of knowledge through summary, classification, and comparison of prior studies
- Traditional
  - Identifies and summarises a body of work
  - Identifies gaps and research frontier
  - Coverage may not be complete
- SLR – Systematic Literature Review
  - Rigorous process to identify 'all' relevant literature
  - Identifies and summarises a body of work
  - Identifies gaps and research frontier

Literature Review Presentation

- Why?

The Format of a Literature Review

- Introduction
  - Why you are writing a review, why the topic is important, where does it fit in HCI
  - The scope of the review — what will the discussion include and exclude
  - The organisational pattern of the review

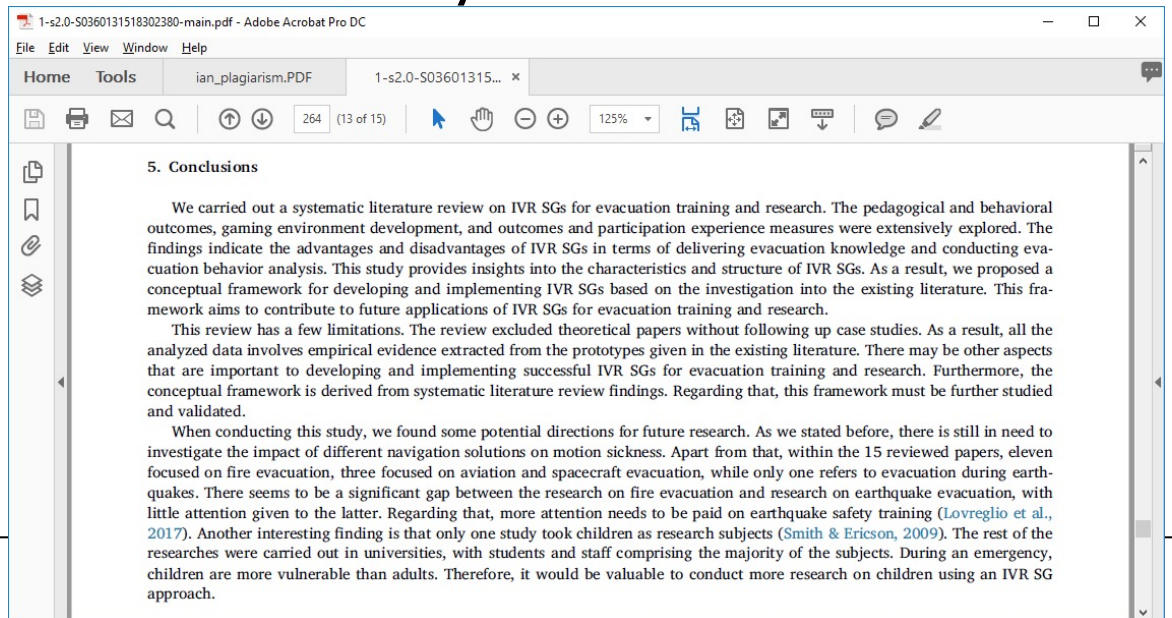


The Format of a Literature Review

- Body
  - Headings and subheadings
  - Summarize and evaluate the current state of knowledge
  - Note major themes or topics, the most important trends, and any findings about which researchers agree or disagree
  - Its purpose is to make an argument that will justify your proposed conclusions

The Format of a Literature Review

- Conclusion
  - A summary of the main agreements and disagreements in the literature
  - The general conclusions that are being drawn
  - Highlight gaps and indicate how previous research leads to your own conclusions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5. Conclusions

We carried out a systematic literature review on IVR SGs for evacuation training and research. The pedagogical and behavioral outcomes, gaming environment development, and outcomes and participation experience measures were extensively explored. The findings indicate the advantages and disadvantages of IVR SGs in terms of delivering evacuation knowledge and conducting evacuation behavior analysis. This study provides insights into the characteristics and structure of IVR SGs. As a result, we proposed a conceptual framework for developing and implementing IVR SGs based on the investigation into the existing literature. This framework aims to contribute to future applications of IVR SGs for evacuation training and research.

This review has a few limitations. The review excluded theoretical papers without following up case studies. As a result, all the analyzed data involves empirical evidence extracted from the prototypes given in the existing literature. There may be other aspects that are important to developing and implementing successful IVR SGs for evacuation training and research. Furthermore, the conceptual framework is derived from systematic literature review findings. Regarding that, this framework must be further studied and validated.

When conducting this study, we found some potential directions for future research. As we stated before, there is still in need to investigate the impact of different navigation solutions on motion sickness. Apart from that, within the 15 reviewed papers, eleven focused on fire evacuation, three focused on aviation and spacecraft evacuation, while only one refers to evacuation during earthquakes. There seems to be a significant gap between the research on fire evacuation and research on earthquake evacuation, with little attention given to the latter. Regarding that, more attention needs to be paid on earthquake safety training (Lovreglio et al., 2017). Another interesting finding is that only one study took children as research subjects (Smith & Ericson, 2009). The rest of the researches were carried out in universities, with students and staff comprising the majority of the subjects. During an emergency, children are more vulnerable than adults. Therefore, it would be valuable to conduct more research on children using an IVR SG approach.

Finding Literature

How do you find information?

- What do you do currently?
  - Why is this good?
  - Why is this bad?

- Motivation
  - Standing on the shoulders of giants
    - Understanding where the forefront of research is
    - Research something new
    - Don’t reinvent the wheel
    - Learn about dead-ends

Quality Obsession

> "No one knows how many scientific journals there are, but several estimates point to around 30,000, with close to two million articles published each year." (Altbach and de Wit 2018)

- So how do we know what is worth reading?
  - Quality Publication Aggregators
  - Peer Review
  - Citations
  - Knowledge of Journal or Publisher
  - Knowledge of Institution
  - Knowledge of Author

Helpful Resources

- Quality Publication Aggregators – and others
  - Scopus, Science Direct (Elsevier)
  - Springer Link
  - IEEExplore
  - ACM Digital Library
  - Web of Science

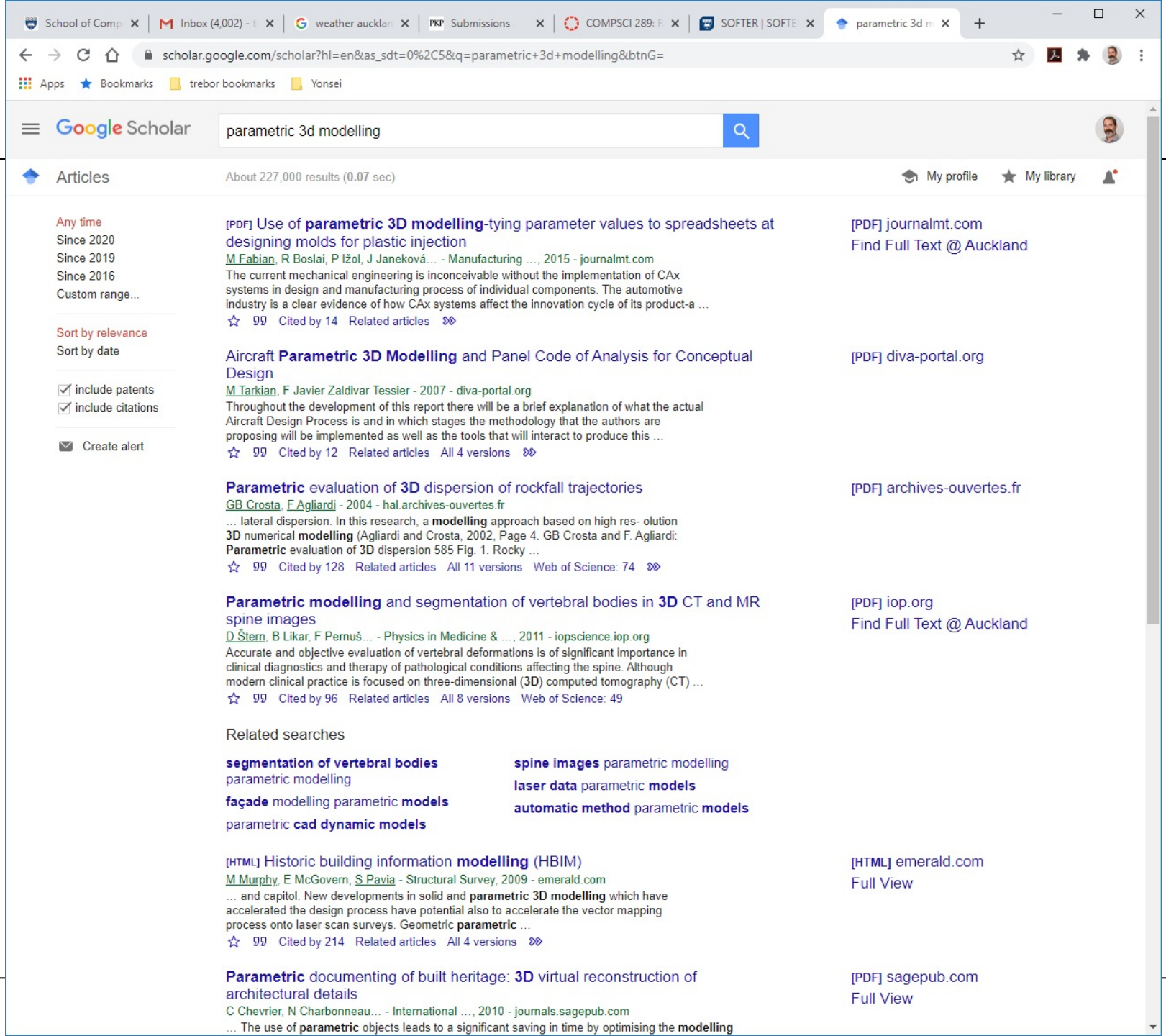
  - Google Scholar

  - Author homepages
  - Research groups
  - Relevant conferences/journals

Internet Resources

- Google Scholar
  - Wide coverage over conferences and journals
  - Access to PDF for many articles
  - Link to publisher's publication URL (DOI)
  - Citation information
  - Known author profiles

  But
  - Quality not guaranteed
  - Self-citations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TITLE	CITED BY	YEAR
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Realistic Load Testing ofWeb Applications C Lutteroth, G Weber, D Draheim, J Hosking, J Grundy Conference on Software Maintenance and Reengineering (CSMR'06), 57-70	~~110~~ *	2006
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Pounamu: A meta-tool for multi-view visual language environment construction N Zhu, J Grundy, J Hosking Visual Languages and Human Centric Computing, 2004 IEEE Symposium on, 254-256	89	2004
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Constructing component-based software engineering environments: issues and experiences	78	2000

Cited by VIEW ALL

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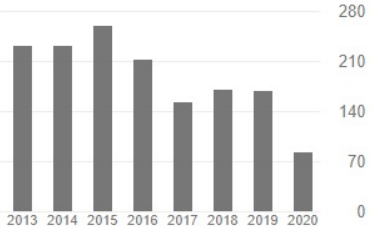

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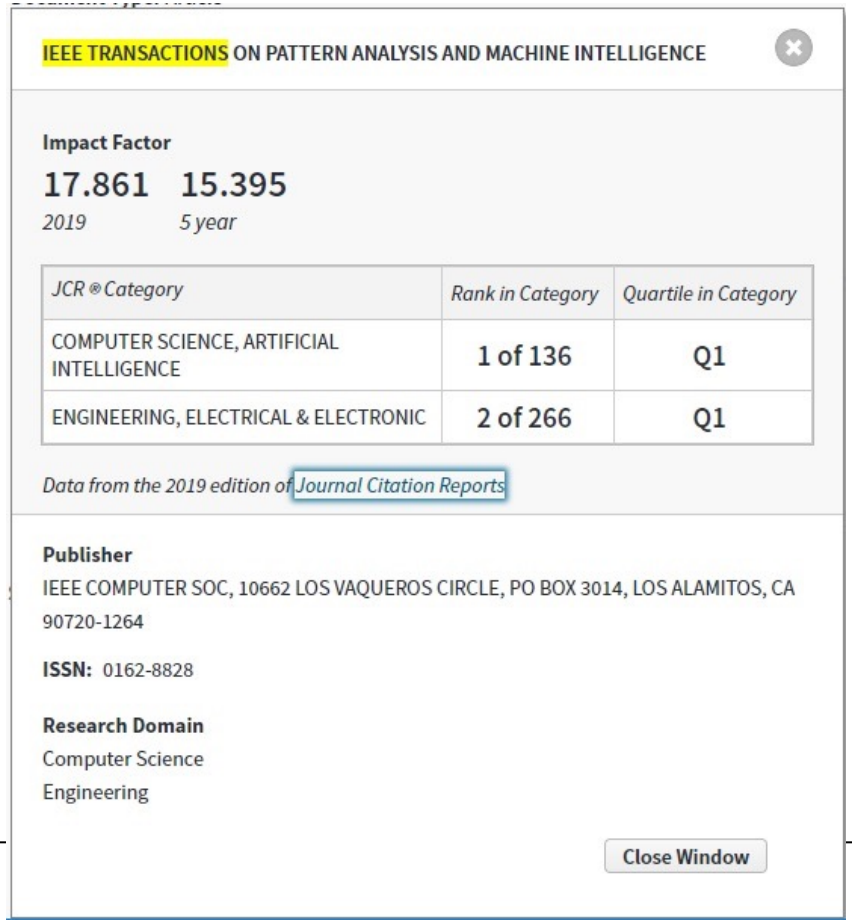
- Jim Warren — Professor of Health Informatics, ...

Types of Publication

- Book
- Book chapter
- Conference article
- Internet site
  - Wikipedia
- Journal article
- Magazine article (trade or popular journal)
- Patent
- Standard
- Technical report
- Thesis/Dissertation
- White paper
- …

Ranking of Journals and Conferences

- ERA (Excellence in Research for Australia)
  - Community ranked thousands of journals and conferences
  - A*, A, B, C
- Web of Science
  - Impact Factor
  - Rank in Category



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2019 *5 year*

JCR ® Category	*Rank in Category*	*Quartile in Category*
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ENGINEERING, ELECTRICAL & ELECTRONIC	2 of 266	Q1

Data from the 2019 edition of Journal Citation Reports

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Research Domain

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Engineering

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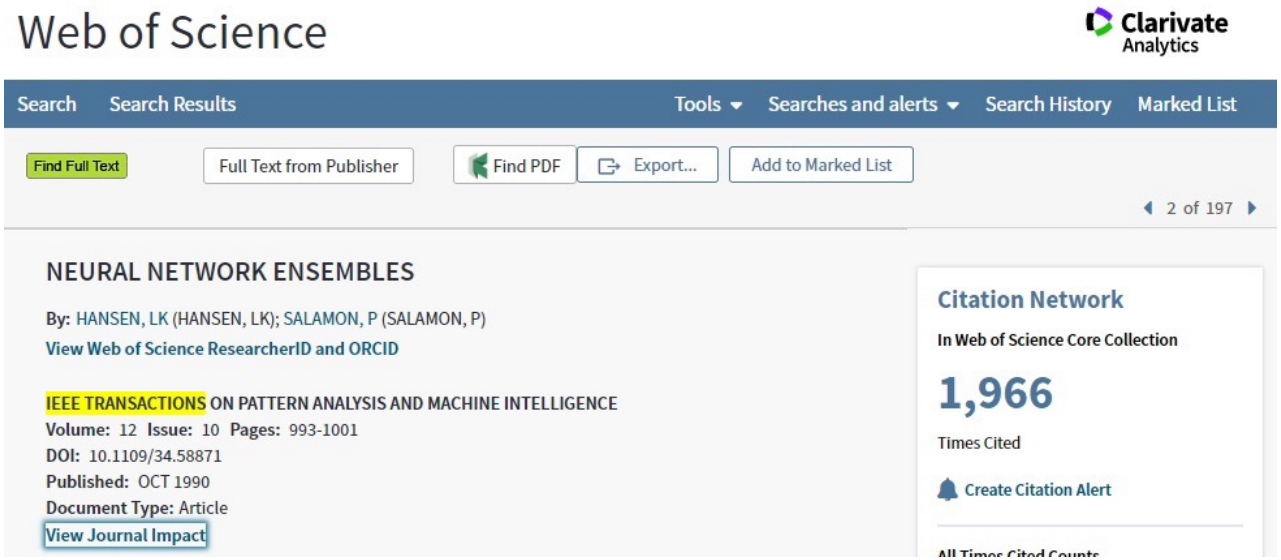
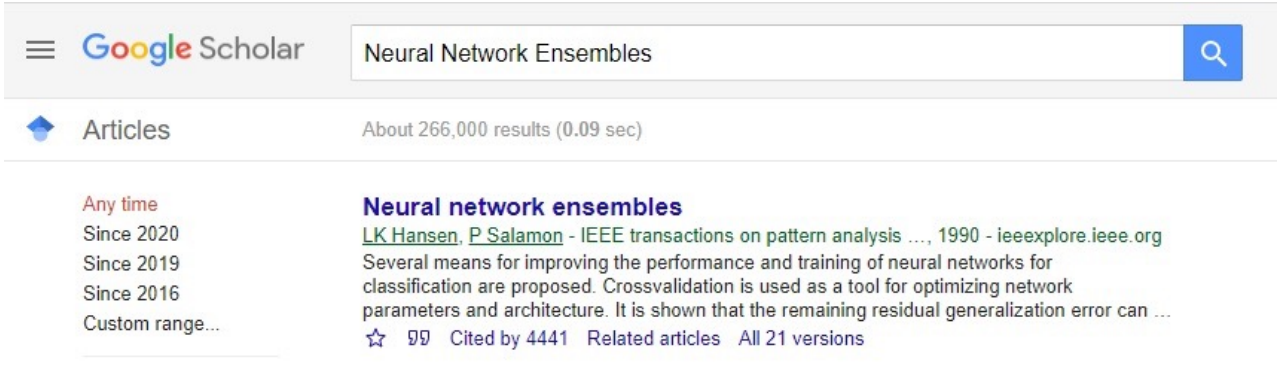
Paper Citations

- A proxy for quality?
  - Self citations not always disambiguated





Reference Chains

- Found a great article
  - What research does it cite?
  - What does it cite to support particular claims in the paper?
  - What related work does it cite?

ture and interaction mechanism based on the construction problems such that if agents follow this, the overall system will solve the particular problem. The design of agent-based systems for construction problems have all the problems associated with designing traditional distributed, concurrent systems and have additional difficulties that arise from having flexible and sophisticated interactions between autonomous problem-solving components. The great power and flexibility of MAS allows developers to tailor the system to various construction problems as long as a properly designed architecture and collaboration mechanism could be built. Besides the collaboration mechanism, the integration of engineering domain knowledge is another important concern of the construction agent research community. For example, the development of domain knowledge based ontology, integration with existing legacy systems, and the implementation of conceptual models with available agent building toolkits are all difficult tasks in the development of MAS in construction.

Considering the complexity and dynamics of construction problems, there are many other important issues to be addressed for the effective application of agent-based systems. One particularly important aspect is the development of agent's learning and adaptive ability in construction applications. Change management is always a top concern for project managers, either during the project planning, collaborative design, resource management or execution processes. System developers are unable to foresee all potential situations an agent could encounter and specify agent behaviour optimally in advance. The agent's ability to learn from each other and the external environment provide a unique and powerful tool to tackle the changing environment. However, since the study of MAS in construction is relatively

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Researchers and Research Groups

- Typically researchers work on a topic for many years
- Look at their bibliography
  - Google Scholar
  - Personal websites
- Researchers often part of a larger research group
  - Search for the group website

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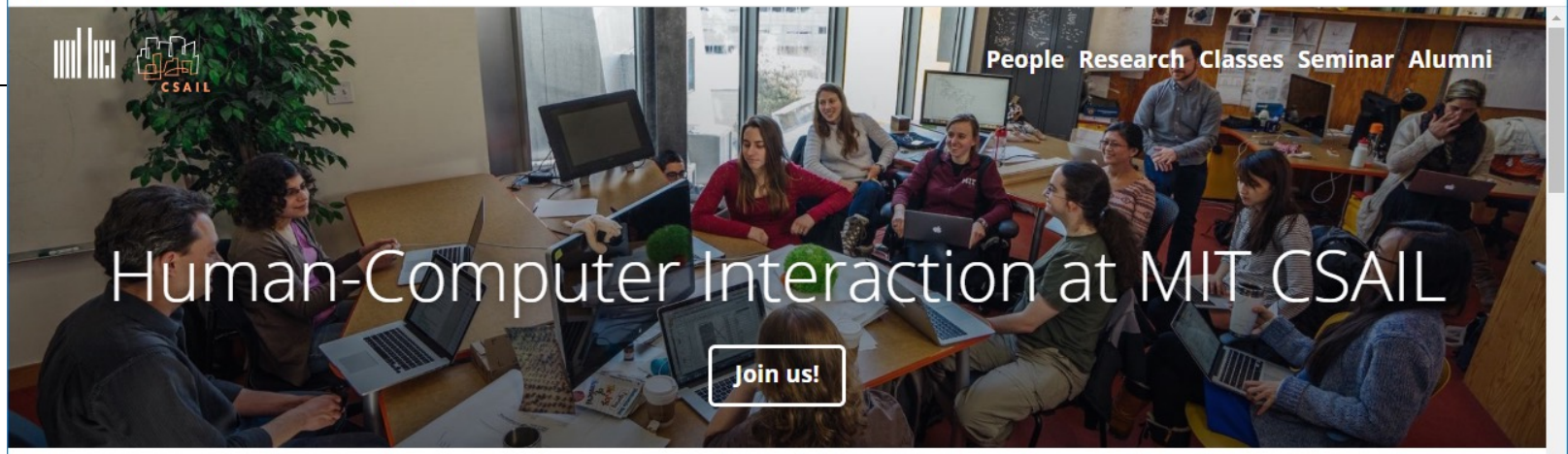


Faculty & PIs

Randall Davis
Design Rationale Group

Max Goldman
Usable Programming Group

D. Fox Harrell
Imagination, Computation, and Expression Lab

Daniel Jackson
Software Design Group

Reading Literature

Approaching an Article

- Do you read a paper from front to back?

- We'll look at the following approach:

  S. Keshav, "How to read a paper," *ACM SIGCOMM Computer Communication Review 37*, no. 3, 2007, pp. 83-84.

A Three-Pass Approach (Keshav 2007)

1. A quick scan
   - Title, abstract and (perhaps) introduction
   - Section headings
   - Conclusions
   - Decide if you need to continue reading the paper

   - Can you answer the following:
     - Category – the type of paper
     - Context – papers it is related to, how was problem analysed
     - Correctness – do they have valid assumptions
     - Contributions – what are its main claims
     - Clarity – is it well put together

A Three-Pass Approach (Keshav 2007)

2. Reading majority of content
   - Ignore technical detail such as proofs
   - Examine figures and tables
   - Make comments, note key points
   - Note useful references
   - Decide if you need to continue reading the paper
3. Fully read the paper
   - Understand it enough you could re-implement the research
   - What future work could there be?

Markup and Quotes

- Underline and highlight points as you go
- Take notes
- Annotate article with queries, points you want to ensure are addressed
- Major claims stated by the authors, might make nice quotes for your summary
  - Though in most cases you'd paraphrase

Writing the Literature Review

- Organise the section structure first
- Be selective
- Use quotes sparingly
- Summarise and synthesize
- Keep your own voice
- Use caution when paraphrasing (remember to cite)
- Focus on analysis, not description
- Revise, revise, revise

Plagiarism

- Using the work of others without explicit acknowledgement and referencing, that is, plagiarism. It includes: use of other people's data without acknowledgement; use of published or unpublished expressions and ideas from other people without adequate attribution; use of published or unpublished charts, diagrams. (Student Academic Conduct Statute, UoA)
- Plagiarism is the representation of another author's language, thoughts, ideas, or expressions as one's own original work (Wikipedia)

Avoid Plagiarism

- Always acknowledge the sources
- Present as quotes – Gallimore (1994) suggests that "valuers tend to give greatest weight to more recent information...." (p. 25).
- References included for:
  - Tables
  - Figures
  - Graphs or diagrams
- Self-plagiarism

Avoid Plagiarism

- Minimise what is quoted from other sources
  - 1-2 sentences
  - Almost never a paragraph
  - Many quotes strung together is not your writing
- Paraphrase
  - Really needs to be in your own words
- Plagiarism detection systems, UoA subscribes to:

Presentation Skills

How to deliver effective presentations

- Know your audience and their background
- Research thoroughly
- Document your sources
- Write your speech
- Prepare the slideshow

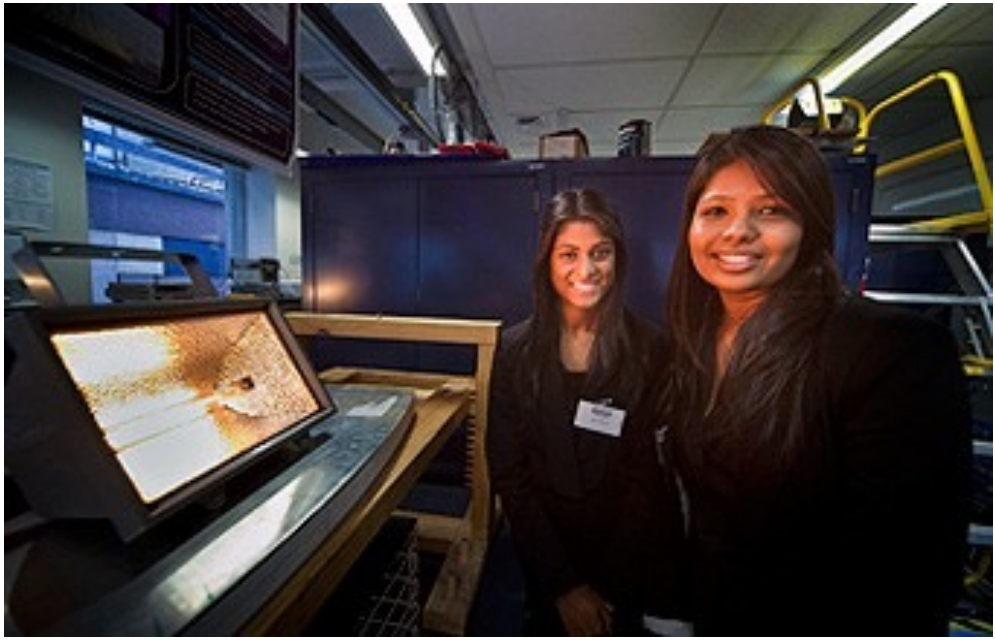
http://sustainability.psu.edu/student-groups

Prepare the slideshow

- What are the points you want to get across?
- Slides are a visual aid
  - Pictures are good (oops…)
- Don’t put too much on a slide
- Not too much flashy graphics/animations
- Time your presentation
- References at end
- Extra material after the end
- Choose an appropriate style

How to deliver effective presentations

- Rehearse and have a dress rehearsal
- Modify based on rehearsals
- Prepare yourself
- Style on stage
- Present to the audience
- Answer questions



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Common mistakes I've seen

- Too much text on a slide
- Reading all the text on the slide
- Text on slides too small (>= 24pt)
- Facing the screen rather than audience
- Too many slides (7-8 for 10 mins?)
- Interlocutory sounds
- Failed movies and live demonstrations

Asking Questions?

- You can always ask a question!
  - It's what science and engineering is all about…
- Reflecting on what is being presented
  - Does it match what you know/believe?
- Why do we ask questions?
  - Clarify your understanding
  - To address contradictions
  - To highlight an aspect of the research
  - To gain further insight from experts
  - To propose future directions
  - To relate to other research you are aware of
  - To be known ☺

Summary

- Standard requirements for literature reviews
  - Not just summarizing papers
- An overwhelming amount of literature available
  - Need strategies to search for relevant information
    - Repositories versus Internet search
    - Keywords and constraining search criteria
    - Following references, researchers and groups
  - Need to be able to identify quality of information
    - Publication venue
    - Review process
    - Citations

Summary

- A three pass approach allows decisions on applicability to be made without investing too much time
- Simple requirements for quoting text and figures
- Presentations require structure and rehearsal
- Slides are a prop, minimize what goes on them
- Asking questions is a core skill of a scientist and engineer

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Extra material

Asking Questions?

- Just ask one question
  - Wait for the chair or speaker to acknowledge you
  - Prepare - jot down what it is you want to ask about
  - Provide some context
    - On slide X
    - When you were talking about Y
  - Don’t make it about you!
  - Closed questions
  - Open questions

Answering Questions

- Stay calm!
- Think about possible questions prior to the presentation
- Ensure you understand the question
  - Ask for clarification or rephrasing if you don't
- Take a few seconds to think about your answer
- Repeat your understanding of the question
- Give a short answer (yes/no) before a detailed explanation
- If you don't know then say so – don't make it up
  - You could offer an opinion
- If it is a misunderstanding of your presentation, then make that clear and try to rephrase
- If very detailed, or long to answer, suggest talking later