



**POLYTECHNIQUE
MONTREAL**

**TECHNOLOGICAL
UNIVERSITY**

INF[67]900E Lecture 2 – Reading Papers

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Deliverables

Today at 11:59 PM

- Google form: <https://forms.gle/6SXCSvX8n2RtRGqh7>

This Lecture

1. Types of papers
2. Where to find papers
3. Structure of a paper
4. Taking notes

Types of Papers



Two kinds of scientific publications

Peer-reviewed



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- Goes through rigorous review process
- Has reviewers and editors

Non-peer-reviewed



Rustemgurler / Getty Images

- No rigorous review process
- No reviewers

Peer-reviewed

- Workshops
- Conferences
- Journals

Non-peer-reviewed

- Preprints: ArXiv
- Social media: Medium, Quora, Twitter, LinkedIn
- Industry/government reports (“grey literature”)
- Patents

Special cases

Extended abstracts / PhD colloquium reports	Reviewed, but isn't an article
Thesis	Reviewed, but not published
Books/Book Chapters	Usually not peer-reviewed

Idea Maturity

- **Workshops**
 - New ideas/visions
 - Work in progress
 - 6-12 pages*
- **Conferences**
 - Developed ideas
 - Evaluation required
 - 10-12 pages
- **Journals**
 - Polished ideas
 - Detailed evaluation
 - 20-40 pages
 - Long review time
- **Posters**
 - Work-in-progress or just to have something at a conference
- **PhD Colloquium**
 - Presenting of proposed research
- **Tutorials**
 - Hands-on teaching

*Number of pages differs per field!

<https://arxiv.org/> Pre-prints

Non-peer reviewed, may be done when submitted to a journal
Common in ML to have work seen faster, but can get messy

Total citations Cited by 253



Scholar articles

[Combinatorial optimization and reasoning with graph neural networks](#)

Q Cappart, D Chételat, EB Khalil, A Lodi, C Morris... - Journal of Machine Learning Research, 2023

Cited by 249 Related articles All 6 versions

[Combinatorial optimization and reasoning with graph neural networks, 2021 *](#)

Q Cappart, D Chételat, E Khalil, A Lodi, C Morris... - arXiv preprint arXiv:2102.09544

Cited by 6 Related articles

Where to Find Papers?



Check the library resources

<https://www.polymtl.ca/biblio/en/guides-tutorials>

GUIDES & TUTORIALS

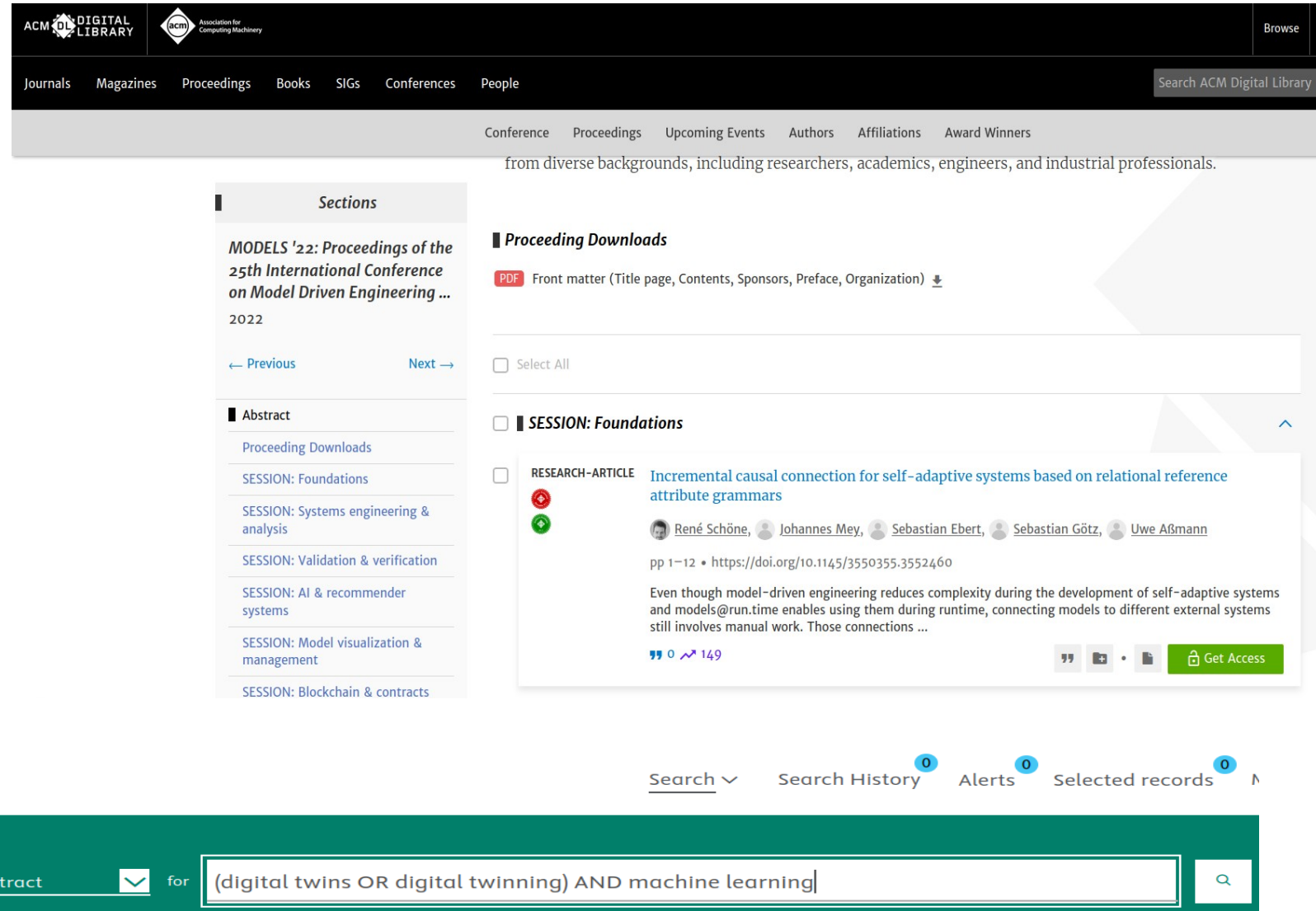
- > **All Guides**
- > **Guides by Subject**
- > **Guides by Document Type**
- > **Citing your Sources / Avoiding Plagiarism**
- > **EndNote, BibTeX, Zotero : Managing Your References**
- > **Presenting an Academic Work in Engineering**
- > **Open Access Publishing**
- > **Publishing (Dissertations, Theses, Technical Reports)**
- > **Finding Scientific Articles**
- > **Promoting Your Research Activities**
- > **Video Tutorials**

Finding papers

- Conference/journal proceedings
- Google Scholar
- ArXiv
- Websites of professors/universities
- Research databases
 - Engineering Village Databases
 - Compendex / Web of Science
 - IEEE Xplore
 - Scopus
 - PubMed
 - JSTOR



Engineering Village



The screenshot shows the ACM Digital Library interface. At the top, there are navigation menus for Journals, Magazines, Proceedings, Books, SIGs, Conferences, and People. A search bar is located in the top right corner. Below the navigation, there are links for Conference, Proceedings, Upcoming Events, Authors, Affiliations, and Award Winners. The main content area displays a list of sections for the 'MODELS '22: Proceedings of the 25th International Conference on Model Driven Engineering ... 2022'. The sections include: Abstract, Proceeding Downloads, SESSION: Foundations, SESSION: Systems engineering & analysis, SESSION: Validation & verification, SESSION: AI & recommender systems, SESSION: Model visualization & management, and SESSION: Blockchain & contracts. A 'Proceeding Downloads' section is also visible, with a PDF link for 'Front matter (Title page, Contents, Sponsors, Preface, Organization)'. A search result for a research article is highlighted, titled 'Incremental causal connection for self-adaptive systems based on relational reference attribute grammars' by René Schöne, Johannes Mey, Sebastian Ebert, Sebastian Götz, and Uwe Afsmann. The article is from pp 1-12 and has a DOI of https://doi.org/10.1145/3550355.3552460. The abstract states: 'Even though model-driven engineering reduces complexity during the development of self-adaptive systems and models@run.time enables using them during runtime, connecting models to different external systems still involves manual work. Those connections ...'. The article has 149 citations and a 'Get Access' button is visible.

Quick search: for

Finding Related Papers

- **Surveys/literature review**

[How to certify machine learning based safety-critical systems? A systematic literature review](#)

44 2022

F Tambon, G Laberge, L An, A Nikanjam, PSN Mindom, Y Pequignot, ...
Automated Software Engineering 29 (2), 38

- **References of papers (backwards snowballing)**

169. Pauli P, Koch A, Berberich J, Kohler P, Allgöwer F (2022) Training robust neural networks using lipschitz bounds. IEEE Control Systems Letters 6:121–126, DOI 10.1109/LCSYS.2021.3050444

- **Citing papers (forward snowballing)**

About 44 results (0.08 sec)

 My profile 

[How to certify machine learning based safety-critical systems? A systematic literature review](#)

Search within citing articles

- **Look at author's profiles / websites**

[Safe learning in robotics: From learning-based control to safe reinforcement learning](#)

[\[PDF\] annualreviews.org](#)
[Full View](#)

[L Brunke](#), [M Greeff](#), [AW Hall](#), [Z Yuan](#)... - Annual Review of ..., 2022 - annualreviews.org

The last half decade has seen a steep rise in the number of contributions on safe learning methods for real-world robotic deployments from both the control and reinforcement learning ...

☆ Save  Cite Cited by 359 Related articles All 7 versions

- **Go to workshops/conferences**

Automatic Recommendations

Google Scholar

Recommended articles



-  **Impulse dynamics and augmented reality for real-time interactive digital twin exploration and interrogation** 
M Cirelli, A Cellupica, P Canonico, PP Valentini
International Journal on Interactive Design and Manuf... - 4 days ago [HTML](#)

ResearchGate

Suggested research from **your network**







[Peter Gorm Larsen](#)
added an article



Survey on open-source digital twin frameworks–A case study approach

Article January 2024 · 42 Reads

Software Practice and Experience

 Santiago Gil ·  Peter H. Mikkelsen ·  Cláudio Gomes ·  Peter Gorm Larsen



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Indications of a Good Paper

- Paper date
- Citation count
- Journal impact factor / conference ranking
- Institution of authors (?)




Title 	Acronym 	Source 	Rank 
Annual Conference on Innovation and Technology in Computer Science Education	ITICSE	CORE2021	A
International Conference on Internet Computing in Science and Engineering	ICICSE	CORE2021	C
International Conference on Software Engineering	ICSE	CORE2021	A*
International Conference on Software Engineering Advances	ICSEA	CORE2021	C
International Conference on Systems Engineering	ICSEng	CORE2021	C

ACM Computing Surveys

2022 Impact Factor: 16.6 (ranked 3/111 in Computer Science Theory & Methods)

These comprehensive, readable surveys and tutorial papers give guided tours through the literature and explain topics to those who seek to learn the basics of areas outside their specialties in an accessible way. The carefully planned and presented introductions in *Computing Surveys (CSUR)* are also an excellent ... [\(More\)](#)

Editor-in-Chief:  [Albert Y H Zomaya](#)

Impact factor: Average citations per paper in last two years

Always be a critical reader!

Metrics aren't everything

Reading a Paper





Anatomy of a Scientific Paper

Are All Apples Red?

by
Ida Cortland

Abstract:

We examined several apples' color. Although most are red, some are not.

Introduction:

An age-old question is: are all apples red? MacIntosh (1993) thought so. G. Smith (1999) begs to differ. We hope to resolve this issue once and for all.

Methods:

We went to the local grocery store and bought one of every apple they had. We took them home and looked at them.

Results:

We found four red apples, one green apple, and two yellow apples.

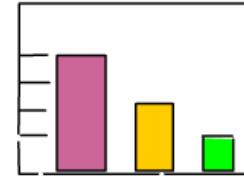


Figure 1

Discussion:

Since we found one yellow apple and two green apples, it must be true that all apples are not red. We concur with G. Smith's findings.

References:

- MacIntosh (1993) *Journal of Fruit Science*. 4(3): 121-135.
Smith, G. (1999) *Apple Technology Today*. 7(3):4-8.

Pomes and You, Volume 3, Issue 4 (2003) p. 8

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Keshav, S. (2007). How to read a paper. ACM SIGCOMM Computer Communication Review, 37(3), 83-84.
<https://doi.org/10.1145/1273445.1273458>

First Pass: Title, abstract, intro, section/sub-section headings, conclusion, skim references.

Think: Is this worth reading further?
What's the *category, context, correctness, contributions, clarity*?

Second Pass: Read the paper, but skip any proofs/technical parts.

Third Pass: ~~Recreate the work~~
Read again. Focus on technical parts. Think about any missing parts to the paper.

ABSTRACT

Researchers spend a great deal of time reading research papers. However, this skill is rarely taught, leading to much wasted effort. This article outlines a practical and efficient *three-pass method* for reading research papers. I also describe how to use this method to do a literature survey.

Categories and Subject Descriptors: A.1 [Introductory and Survey]

General Terms: Documentation.

Keywords: Paper, Reading, Hints.

1. INTRODUCTION

Researchers must read papers for several reasons: to review them for a conference or a class, to keep current in their field, or for a literature survey of a new field. A typical researcher will likely spend hundreds of hours every year reading papers.

Learning to efficiently read a paper is a critical but rarely taught skill. Beginning graduate students, therefore, must learn on their own using trial and error. Students waste much effort in the process and are frequently driven to frustration.

For many years I have used a simple approach to efficiently read papers. This paper describes the 'three-pass' approach and its use in doing a literature survey.

2. THE THREE-PASS APPROACH

The key idea is that you should read the paper in up to three passes, instead of starting at the beginning and plowing your way to the end. Each pass accomplishes specific goals and builds upon the previous pass: The *first* pass gives you a general idea about the paper. The *second* pass lets you grasp the paper's content, but not its details. The *third* pass helps you understand the paper in depth.

2.1 The first pass

The first pass is a quick scan to get a bird's-eye view of the paper. You can also decide whether you need to do any more passes. This pass should take about five to ten minutes and consists of the following steps:

1. Carefully read the title, abstract, and introduction
2. Read the section and sub-section headings, but ignore everything else
3. Read the conclusions

4. Glance over the references, mentally ticking off the ones you've already read

At the end of the first pass, you should be able to answer the *five Cs*:

1. *Category*: What type of paper is this? A measurement paper? An analysis of an existing system? A description of a research prototype?
2. *Context*: Which other papers is it related to? Which theoretical bases were used to analyze the problem?
3. *Correctness*: Do the assumptions appear to be valid?
4. *Contributions*: What are the paper's main contributions?
5. *Clarity*: Is the paper well written?

Using this information, you may choose not to read further. This could be because the paper doesn't interest you, or you don't know enough about the area to understand the paper, or that the authors make invalid assumptions. The first pass is adequate for papers that aren't in your research area, but may someday prove relevant.

Incidentally, when you write a paper, you can expect most reviewers (and readers) to make only one pass over it. Take care to choose coherent section and sub-section titles and to write concise and comprehensive abstracts. If a reviewer cannot understand the gist after one pass, the paper will likely be rejected; if a reader cannot understand the highlights of the paper after five minutes, the paper will likely never be read.

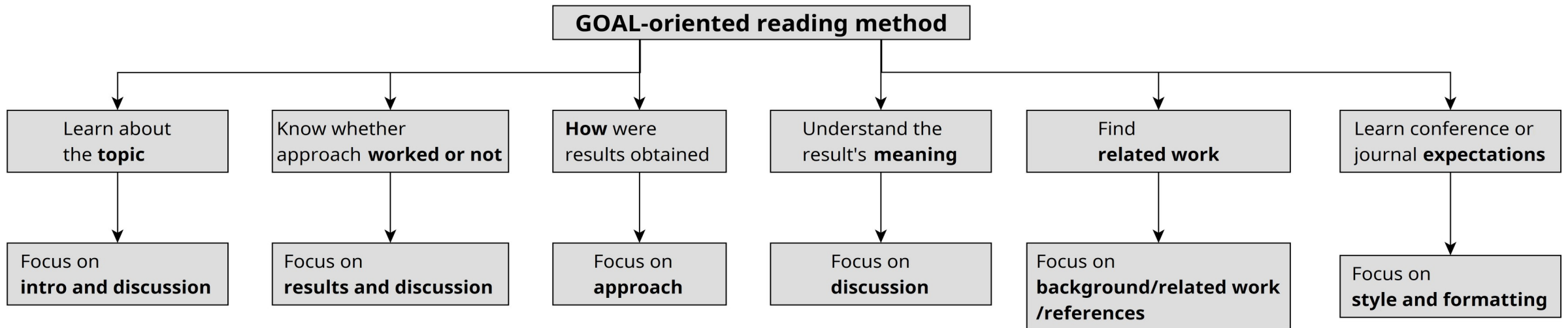
2.2 The second pass

In the second pass, read the paper with greater care, but ignore details such as proofs. It helps to jot down the key points, or to make comments in the margins, as you read.

1. Look carefully at the figures, diagrams and other illustrations in the paper. Pay special attention to graphs. Are the axes properly labeled? Are results shown with error bars, so that conclusions are statistically significant? Common mistakes like these will separate rushed, shoddy work from the truly excellent.
2. Remember to mark relevant unread references for further reading (this is a good way to learn more about the background of the paper).

Reading Approach

When reading, think about *“why am I reading this?”*



<https://alternativepostdoc.com/goal-oriented-reading-6-ways-to-read-a-research-papers-efficiently/>

My approach: always have your 'Related Work' section in mind

This means you have to have a research idea...

When reading a paper, think about:

- Do they have the same idea as me?
 - If so, look at their future work
 - If not, how is it different (put this paper in your related work section)
- Do I want to collaborate with the authors? What else have they done?
- Are my approach and results better or worse?
- Is their related work relevant for my idea?
 - Go and read these papers, and maybe add them to your related work

If you are having difficulties with a paper:

- Maybe you're tired
 - Consider reading it the next day, or in better surroundings (try a park)
 - Read it a different way: Print out the paper, use a tablet/e-reader
- Maybe you don't understand the words
 - Grab your dictionary
- Maybe the paper is unclear
 - Read better papers from better venues
 - Read related work to understand the ideas, and come back to this paper later
- Use ChatGPT (but double-check what it says!)

Journaling



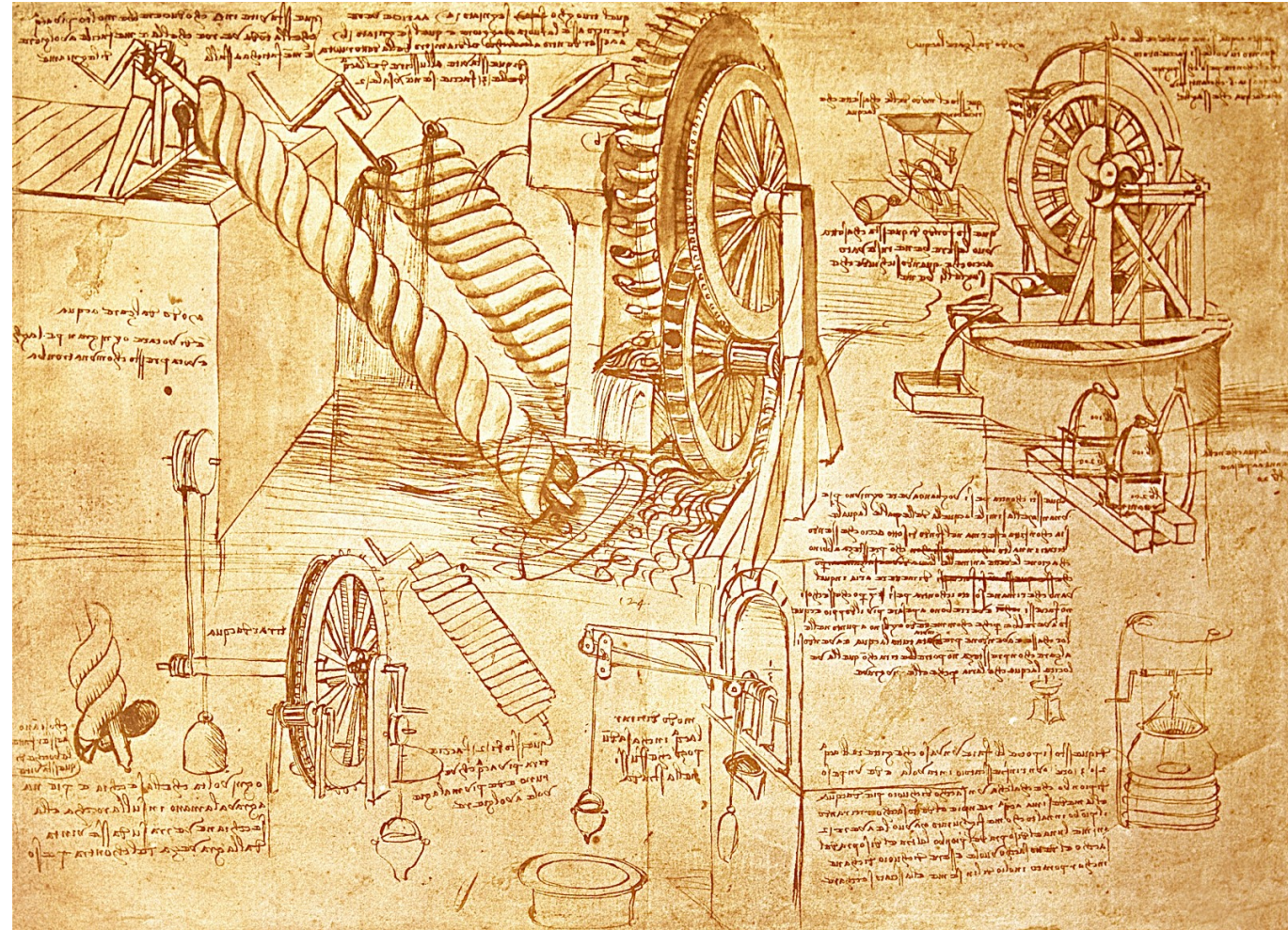
Journaling

When you're reading, try to maintain a journal/notebook of the things you've read, the ideas in them, and what you think about the paper

*Constantly and consistently record:
summaries, insights, new ideas, references*

Hopefully, this information will be useful for future papers

(Journaling also has proven mental health benefits, to externalize thoughts and record successes)



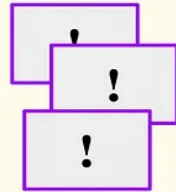
THE ZETTELKASTEN METHOD

Input → Digest → Organize → Outline/Output

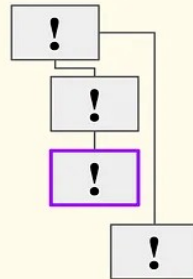
Fleeting Notes: Take random notes as you go on about your day

Literature Notes: Take notes of something you're reading, listening to, watching, observing

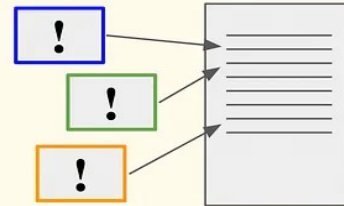
Idea Notes: Review fleeting/lit. notes and write *one idea per note*



File Ideas: Find a place to save the new ideas amongst existing ideas, so you can find them again in the future

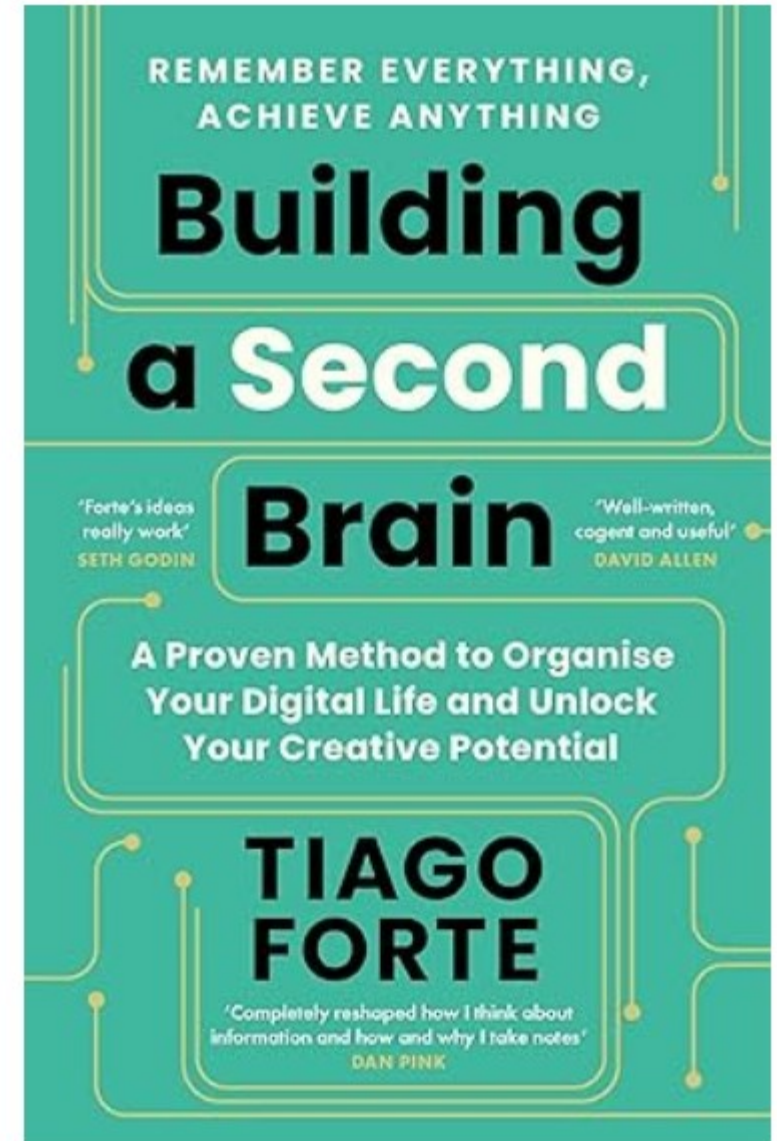


Reuse Ideas: Let ideas you've collected over time inspire your next essay



NIKLAS' GOAL: To facilitate ongoing conversations with himself over time.

<https://feeei.substack.com/p/the-dirty-lil-secret-about-my-note>



Assignment 1: Paper Abstract

Template: <https://www.overleaf.com/read/fhxsgdpvdkyk#f9ac3a>
(abstract.tex)

Objective: Summarize a paper in a shorter form (0.75 pages to 1 full page)

Methodology: Read a paper in detail, then summarize it. The reader should be able to understand the paper quite well from the summary. Try to pick a paper that you will use for the review, and the presentation.

Please do not copy the abstract, and do not use ChatGPT

Assignment 1: Paper Abstract

Evaluation: 8 marks for clarity, 12 marks for specific-ness, 5 marks for structure. See the evaluation grid on Moodle

Hand-in on Moodle as a PDF (and the paper), due Sept 26th

	A	B	C	D	E
1	Criteria	Insufficient (25%)	Satisfactory (50%)	Good (75%)	Very Good (100%)
2	1. Clarity (8/25): Sentences have appropriate length. No grammar mistakes. No excessive repetition of words. Sentences are clear and concise. Appropriate word choices.	The abstract is not comprehensive . Grammar and sentences are not structured and the abstract is difficult to read.	The abstract is not clear and not easy to read . Major improvements are necessary for appropriate word choices, grammar and length of sentences.	The abstract is mostly clear and understandable . Minor improvements are necessary for appropriate word choices, grammar and length of sentences.	The abstract is clearly written and easy to read . It is written with appropriate word choices, grammar and length of sentences.
3	2. Specific (concise & details) (12/25): The principal results and conclusions are clearly stated. The methodology and the novelty of the work are highlighted. The limitations of the work and the future work are clear.	The introductory statement and the work's aim are missing or majorly missing. The background and context of the work are missing or majorly missing. The methodology used to support the research is missing or majorly missing. The expectations, the findings, the productions are missing or majorly missing. The contribution, the limitations of the research and the future work are missing or majorly missing.	The introductory statement and the work's aim are unclear and repetitive. The background and context of the work are unclear, lengthy and/or irrelevant to the research work. Major parts of the methodology are missing or were not understood. The information about the expectations, the findings, the productions are unclear or misinterpreted. The contribution, the limitations of the research and the future work are mostly unclear and lack details.	The introductory statement and the work's aim are clear, but lengthy. The background and context of the work are clear but lengthy and have some irrelevant or not specific enough details. The methodology used to support the research is not clearly or completely identified, the relevancy for the research is not clearly stated. Some information about the expectations, the findings, the productions are either missing or unclear. Some information about the contribution, the limitations of the research and the future work are unclear or missing.	The introductory statement and the work's aim are clear, concise, engaging. The background and context of the work are clear, concise, relevant. The methodology used to support the research is clearly identified, the relevancy for the research is pointed out. The expectations, the findings, the productions are clearly stated. The contribution, the limitations of the research and the future work are clearly stated.
4	3. Structure (5/25): Respect the general abstract format (about 0.75 to a full page in length). Contain Introduction. Previous/related work. Methodology (author's work). Results. Future work/impact.	The abstract is missing most of the important contents (difficult to follow due to lack of content) and not structured (absence of structure in general to be an abstract).	The abstract contains some important contents (some contents are missing) and not structured (does not follow the paper's ordering of sections).	The abstract contains most of the important contents (some contents are not clearly stated) and mostly structured (follows the paper's ordering of sections, but the abstract does not have smooth transition among the contexts).	The abstract contains all the important contents (Introduction, Previous/Related work, Methodology (author's work), Results and Future Work/Impact) and structured (follows the paper's ordering of sections and smooth transition among the contexts).
5	Plagiarism (Fail/Redo):				
6	1) if there are same sentences as the original abstract				
7	2) if there are signs of rephrasing the original abstract				
8					

Lab Session

In your groups, we're going to dive into the *conferences and papers for your topics*. Discuss your findings with your group and the class.

1. Find the main conferences and journals for your topic(s). What are their topics? Where are their proceedings?
2. Look at your professor's publications. What venues do they publish in?
3. Do your venues have awards? Example:

SOSYM Ten Years Most Influential Regular Paper

Where does model-driven engineering help? Experiences from three industrial cases. by Parastoo Mohagheghi, Wasif Gilani, Alin Stefanescu, Miguel A. Fernandez, Bjørn Nordmoen & Mathias Fritzsche, In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 12, Issue 3, pp. 619–639, Springer, July 2013.

THANK YOU!

Topics covered:

- Types of papers
- Where to find papers
- Paper structure
- Journaling



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<https://bentleyjoakes.github.io/>