



# INTERDISCIPLINARY SEMINAR ON PRIVACY AND TRUST FOR MOBILE USERS (IPAT SEMINAR)

3 CP, Winter Term 2023/24

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# HOW TO WORK WITH LITERATURE AND WRITE SCIENTIFIC MATERIAL

## (TIPS AND BEST PRACTICES FOR THE SCIENTIFIC REVIEW IN COMPUTER SCIENCE)

Adapted based on Original Content by  
Dr. Andrea Tundis

# OVERVIEW

## *Part I – Search part*

- What is a publication?
- Where to find Scientific Publications?
- Type of Publications
- References and Referencing
- Quality of Scientific Publications

## *Part II – Review & Writing part*

- *How To ?*
- *Writing a Scientific Publication*

# PART I – SEARCH PART



# WHAT'S A SCIENTIFIC PUBLICATION?



Scientific Publication → a message

- With scientific background
- Offer a **new insight** of a scientific problem  
Solution, Problem, Criticism
- **OR** a **Survey of a research field [Topic]**  
SoK (Systematization of Knowledge)



Your Goal: Write a “**Scientific Survey**”

- Doing a survey is about balancing **exploitation** and **exploration**
  - Exploit:** Handle information as well as possible
  - Explore:** Gather more information
- **Quality of survey = f(quality of exploration, quality of exploitation)**



# WHERE TO FIND SCIENTIFIC PUBLICATIONS?

Platform/Website/Search Engine ... among the most popular one...

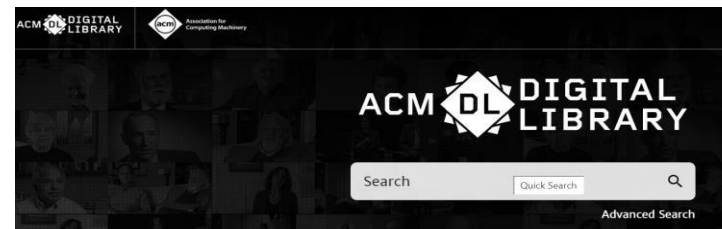
IEEE Xplore

<https://ieeexplore.ieee.org>



ACM Digital Library

<https://dl.acm.org>



Elsevier

<https://www.sciencedirect.com/>

<https://www.elsevier.com/>



What about Google Scholar ?

<https://scholar.google.com/>

almost “everything” is indexed... so **Be careful!!!**

# WHERE TO FIND SCIENTIFIC PUBLICATIONS?

How to “search and select” for publications...?

- Title
- Topic [Abstract]
- Similar words... [Keywords]

→ not that much different from a “classic/standard” Google search

**Title** →

**Towards Security as a Service (SecaaS): On the modeling of Security Services for Cloud Computing**

Publisher: IEEE [Cite This](#) [PDF](#)

Angelo Furfaro ; Alfredo Garro ; Andrea Tundis [All Authors](#)

22	1	1077
Paper	Patent	Full
Citations	Citation	Text Views

**Abstract** →

**Abstract:**  
The security of software services accessible via the Internet has always been a crosscutting non-functional requirement of utmost importance. The recent advent of the Cloud Computing paradigm and its wide diffusion has given birth to new challenges towards the securing of existing Cloud services, by properly accounting the issues related to their delivery models and their usage patterns, and has opened the way to the new concept of Security as a Service (SecaaS), i.e. the ability of developing reusable software services which can be composed with standard Cloud services in order to offer them the suitable security features. In this context, there is a strong need for methods and tools for the modeling of security concerns, as well as for evaluation techniques.

Document Sections

- I. Introduction
- II. Security-as-a-Service (SecaaS): An Overview
- III. Modeling Security

**Abstract**

+

“typically” right after the abstract a set of “**keywords**” which can help you to understand the context of the publication

↓

**Keywords:** Internet-based crimes, criminal detection, cyber-criminality, online social network analysis, radicalization, terrorist networks, machine learning.



# TYPES OF PUBLICATIONS VENUES

## ■ Books

- Survey (mostly) about a topic

## ■ Journal Articles

- Collection of related topics into one magazine (the journal)
- Quality mostly depends on the Journal

(Rankings: <http://www.core.edu.au/index.php/>)

Good Journal



Good Article

## ■ Conferences and Symposia

- The most recent research achievements
- Strict page limits
- Papers followed by a presentation
- Quality is usually connected to the Conference

(Rankings: <http://www.core.edu.au/index.php/>)

Good Conference



Good Paper

## ■ Workshops

- Mostly for work in progress
- Good for discussing new ideas

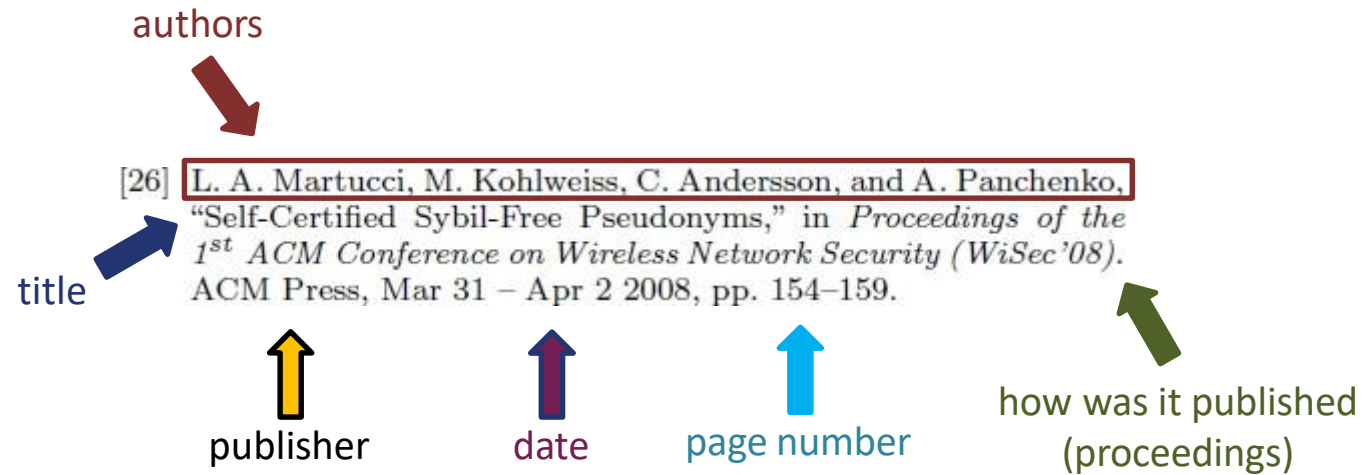




# REFERENCES AND REFERENCING

A reference looks like this:

doing it right



\* There are also other reference **styles**

\* If you use **LaTeX** to write your report, have a look at **BibLaTeX**.

# REFERENCES AND REFERENCING (CONT.)

- Refer to the **original** source of information [cite]

For others to identify the foundations of your work

Giving credit, when credit is due

Not doing so is **REALLY** bad practice → A.K.A. **plagiarism**

- Grundregeln der wissenschaftlichen Ethik am Fachbereich Informatik
- Avoid copying and pasting sentences from work you read  
If you do it, mark it as a **verbatim** quote [cite]

# REFERENCES AND REFERENCING (CONT.)

- Copying and changing the order of sentences, replacing words by their synonyms etc. is still **plagiarism**.
- If you take part in this seminar, you agree that the report you generate can be checked for plagiarism

So, how can you be sure even if you stick to all the above mentioned hints?

→ We offer you to **check** the „**alpha**“-version of your final report for plagiarism once before the final submission and provide you with feedback to correct your report.

# WHAT SHOULD I REFERENCE?

- Scientific publications

Articles, Papers, Books

- Standards

RFC, ITU, IEEE, W3C etc.

+ All other non-scientific sources

- Surveys
- Magazines
- Reports

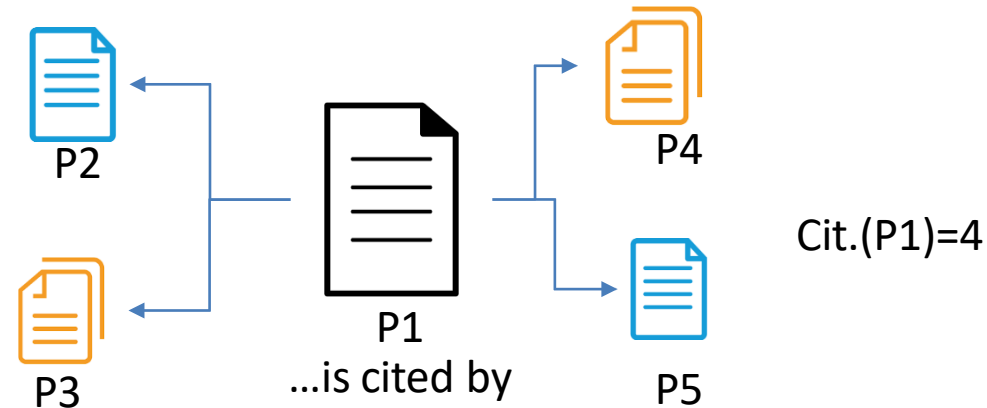
- Can I reference Wikipedia?

➔ **NO:** not reliable (or stable) information sources. Avoid to put direct references to Wikipedia



# QUALITY OF SCIENTIFIC PUBLICATIONS

One of the main **quality [paper]** parameters / indicators is the "**Citation Number**".



- The **more** a publication is cited by others, the **greater** its "scientific **value**" is recognized by the scientific community.
  - The more a publication is cited by others, the **higher** the **quality** of the Venues becomes (ie Conference, Journal, etc.), where the scientific contribution is published, and vice-versa.
- The **higher the quality of a Venue**, the more **difficult** and more **competitive** it becomes to be able to publish.

# QUALITY OF SCIENTIFIC PUBLICATIONS (CONT.)

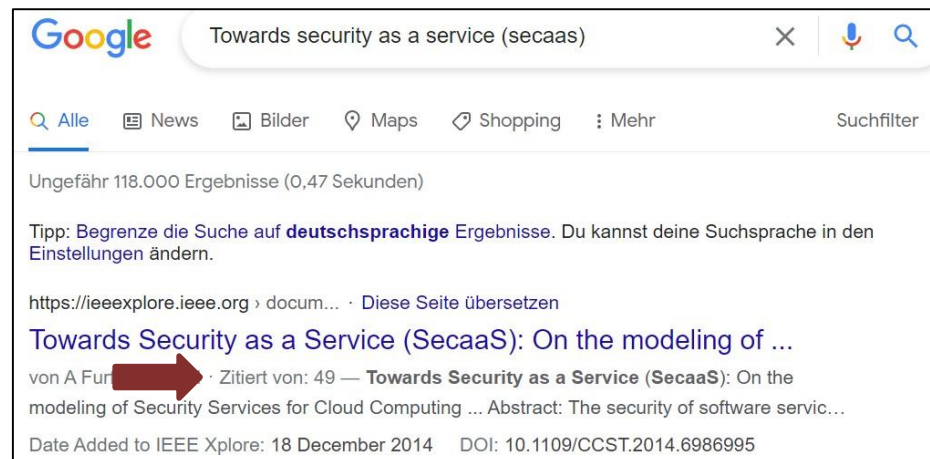
Some “place/way” to get the "Citation Number“.

Google scholar



TITEL	ZITIERT VON	JAHR
<input type="checkbox"/> Towards security as a service (secaas): On the modeling of security services for cloud computing A Furfaro, A Garro, A Tundis 2014 International Carnahan Conference on Security Technology (ICCST), 1-6	49	2014
<input type="checkbox"/> On the reliability analysis of systems and sos: The ramsas method and related extensions A Garro, A Tundis IEEE Systems Journal 9 (1), 232-241	40	2014
<input type="checkbox"/> Formal requirements modeling for simulation-based verification M Otter, N Thuy, D Bouskela, L Buffoni, H Elmqvist, P Fritzsos, A Garro, ...	36	2015
<input type="checkbox"/> A model-based method for system reliability analysis. A Garro, A Tundis SpringSim (TMS-DEVS), 2	31	2012

Google search




Google Towards security as a service (secaas)

Ungefähr 118.000 Ergebnisse (0,47 Sekunden)

Tipp: Begrenze die Suche auf **deutschsprachige** Ergebnisse. Du kannst deine Suchsprache in den Einstellungen ändern.

<https://ieeexplore.ieee.org> · docum... · Diese Seite übersetzen

**Towards Security as a Service (SecaaS): On the modeling of ...**  
 von A Fur  · Zitiert von: 49 — **Towards Security as a Service (SecaaS): On the modeling of Security Services for Cloud Computing ... Abstract: The security of software servic...**  
 Date Added to IEEE Xplore: 18 December 2014 DOI: 10.1109/CCST.2014.6986995

Or... directly on IEEE Xplorer, ACM digital library, etc.


# QUALITY OF SCIENTIFIC PUBLICATIONS (CONT.)

How to check the **quality of the Venue** (of a scientific publication)?

- Conference → **Conference Ranking**

A\*, A, B, C (ERA/CORE)/ A1, A2, B1, B2, C1, C2 (Qualis)

Where to check: Core Conference Portal → <http://portal.core.edu.au/conf-ranks/>



**CORE** Conference Portal  
*Computing Research & Education*

CORE homepage | CORE rankings page | Frequently asked questions

Search by: All Source: CORE2021

Search

Signing in with LinkedIn authorizes us to store your name, email address, headline and display picture

why?

CORE2021 Summary:

- A\* - 7.21% of 804 ranked venues
- A - 16.04% of 804 ranked venues
- B - 37.19% of 804 ranked venues
- Australasian B - 1.62% of 804 ranked venues
- C - 36.19% of 804 ranked venues
- Australasian C - 1.74% of 804 ranked venues

# QUALITY OF SCIENTIFIC PUBLICATIONS (CONT.)

How to check the **quality of the Venue** (of a scientific publication)?

- **Journal → Impact Factor (IF)**

Search for Journal → IF  $\geq 1,0$

Typically, it is reported on the web site of the Journal



The screenshot shows the homepage of the journal "Computers & Security". On the left is a cover image of the journal. The main text reads "Computers & Security" and "The International Source of Innovation for the Information Security and IT Audit Professional". Below this, it lists publishing options: "OA Open Access" and "S Subscription". At the bottom left, it says "ISSN: 0167-4048" and provides links for "Guide for authors", "Track your paper", and "Order journal". On the right, there is a blue button that says "Submit your paper". Below the button, a light blue box contains the text: "The Impact Factor of this journal is 4.438, ranking it 40 out of 162 in Computer Science, Information Systems". A red arrow points to this box from the right.

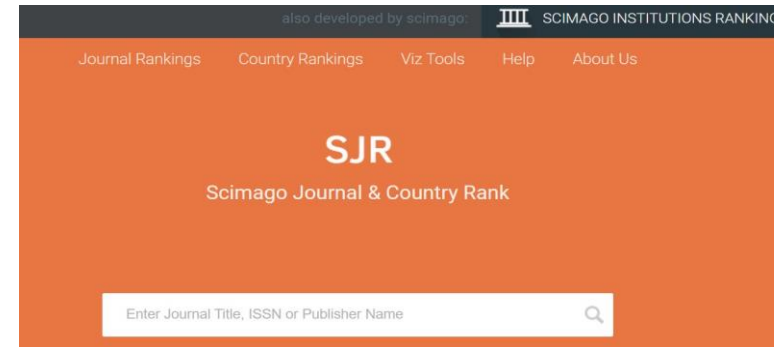


# QUALITY OF SCIENTIFIC PUBLICATIONS (CONT.)

How to check the **quality of the Venue** (of a scientific publication)?

- Conference / Journal → ScimagoJR

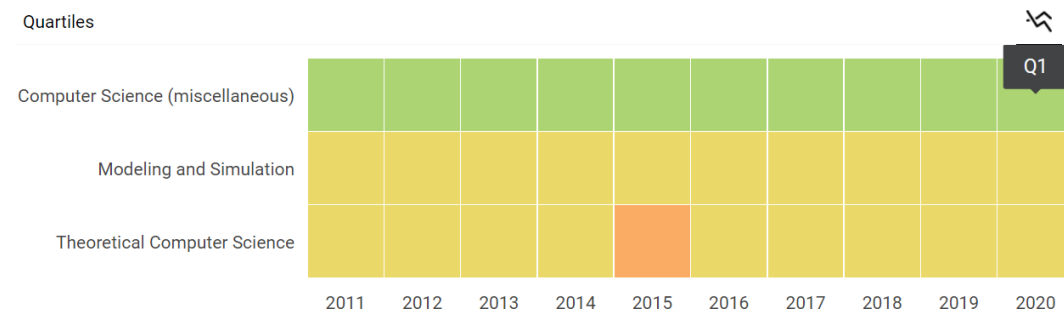
<https://www.scimagojr.com/>



Ranked by Quartiles:

Q1 (top), Q2, Q3, Q4 (worst)

Journal of Computational Science -  
JOCS



# PART II – REVIEW & WRITING PART

# OVERVIEW

## *Part I – Search part*

- What is a publication?
- Where to find Scientific Publications?
- Type of Publications
- References and Referencing
- Quality of Scientific Publications

## *Part II – Review & Writing part – 2nd May*

- *How To ?*
- *Writing a Scientific Publication*

# PROCESS: WRITING A SCIENTIFIC PUBLICATION

## 0. READ, READ, READ ....

### 1. First, define the **message**

Objective of your publication; define the area of research

### 2. Read the related work

Define the work around your work

Finding out what has been DONE (inc. Partially done before)

### 3. Survey the related work

Evaluate differences, similarities. Identify trade-offs

Create a **Storyline**

### 4. Write your publication

Structure ...





# PROCESS: WRITING A SCIENTIFIC PUBLICATION

## Storyline

What is the plot of your **survey**?

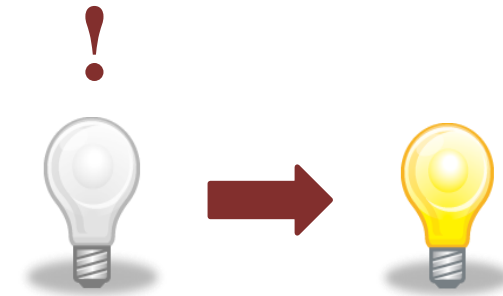
- Connect each idea with the next in a sensible way
- Find common links, comparisons, thoughts



# YOUR WORK, YOUR MESSAGE

## Finding the message

- The most difficult part (!) --- could be
- Also, the creative one  
go beyond the **state of the art**
  
- Communicate your **message with science**  
Find the scientific foundations  
Identify the **challenges**



# RELATED WORK? WHERE? HOW?

## Related Work? Where?

- For the initial literature **ask your advisor**

➔ it will give you a broad idea about the area

- Check publication repositories:

- Google Scholar - <http://scholar.google.com>
- Conference directories - <http://www.dblp.org/search/>
- ACM Digital Lib - <http://portal.acm.org/portal.cfm>
- IEEE Xplore - <http://iee.org/portal/site>

- Authors' home pages
- **Follow references!**
- Other sources from the **reference lists, Similar papers**

Likely the fastest way

Likely, most correct  
and complete  
information



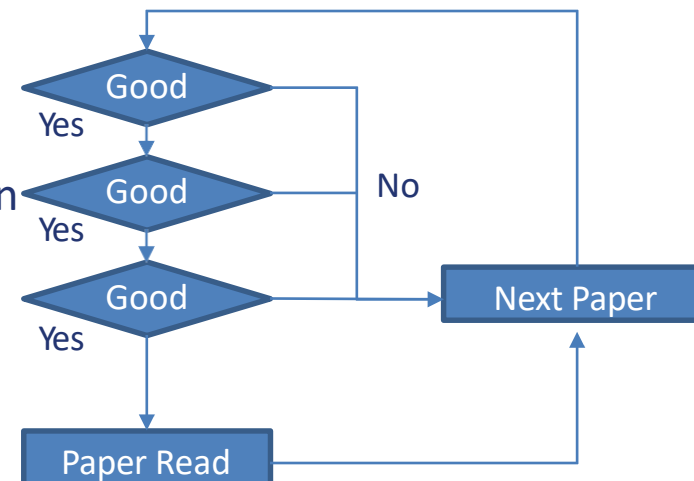
# RELATED WORK AND RELEVANCE

- Related Work → ∞

Identify the relevant sources

Evaluating the importance of a publication

1. Read the abstract
2. Read the introduction & conclusions
3. Check the reference list
4. Read the rest



- Related work will

Compare **your results** against their results

Be used as input for a survey



# WRITE YOUR PUBLICATION

- Always have a good paper structure

Organize your **ideas**

Organize your **papers**

Define it **BEFORE** starting to add text

**Plan** the content of each section



- Writing skills

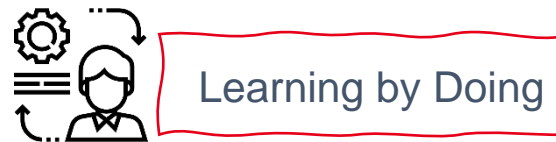
No one learns without doing it

General Guidelines:

Be concise

Be precise

Active vs Passive voice



Have a look into some Academic Writing  
Tips



# ABOUT THE STRUCTURE

## Example of a Report (about 8-10 pages / IEEE double column -

<https://www.ieee.org/conferences/publishing/templates.html> )

- **Abstract:** 200-300 words
- **1 Introduction:** to introduce the topic you are analysing as well as your objective(s) (1 page)
- <Section 2> → related to Aspect 1
  - Papers p1, p2, p3, ...: dealt with aspect 1 → report the relevant information in relation to your objectives
  - Comparison Table Aspect 1 → (See next Slide)
  - Your Consideration/Observations/Discussion in relation to the objective of your seminar topic
- <Section 3> → related to Aspect 2
  - Papers p4, p5, p1 ... dealt with aspect 2 → report the relevant information in relation to your objectives
  - Comparison Table Aspect 2 (See next Slide)
  - Your Consideration/Observations/Discussion in relation to the objective of your seminar topic
- <Section 4> Comparison ? Discussion
  - Paper p6, p7, p8: dealt with another aspect... → report the relevant information in relation to your objectives
  - .....
- **Conclusion** (1/2-1 page)
- **References** (1/2-1 page)



# COMPARISON IS FUNDAMENTAL

- Describe the aspects that are important in your review and use tables [not only] to highlight
  - Differences
  - Limitation/advancements
  - Unsolved problem
  - Achieved results
- Comparison tables are fundamentals and very useful to support/explain your work

**Table 1**  
Overview of the approaches related to the acquisition of cyber threat intelligence from open sources.

RW	Data Source	Type of Intelligence	Features & Implementation	Rules & Constrains	Alert Evaluation
Sabottke et al. (2015)	Twitter	Vulnerabilities (CVE)	Source Metadata, Textual data, linear SVM	Utility Score (Informativeness)	No evaluation for utility score
Schaberreiter et al. (2019)	MISP	STIX, OpenIOC	Semantic, Syntactical features of STIX objects	Timeliness parameter	None
Lee et al. (2017)	Twitter, Security Blogs	Mid-level CIT terms (TTP)	Source Metadata, Social graph, Textual data	Expert Authority weighting	Precision (81.4%), Recall (~20%)
Sapienza et al. (2017a)	Twitter	Mid-level CIT terms (TTP)	Keyword filtering, Term frequency	Rule set (Intelligence count)	Case study
Sapienza et al. (2018)	Twitter, Darkweb	Mid-level CIT terms (TTP)	Keyword filtering, Term frequency	Rule set (Intelligence count)	Case study, Precision (84%)
Mittal et al. (2016a)	Twitter	Cyber threat topic & concepts (TTP)	Keyword filtering, Term frequency, Tagging	SWRL rules (source count)	Precision (57%), Recall (~40%)
Mittal et al. (2017c)	Twitter	Cyber threat topic & concepts (TTP)	Keyword filtering, Tagging, NER, Word embeddings	SPARQL/SWRL, System profiles	Precision (78%)
Le et al. (2019)	Twitter	Vulnerabilities (CVE)	Source Meta data, Term Frequency, Centroids	Cosine similarity	Precision (85%), Recall (52%), F1-Score (64%)

# COMPARISON IS FUNDAMENTAL

- **One possible way/An example**
  - **Comparison & Table: Aspect 1**

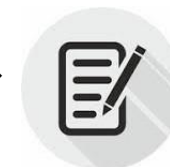
Paper Description: p1,p2 p3 they focused on Aspect 1 →



Table

	Model - Features	Algorithm, Machine Learning	Metrics	Results	Dataset	Platform
p1	F1, f2	DT	Accuracy	93%	D1	Tw
p2	F3, f1,f4	SVM	F1-score	80%	D2	Tw
p3	F1, F5	DT				FB

Put your Considerations/Observations/Critic/Discussion... →  
...in relation to the objective(s) of your seminar topic

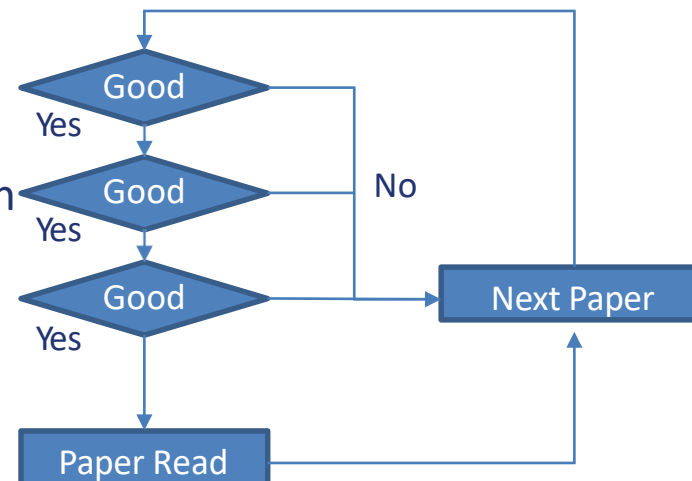


# SUMMARY

A scientific publication is a **message**; a **validated claim**

Refer to the original source of information, **avoid plagiarism**

1. Read the abstract
2. Read the introduction & conclusions
3. Check the reference list
4. Read the rest



Further/more **specific feedback depends on your specific topic...**  
so ask directly your supervisor!

# ADDITIONAL READINGS

- Difference between Survey, LR, SoK:  
<https://www.editage.com/insights/what-is-the-difference-between-a-survey-paper-and-a-systematic-review-paper>
- Research Stories:  
<https://miamioh.edu/hcwe/handouts/research-stories/index.html>