

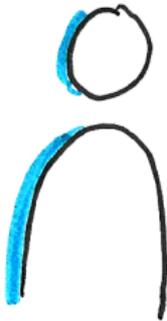
How to Write a (Seminar) Report?

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Let's Go!

Goals



You

practice reading and writing
scientific literature



Other seminar participants

- Who is your audience?
- What do they already know?
- What should they learn?

Source Material

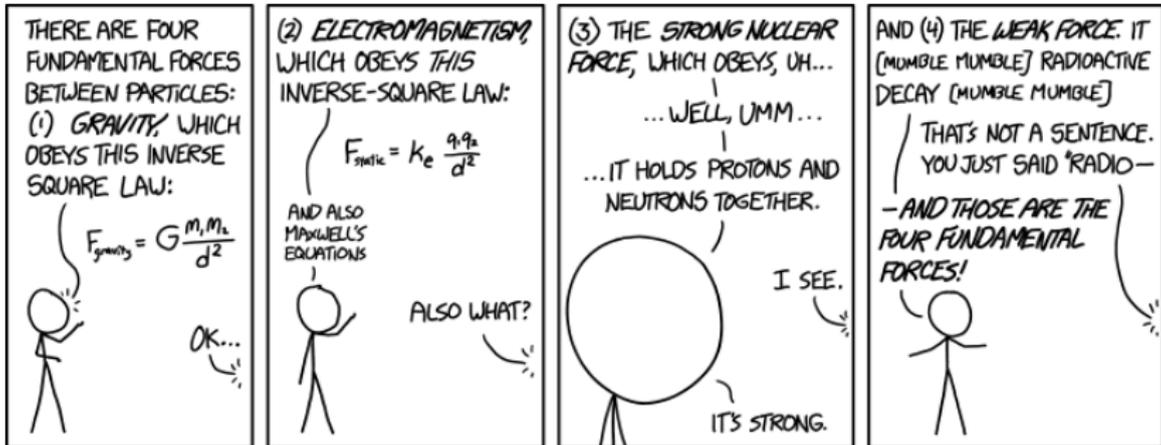
Finding source material

- References in existing material
- <https://scholar.google.com> (demo)
- References in Wikipedia articles (in the end of the article)
- Library
- Ask your supervisor for help!

Articles behind a paywall?

- Authors' homepages
- University subscriptions
- Library

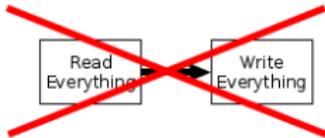
Understanding the Source Material



www.xkcd.com

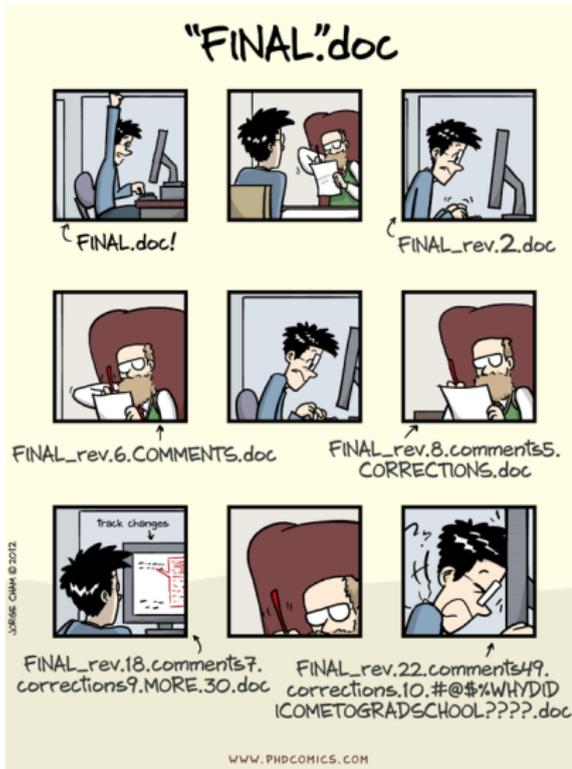
- Do not ignore complex details.
- We are happy to help.

Start Early



- Writing is an **iterative process**.
- **Don't wait** until you read everything.
- Get feedback on drafts.
- Be prepared to make **revisions**.

Version Control Systems



- Use **version control** for files you create (tex).
- **Ignore** automatically created files (pdf, log, aux, ...).
- **Overleaf**, online LaTeX editor.
- Online repositories on **Github**.

Structure

A Common Structure

- Abstract
- Introduction
- Background
- Main Part(s)
- Related Work
- Conclusion
- References

Abstract I

Sorting Algorithms

Hans Meier

Seminar on Algorithms and Data Structures
University of Basel
HS 20XX

Abstract

A *sorting algorithm* orders the elements of a list according to a given total order relation. We explain three different such algorithms, namely *merge sort*, *heap sort* and *quick sort* and analyse their time and space complexity. An empirical evaluation illustrates in which scenarios these algorithms have their strengths and weaknesses.

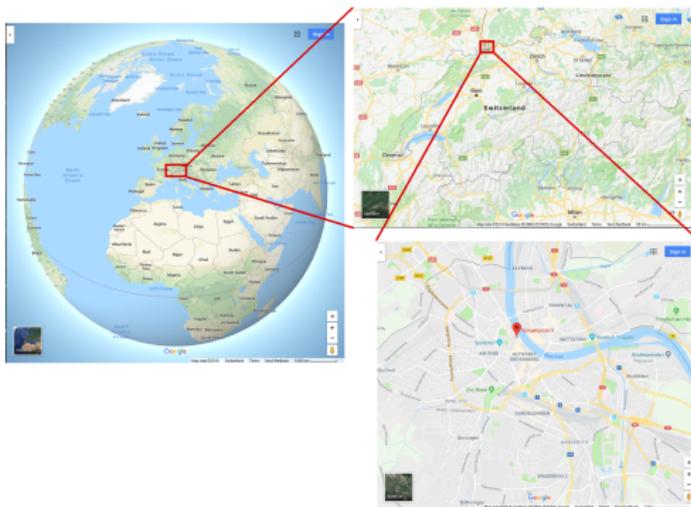
1 Introduction

Abstract II



- very short summary of the report's content
- high-level, no details, no references
- potential readers decide whether to read on
- expectation management
- in \LaTeX : `\begin{abstract}... \end{abstract}`

Introduction I



- context
- (gap in previous approaches)
- motivation, why the topic is interesting
- high-level description of the topic

Introduction II

- structure of the report

We present an extension of the LM-Cut heuristic that preserves both admissibility and dominance over the maximum heuristic. For this purpose we introduce context splitting as a new general technique which allows us to split up actions in a tasks to distinguish different scenarios of their application. We show how context splitting can be made useful for the extension of the LM-Cut heuristic. After proving the desired theoretical properties of the heuristic, we also evaluate its performance empirically.

[Röger et al., ECAI 2014]

Background

- introduces basic terminology and notation
- **foundation** of main parts, not a goal in itself
- often general or known definitions or previous work
- makes report **self-contained**
- title does not have to be “Background”
 - SAS⁺ Planning, μ -recursive Functions, Turing Machines, ...

Background (style)

- formal language
 - clear, easy to read, unique interpretation
 - not too complicated
 - not too colloquially

More details

Zobel, J. (2015). *Writing for computer science*. Springer.

Examples for good and bad style

No unique interpretation

If some nodes get me from A to B, I'll call them a path.

Too complicated

A path is $\pi = \langle e_i \mid \forall i : 1 \leq i \leq n \rangle$, $e_i = \langle v_{i,1}, v_{i,2} \rangle \in E$,
 $\forall i : 1 \leq i \leq n$, and $v_{i,2} = v_{i+1,1} \forall i : 1 \leq i \leq n - 1$.

Unique interpretation and easy to read

A path is a sequence of nodes such that there is an edge between each pair of subsequent nodes.

Main Parts

- main part of your report
- structure depends on the topic

Related Work

- short description of other approaches for the same problem or similar problems
- focus on core ideas
- sometimes also directly after introduction

Conclusion

- short summary of the main results
- **do not repeat** abstract or introduction
- often ends with open questions
or discusses how work can be continued

References

- list of used literature (and other sources)
- **complete** and **consistent**
 - don't use "Proceedings of the Xth Conference on Blabla" for one conference and "Proc. ACRONYM 2000" for another
 - or even worse: the same conference
- use bibtex, biblatex, . . .
- read the output of these tools
 - warnings for incomplete entries

Citations

Citing

- “Meier and Huber (2013) have shown...”
- “STRIPS plan existence is PSPACE-complete (Bylander 1994).”
- **Theorem 1** (Murphy’s law, Sack 1952).
Anything that can possibly go wrong, does.
- **not** “(Meier and Huber 2013) have shown...”
- **not** “In (Bylander 1994) ...”

Bibtex

```
@Article{bylander-aij1994,  
  author =      "Tom Bylander",  
  title =      "The Computational Complexity of  
                Propositional {STRIPS} Planning",  
  journal =     "Artificial Intelligence",  
  volume =     "69",  
  number =     "1--2",  
  pages =      "165--204",  
  year =       "1994"  
}
```

(demo)

FAQ

How can I fill the pages?

PAGE LIMITS



- explain things in more detail
- explain more things
- use more examples

What are common mistakes?

- Using terms/notation before they are introduced
- Only translating/paraphrasing an original text
- Colloquial or ambiguous language
- “The authors wrote this in the best way possible. How should I write this in a different way?”
 - get a deeper understanding of the material
 - read alternative sources
 - do not read source while writing

Where can I get further information?

Good example

We uploaded a good example from a previous seminar to the course website.

Great talk by Simon Peyton Jones

<https://www.microsoft.com/en-us/research/academic-program/write-great-research-paper/>

Questions

