Writing Academic Texts
Using the Media Informatics templates for theses & reports

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medieninformatik
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Outline

General Remarks

Sources
Tables and Figures

Process

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Writing

General Issues

- Why does one write in Science & Technology?
    - Clarification of own thoughts and activities
    - Let others take part in the knowledge gained
- What style of writing?
    - "Bauhaus, not Baroque"
        - factual
        - clear
        - precise
        - short
    - But that does not mean that scientific texts need to be boring!
    - More hints in German: ☞ Werner Stangl (2016): Arbeit mit wissenschaftlicher Literatur.

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Why Quote?

- Establish connections
- Avoid Wheel 2.0
- Separate own ideas from those of others
- Show the reader where something comes from
- Help the reader to understand the quote
    - put into context
    - find the original
- Quotes come in all medial shapes and sizes
    - Text, graphics, photo, film…

- Quoting in a scientific context does not need permission
- Go for original works, not secondary references
- Quotes of quotes should be the exception
    - Urban Myth: "Mark Weiser, father of Pervasive Computing"
    - Mark Weiser (1991). The Computer for the 21st Century. Scientific American.
    - In this text, Weiser talks about Ubiquitous Computing, not Pervasive Computing

- How to quote?
    - Quotation vs. Interpretation
    - Different context of use require different means
        - Quote word by word
        - paraphrase (interpret in own words)

Word by Word

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- Usually with page number
- not too short
- Danger of losing context
- Danger of misrepresentation
- Danger of misinterpretation
- Long quotations are acceptable, should still be avoided
- Use typographic means to separate from your own work
  - avoid misunderstanding (reference vs. text)
  - e.g. Roland Koch (2000) promises "…brutalst mögliche Aufklärung." (cursive, italic or/and "…")
  - longer passages indented

Indirect Quote

- paraphrase, not word by word
- often better to use your own wording
- Use page numbers
    - when referencing longer works
    - referencing central points
- Quote in variations
    - Foppa (1972, p. 32) showed in a study, that vegetarians do not buy jelly beans because they contain gelatine, an animal product
    - A study by Foppa (1972, p. 32) showed the rejection of jelly beans by vegetarians since those contain gelatine, an animal product
    - According to Foppa (1972, p. 32), vegetarians do not eat jelly beans since they contain gelatine, an animal product
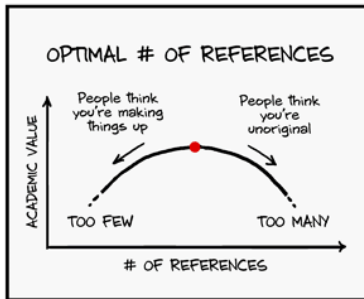   - Those and more examples: ☞ Werner Stangl (2016): Wissenschaftliches Schreiben.

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☞ PhD Comics 1821

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Figures

- Figures need to legible and readable
- If possible, same font in all figures
- Further more, same font as in text
- legibility means in particular, that the text is not smaller than in footnotes and not larger than the font used in the main text body
- Figures are meant to support the text and elaborate content
- every figure is referenced in the text
    - e.g. "as fig. 4.2 shows" or "(compare fig. 4.2)"
- Referencing figures done by others
    - as with quotes
- Use captions for numbering and elaboration
- Tabe of figures at the end of the work (convention, can be at the start)

Figures: Technical Hints

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- Vector formats preferred because of independence of print resolution (PDF, SVG)
- Use vector drawing software for creation
    - Inkscape: ☞ inkscape.org
    - yEd: ☞ yworks.com/products/yed
    - TikZ when using LaTeX: ☞ Wikibooks-chapter
- Raster graphics: use lossless PNG or TIFF
- JPEG only useful for photographs
    - Compression artefacts with line drawings or text
- do not save on resolution
    - 800dpi can make sense
- Use colour sparsely, make sure, figures are still readable in grey scale

Tables

- Tables must be readable
- each table is referenced in the text
- e.g. "As table 4.2 shows" or "(compare table 4.2)"
- uniform font in all tables
    - Use the font of the text sentence
- Table do not protrude from the type area
- if possible in the same reading direction as the text, ie portrait format
    - if necessary Landscape format for very wide tables
    - landscape: no text in portrait mode on same page
- a fact is usually illustrated either in a table or a picture, rarely both
- Make tables of the tables and the end of the work
    - The exact location where such directories appear may vary depending on the document template you are using

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Tables: Creative tips

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- Use colour sparingly
- Use lines sparingly
- especially lines against the reading direction disturb the flow
- Better: white space
    - Gestalt principles

	Advantage	**Disadvantage**	**Note**
Word	easy to learn	non-free	
LaTeX	good typography	not easy to learn	extendable
Libreoffice	easy to learn		free

Table: Comparing documentation systems for theses.

Outline

When to Write

- **Idea 1:** Plan for a miracle
- **Idea 2:** Parallel work

- Parallel work is a proven procedure
- Documentation of the work (writing of the thesis or report) takes place parallel to the execution of the work (i.e., analysis, concept, implementation, evaluation)
- The goals and results are documented in the first drafts as they are produced and finally complemented or smoothed out into a coherent overall work

- Any time, it is possible to deduce the state of work from the documentation (thesis) in essential aspects
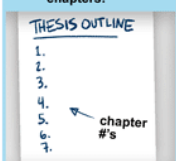
Structure I

- Structure a thesis/documentation
- The structure of the written documentation should reflect a narrative linearization of the process of editing
- It typically has the following structure
  1. Introduction: goals and contextualization
  2. Analysis: Analysis of current state
  3. Concept: modeling, architecture and design
  4. Realization: implementation/technical solution
  5. Dialogue examples: For interactive systems, presentation of screenshots & elaborating text
  6. Evaluation: method and results
  7. Conclusions, summary and outlook
  8. Tables of …, literature, annexes
  9. "Declaration of independence"

☞ PhD Comics 715

Outline

1 General Remarks

2 Process

3 Templates
- Thesis
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4 Writing

Form

- There are style sheets helping you with documents created within media informatics courses
    - Template for LaTeX
    - Derived: Microsoft Word and LibreOffice
    - Available at ☞ mi.kriwi.de/templates
- The template describes the form and outlines the content structure of a typical thesis in the field of media informatics

    - Documentation mostly German so far

- Depending on the focus of the work, deviations from this standard are useful if necessary, please consult with your supervisor
- If using other word processing and typesetting systems, follow the form and content structure of the template
    - compare the content of the explanatory PDF version
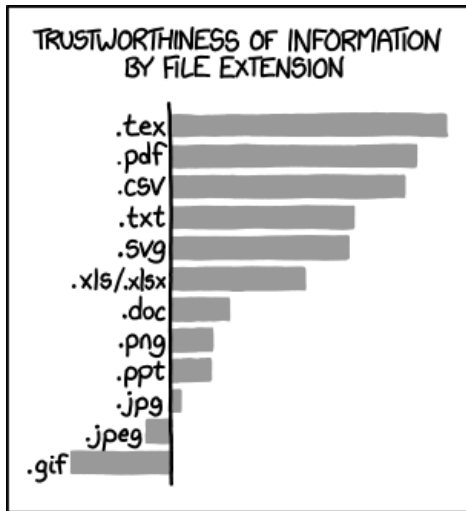
☞ xkcd: file extensions

Thesis

Templates, Front Matter

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- Templates for media informatics available at
  ☞ mi.kriwi.de/templates
- PDF, LaTeX, docx, doc, odt

Cover

- consistent and complete according to template
- may be provided with a transparent protective cover when binding (seminar and project work in manila folders)

Abstract & keywords

- Half to full page of English or German and English abstract
- In addition to the abstracts, keywords are given
- Keywords based on common classifications
  - e.g. ☞ ACM Computing Classification System (CCS)

TOC, Introduction

Table of content

- The table of contents should be a maximum of three, but preferably only two levels deep
- The table of contents shows whether the work was structured in a balanced way

Introduction

- Typical structure is:
    1. Motivation and goals of the work
    2. State of the art
    3. Methodology and procedure
- Other content is possible
    - e.g. Scenarios that describe the project in more detail

Analysis

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- Typical for analysis
    1. problem or task analysis
    2. user analysis
    3. context analysis
    4. organization analysis
    5. systems analysis
    6. problem scenario
- The description of the analysis must be precise enough to derive a suitable concept from it
- Substantial research is usually documented in the analysis chapter
- Alternatively, this can also be done in the introduction with overview-type surveys

- As an intermediate step prior to implementation, the concept describes the first, often abstract, transformations from analysis to implementation
- Requirements are translated into solutions without describing technical details
- Typical descriptions are
    1. Functional concept, features
    2. system architectures
    3. Design Patterns etc.
    4. dialogue design
    5. concept scenario
- In the concept chapter, optional solutions can be discussed and weighted

Implementation

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- The implementation chapter describes the hardware and software implementation
- The implemented
    - program structures
    - interfaces
    - data models

    are described
- The chapter structure can, for example, be
    - System architecture (e.g., client-server) or am
    - Design Pattern (e.g., Model-View-Controller)
- Use modelling languages (e.g., UML)
    - Code: only short and illustrative
- Program code does not belong in this section but in an appendix (better CD-ROM, even better (as open source) in a (publicly accessible) repository)

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- Interactive systems should be presented with one or more representative interaction sequences using screenshots
- Screenshots that describe interaction sequences
    - must be easy to read and
    - carry detailed, explanatory subtitles
- Ideally, this chapter should introduce the reader to using the system in the manner of a short tutorial

Evaluation

- Evaluation = proper assessment (of a system)
- Purpose, procedure and results of the evaluation are described
    - what was evaluated?
    - how was the procedure?
    - which methods were used?
- For interactive systems: the evaluation scenario to be evaluated
- What results did we get?
- For user-centric evaluations, using a evaluation scenario can be very helpful

- All the different scenarios – problem, analysis, concept & implementation, evaluation – are built on top of each other

Summary and Outlook

- Summary, conclusion and Outlook provide an overview of what was done in the work, as well as what was mentioned in the work, but could not be done
- Typical structure
  - Summary (1 - 2 pages)
  - Open issues (max 2 pages)
  - Outlook and further work (1/2 to 2 pages)

- often, only abstract, introduction and outlook of a work is being read
- These sections are therefore extremely important
- They should not be copy-pasted together, but fluently give an interesting and reliable overview of the work

☞ Jason Keath, 2011-09-18

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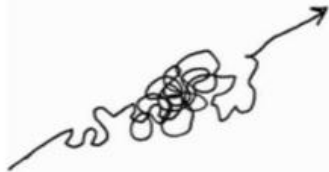
- Table of Figures, Tables and References
- After summarizing and looking out, figures and tables are listed if necessary (it should be), bibliography follow on a separate page
- These tables are created automatically, but may need to be optimized in the final version in terms of line lengths and wrapping
  - This is done as the very last editorial work

References

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- After these directories, which allow quick access to elements of the present work, a reference section and bibliography follows the sources used
- This is created according to given standards
    - in the LaTeX template, you can use the bibTeX style supplied
- References can be divided into:
    - Bibliography
    - Web links
        - Maybe using ☞ webcitation.org
    - Software
        - what was used (e.g., Eclipse, Inkscape, Python, libraries …)
        - but may not be listed in the bibliography
- Referencing literature is the most important part here

Bibliography

- Consistency of style, for example:
    - First letters of all first names, but not the first names themselves, or
    - If first names, then in all references
- Only name, no titles
    - "Herczeg, M. (2007)…", not "Herczeg, Prof. Dr. rer. nat. Michael (2007)…"
- References belongs in the text and in the appendix (not (exclusively) in footnotes)
- The bibliography serves to verify information and to find sources
- Litmus test: Based on the information in the bibliography, can I find the source myself without relying on guessing and Google?

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- In addition, it may be useful to have:
    - Abbreviations
    - Glossary
- Collect central terms in one place
- Explain frequently used abbreviations
- Adds to definitions in the text, but does not replace them

Appendix

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Writing

- Appendices often contain extensive additions that would break the text presentation, such as
    - Definition of protocols or an API
    - Program code
        - if any, then excerpts that represent special features (for example use of an API)
    - Questionnaires and raw data of the evaluation results
    - More extensive data sets
    - A short installation guide
- Appendices remove details from the main text and thus increase readability
- However, the work must be understandable without reading the appendices

Project

- This template differs from the template for bachelor and master theses mainly in that no glossary and no list of abbreviations are created
- If this should be part of a project thesis or lab course report, the template to be used is more likely that for master and bachelor thesis

☞ xkcd: reports

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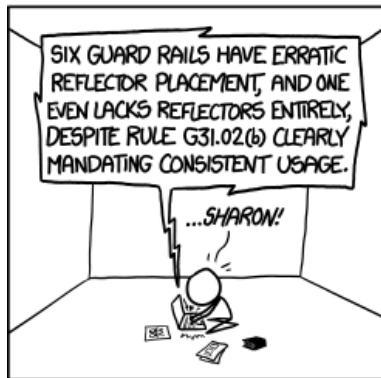
Seminar

- The content of this template differs significantly from the template for bachelor and master theses
- Due to the differences in the given texts, the structure of a seminar paper (homework assignment) can differ greatly from the template
- The structure of the template is designed so that it can be used for many different types of basic texts
- Proposed structure:
    1. Introduction
    2. Main part
    3. Example
    4. Conclusion

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Writing

Introduction

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- Introduction to and motivation of the topic
- Brief introduction to the subchapters
- Presentation of the problem statement, introduction of concepts
- Proposed structure of this part:
    1. Related work
    2. Central concepts

Main Part

- The key messages of the basic text are presented
- Theories, methods and procedures are explained
- In general, it is necessary to consult further literature in order to classify what has been said
- Proposed structure of this part:
    1. State of the art
    2. Key messages

Example

- Description of a possible implementation (hardware and/or software) and possibly evaluation
- Structure of this chapter may vary depending on the underlying texts
- Proposed structure of this part:
    1. Implementation
    2. Evaluation

Conclusion

- Own opinion
- Context
- Proposed structure of this part:
    1 Summary
    2 Assessment

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Eigenständigkeitserklärung

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Eigenständigkeitserklärung

Ich versichere hiermit, daß ich die vorstehende Bachelorarbeit selbständig verfaßt und keine anderen als die angegebenen Hilfsmittel benutzt habe. Die Stellen der Arbeit, die anderen Werken dem Wortlaut oder dem Sinn nach entnommen wurden, habe ich in jedem einzelnen Fall durch die Angabe der Quelle bzw. der Herkunft, auch der benutzten Sekundärliteratur, als Entlehnung kenntlich gemacht. Dies gilt auch für Zeichnungen, Skizzen, bildliche Darstellungen sowie für Quellen aus dem Internet und anderen elektronischen Text- und Datensammlungen und dergleichen. Die eingereichte Arbeit ist nicht anderweitig als Prüfungsleistung verwendet worden oder in deutscher oder in einer anderen Sprache als Veröffentlichung erschienen. Mir ist bewußt, daß wahrheitswidrige Angaben als Täuschung behandelt werden.

Declaration of Academic Integrity

Non-official translation

Declaration of Academic Integrity

I hereby assure that the present thesis is solely my own work and that no and without any other resources than the ones indicated. When parts of this thesis use other works, in wording or paraphrased, I have in every single case indicated the original source or origin, including but limited to secondary sources. This applies as well to figures, drawings, sketches, or other pictorial representations, sources from the Internet and other electronic media or data collections and the like. The submitted work has not previously been submitted to another authority for examination nor has it been published yet, either in its original language or in any translated form. I am aware of the fact that untrue statements are treated as attempts of deception.

Outline

Checklist

- Proof reading *by someone else*
    - Typing error
    - Expression
    - understanding
- be precise
    - Internet $\neq$ World Wide Web
- all central concepts must be explained
- pay attention to (internal and possibly external) consistency
    - one word is German or English but not both
- Paragraphs structure train of thought (not sentences or subchapters)
- Target group specific phrasing
    - you write for computer scientists
- Use comments and your own opinion sparingly
    - rather in introduction and outlook
    - mark as such

Provide Evidence

- General Remarks
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- Writing

- not enough literature
- many statements without evidence
    - Reference to "common sense" without evidence
    - Danger of the "Stammtisch" arguments
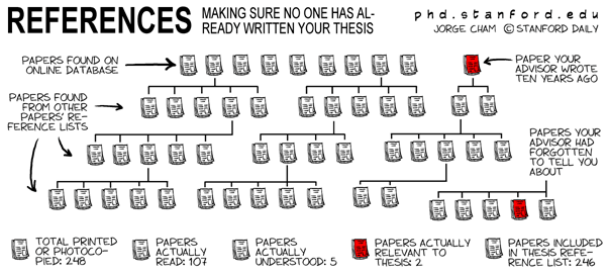

☞ xkcd: wikipedian protester

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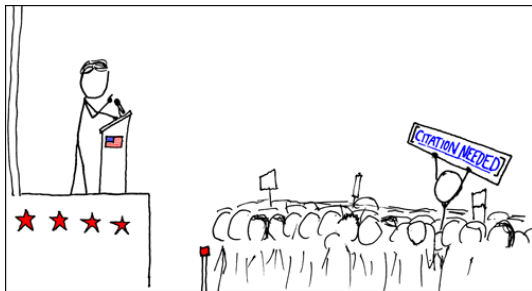
- too much gray literature
- Wikipedia may be OK - but only as a starting point
- Literature is sold "below value"
    - Journal article "only" as a web reference
- References in the text without reference in the appendix
- Literature in bibliography not referenced in the text
- Bibliography or references incomplete or inaccurate
- missing page or chapter information for articles in editorial works or journals
- missing publisher's name (place name of the publisher) for books or editorial works
- missing information for web references (author, title, version if available, date of last access)

Work with Literature III

Citation Styles

- There are many different
- Basically: author year better than the usual method in computer science with numbers [1] or letters [MBH16]
- Contextualized use
  - "Herzceg (2007) sagt, daß Medieninformatik wichtig sei."
  - "Medieninformatik ist wichtig (Herzceg, 2007)."

REFERENCES MAKING SURE NO ONE HAS ALREADY WRITTEN YOUR THESIS

phd.stanford.edu
JORGE CHAM ©STANFORD DAILY

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Writing

- Avoid colloquial language and snappy wording
    - "the quicksort algorithm plays in a different league"
- Avoid animistic text
    - "the system takes a different approach"
- Passive voice: use controlled
    - Who is the Agent?
    - Name agent or passive voice
- Intersubjectivity does not say that there are no acting subjects
    - It is important that statements can be deduced or argumentatively derived
- Largely avoid fill words
    - For each word you can justify why it is there
    - Check your text for fill words

Problems

- Process
    - students often ask for too little help in early stages
    - subsequently missing the opportunity to learn from mistakes
- We are not only there to grade you, but also to help you
- Peer learning

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Academic Literacy
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medieninformatik
IMAI – Institut für
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