The Perpetual Motion Machine
Concept, Realisation and Consequences of Unlimited Energie

Diploma Thesis

by

cand. inform. Villard de Honnecourt

University of Potsdam
Institute for Computer Science
Operating Systems and Distributed Systems

Supervisor(s):
Prof. Dr. Bettina Schnor
Dr. Second Advisor

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de Honnecourt, Villard
villard.de.honnecourt@cs.uni-potsdam.de
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Finally, thanks to my dog, my cats and my guinea pig – you never complained when I had no time to snuggle.

Selbständigkeitserklärung

Hiermit erkläre ich, daß ich die vorliegende Arbeit selbständig angefertigt, nicht anderweitig zu Prüfungszwecken vorgelegt und keine anderen als die angegebenen Hilfsmittel verwendet habe. Sämtliche wissentlich verwendeten Textausschnitte, Zitate oder Inhalte anderer Verfasser wurden ausdrücklich als solche gekennzeichnet.

Potsdam, May 8, 2024

Villard de Honnecourt

Abstract

In this thesis something unbelievable will be researched – the world's first running perpetual motion machine. Beside the complex physical proof, the perpetual motion machine will be described in detail. Finally the energie that can be created by running a single machine is calculated, measured and verified.

The second part of the thesis deals with the positive effects such machines will have to the human race and its natural environment. This includes consideration about resulting never-ending love and peace and harmony.

Deutsche Zusammenfassung

Lorem ipsum et dolor... .

Contents

1 Short introduction

A working TEX-installation with all used packages is required. The commands `make progs`, `make show-pkg` and `make chk-pkg` will check and list the required packages and programs.

At least the following steps should be done:

1. Change meta data in `thesis.cfg`.
2. Change `literatur.bib` according to your needs.
3. Change included files in `thesis.tex` to reflect your number of chapters.

For more information see `README.md`

1.1 Requirements

1.1.1 Windows

Under Windows the usage of the MikTeX-Distribution[1] is recommended. TeXnicCenter[2] could be recommended as editor.

Due to the fact that we include our own, self defined LATEX-style, this style needs to be included at each LATEX-run. This can be done easily by adding the `styles`-folder to the included directories when using the `latex`/`pslatex`/`pdflatex` command, e.g.:

```
pdflatex -include-directory="./styles" thesis
```

In case you use TeXnicCenter you should modify the output profile (“Ausgabe”-> “Ausgabe-profile definieren... Alt+F7”). There, you should add the `-include-directory`-option to the predefined DVI, PS and PDF profiles. E.g., the PDF profile’s arguments probably will look like this:

```
-interaction=nonstopmode "%pm" -include-directory="%dm/styles"
```

1.1.2 Unix/Linux

Most distributions contain packages for LATEX. There are a lot of useful editors available for example: gedit, kile and texmaker. Even emacs and vim having a LATEXmode.

[1] http://www.miktex.org/
[2] http://www.toolscenter.org/

2 Structure and Layout

2.1 Headlines

For headlines the standard LaTeX-commands are used. One could use short entries in the table of contents for long headlines with the help of the command `\section[short]{long}`.

2.1.1 Example for a subsection with a short entry in table of contents

This subsection is listed as "‘Short example"’ in table of contents.

2.1.1.1 Example subsubsection

Example for a subsubsection.

Paragraph example Example for a paragraph.

Subparagraph example Example for a subparagraph.

Minisec
Furthermore this template provides the command `\minisec{}`. With this command paragraphs with seperated headlines are possible like this one.

2.1.2 One- and twoside layout

The twoside layout is the default but could be easily switched to oneside in `thesis.tex`.

3 Links

3.1 Links and references

It is easy to use links in LaTeX just create a label: `\label{sec:l1}` link to it with `\ref{sec:l1}` and `\pageref{sec:l1}`.

Links are colored by default. For printing purpose link color should be set to black.

Additionally, you should prefer `\prettyref{sec:l1}`. You will get generic prefixes like "Section". E.g. there is a nice chapter about links (Chapter 3).

The prefixes you should use are listed in Table 3.1 on page 4.

3.2 External links

The template provides the command `\url{}` for external links. An link to `http://www.google.de` for example.

3.3 Literature links and bibliography

BibTeX is used for the bibliography. All citations are done in `literatur.bib`. The rules for umlauts are importatnt in this file.

The command `\cite{label}`. is used to cite from the bibliography database. For example: "'Mittelbach et al [GMS00] has written a useful book about LaTeX"'.

3.4 Footnotes

Footnotes [1] are easy.

[1] This is a footnote.

label prefix	german reference prefix	english reference prefix
prt	Teil 14	Part 14
cha	Kapitel 14	Chapter 14
sec	Abschnitt 14	Section 14
ssec	Teilabschnitt 14	Subsection 14
sssec	Unterabschnitt 14	Subsubsection 14
par	Absatz 14	Paragraph 14
spar	Teilabsatz 14	Subparagraph 14
fig	Abbildung 14 auf Seite 3	Figure 14 on page 3
tab	Tabelle 14 auf Seite 3	Table 14 on page 3
alg	Algorithmus 14 auf Seite 3	Algorithm 14 on page 3
eq	(14)	(14)
thm	Theorem 14	Theorem 14
prp	Satz 14	Proposition 14
cor	Korollar 14	Corollary 14
lem	Lemma 14	Lemma 14
xmp	Beispiel 14	Example 14
rem	Anmerkung 14	Remark 14
def	Definition 14	Definition 14
prf	Beweis 14	Proof 14

Table 3.1: Label prefixes and its corresponding generic references.

4 Tables

This template uses the `tabularx` package.

Tables are automatically added to the list of tables aufgenommen, as long as they start with `\begin{table}` end with `\end{table}` and containing a `caption`.

4.1 Tabular Environment

The following LaTeXsource:

```
\begin{table}[htbp]
  \begin{tabular}{|c|lr}
  row 1, column 1 & row 1, column 2 & row 1, column 3 \\
  row 2, column 1 & row 2, column 2 & row 2, column 3 \\
  \hline
  row 3, column 1 & row 3, column 2 & row 3, column 3 \\
  \end{tabular}
  \caption[Example with tabular]{Simple table with tabular.}
\end{table}
```

results in:

row 1, column 1	row 1, column 2	row 1, column 3
row 2, column 1	row 2, column 2	row 2, column 3
row 3, column 1	row 3, column 2	row 3, column 3

Table 4.1: Simple table with tabular.

4.2 The tabularx package

The following LaTeXsource:

```
\begin{table}[htbp]
  \begin{tabularx}{10cm}{|c|X|X}
  row 1, column 1 & row 1, column 2 & row 1, column 3 \\
  row 2, column 1 & row 2, column 2 & some more Text,
  some more text some more text \\
  \end{tabularx}
  \caption{Example with tabularx}
\end{table}
```

results in:

row 1, column 1 row 2, column 1	row 1, column 2 row 2, column 2	row 1, column 3 some more text, some more text some more text

Table 4.2: Example with tabularx

5 Figures

Figures could be easily included with following command

```
\pic[shortcaption]{filename}{width}{caption}{label}
```

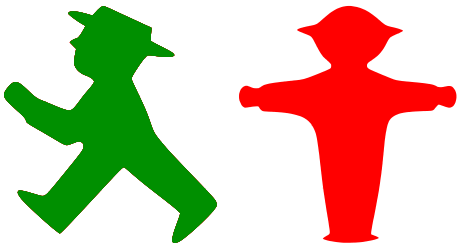


Figure 5.1: A simple figure.

The command `\fpic` is used with the same parameters as `\pic` but results in a border around the figure.

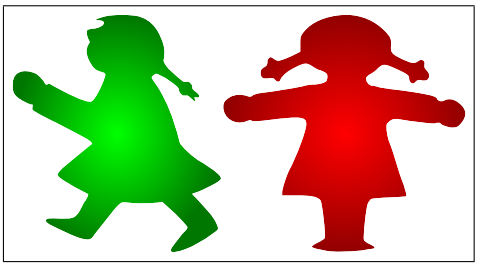


Figure 5.2: A simple figure with border.

Simple link to figure 5.1 or 5.2.

5.1 Two images parallel

Simple link to 5.3.

Das Package `subfig` erlaubt die Erstellung von Untergrafiken (1a, 1b, ...). Auch dafür gibts ein vorgefertigtes Skript, allerdings nur für zwei Unterbilder. Für mehr als zwei solche Bilder muß die ganze Sache per Hand eingetragen werden. Das Skript `\subfigs` arbeitet exakt wie `\twopics` und nimmt auch die gleichen Parameter. Das sieht dann aus wie in Abbildung 5.4. Querverweise in die Subfigs funktionieren natürlich auch, wie dieser Verweis zu Abbildung 5.4b.

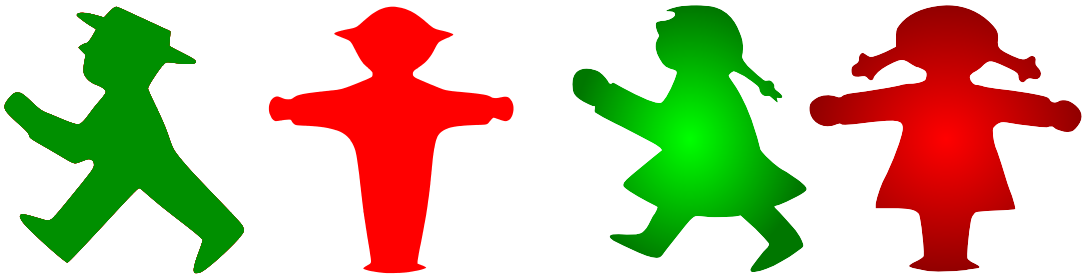
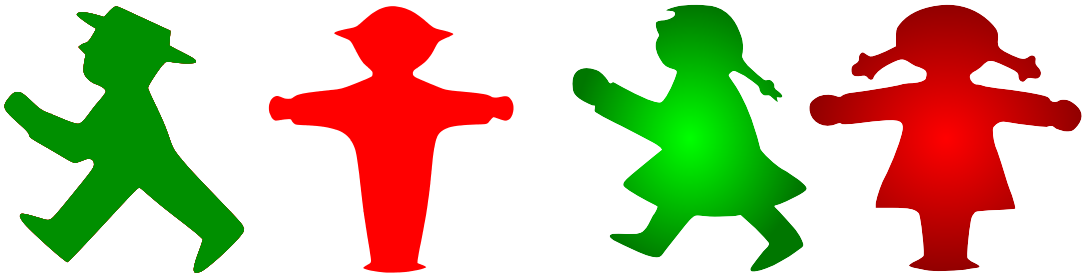


Figure 5.3: Example for two parallel images.



(a) **(b)**

Figure 5.4: Zwei Bilder mit subfig **(a)** das linke Bild, **(b)** das rechte Bild

5.2 Gnuplot

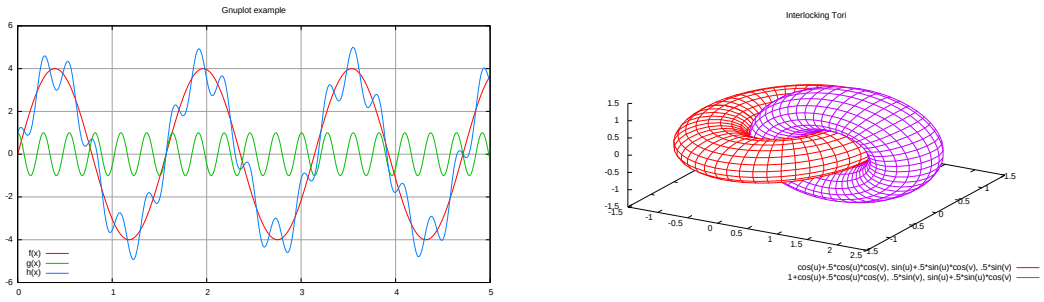


Figure 5.5: Two graphs created with Gnuplot.

6 Algorithms

6.1 Verbatim Environment

For short sources of algorithms the `verbatim`-Environment could be used:

```
Example for a verbatim-Block.
```

6.2 Algorithms and listings

The template uses the listings package.

```
1 #include <stdio.h>
2
3 int main(int argc, char **argv) {
4   printf("Hallo Welt!\n");
5   return 0;
6 }
```

Algorithm 6.1: Example for algorithm environment. Algorithm does the positioning (like figures and tables) and the listing the format.

7 Others

7.1 Lists and enumerations

7.1.1 Bullet Lists

- Item 1
- Item 2
  - Sub item 1
  - Sub item 2
    - Sub Sub item
- Item 3

7.1.2 Enumerations

1. Item 1
2. Item 2
   - Sub item 1
   - Sub item 2
     - Sub Sub item
3. Item 3

7.1.3 Other lists

A one letter

B another letter

Text many letters

7.2 Citations

7.2.1 Quote

Short citations.

> "'LaTeX can do a lot of things."' *Someone Important*

7.3 Math environment

Formular example:

$$\beta = \arcsin\left(\frac{n_1}{n_2}\sin(\alpha)\right)$$

Complex math 7.1:

$$R_s = \left[\frac{\sin(\alpha-\beta)}{\sin(\alpha+\beta)}\right]^2 \quad R_t = \left[\frac{\tan(\alpha-\beta)}{\tan(\alpha+\beta)}\right]^2 \quad R(0) = \frac{(n_1-n_2)^2}{(n_1+n_2)^2} \tag{7.1}$$

7.4 Theorems and Definitions

Example for theorems

Theorem 1 *Example theorem.*

Lemma 1 *Example lemma.* □

Proposition 1 *Example proposition.* □

Corollary 1 *Example Corollary.* □

Definition 1 Example definition. □

Example 1 Example example. □

Remark 1 Example Remark. □

PROOF Example proof. ■

7.5 Helping environments for the author

Another helper command is `\comment{text}`.

> Example for author comment.

8 Abbreviations und Index

8.1 Index

The command `\index{entry}` is used to create index entries.

8.2 Abbreviations

Here is the acronym for GSM (TDMA also known as CDMA) first time used. And now the second time GSM (and TDMA also known as CDMA) used.

A Makefile

The usage of the makefile will be printed on `make help`.

B Files of the thesis

images/	Directory for graphics as format jpg, png, fig and svg
images/ampelmann.fig	Sample fig format
images/ampelfrau.svg	Sample svg format
images/logo.eps	Logo
images/ampel*.*	Sample picture as eps and pdf
plots/	Directory for Gnuplot-control files
plots/sinus.eps	Sample plot sinus
plots/tori.eps	Sample plot interlocked tori
plots/sinus.pdf	Sample plot sinus
plots/tori.pdf	Sample plot interlocked tori
plots/sinus.plt	Gnuplot Skript for sample
plots/tori.plt	Gnuplot Skript for sample
Makefile	Makefile for compiling the whole thesis
literatur.bib	Bibliography entries for BibTeX
styles/alphaurl.bst	BibTeX style
styles/user.sty	Various user defined commands
styles/bsvstitle.sty	BSVS title style
thesis.dvi	thesis as DVI
thesis.pdf	thesis as PDF
thesis.ps	thesis as PS
thesis.tex	Main file which inludes all other *.tex files
data.tex	Meta data
title.tex	Content of title pages
appendix.tex	Appendix (this file)
chapter*.tex	Content of chapters

Directories are used by the makefile.

C Auxiliary files

The following files are auxiliary files from different programs created on compiling the latex thesis. They could be removed with `make clean`.

`*.aux`	auxiliary files
`thesis.bbl`	Bibliography
`thesis.blg`	BibTeX logfile
`thesis.glg`	Glossar logfile
`thesis.glo`	Glossar
`thesis.gls`	Glossar
`thesis.idx`	Index
`thesis.ilg`	Index
`thesis.ind`	Index
`nomencl.ist`	Index
`thesis.loa`	List of algorithms
`thesis.lof`	List of figures
`thesis.log`	Logfile
`thesis.lot`	List of tables
`thesis.out`	PDF-Bookmarks
`thesis.thm`	Links, definitions etc.
`thesis.toc`	Table of contents

List of Figures

List of Tables

List of Algorithms

D Abbreviations

CDMA Code Division Multiple Access

GSM Global System for Mobile communication

TDMA Time Division Multiple Access

Bibliography

[Dom06] Uwe Domaratius. Diplomarbeitsvorlage mit LaTeX. Diplomarbeit, Chemnitz University of Technology, 2006.

[GMS00] Michael Goossens, Frank Mittelbach, and Alexander Samarin. *Der LaTeX-Begleiter*. Pearson Studium, 2000. Available from: http://www.pearson-studium.de/main/main.asp?page=bookdetails&ProductID=106617&SID=%7B0EF7E587%2D7DC6%2D4CAA%2D969C%2DB07A1E07F1EE%7D.

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