TECHNISCHE UNIVERSITÄT
ILMENAU

Faculty of Electrical Engineering and Information Technology
Institute for Media Technology
Audio Visual Technology

DISSERTATION

zur Erlangung des Akademischen Grades Doktoringenieur (Dr.-Ing.)

A guide to the thesis template

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Gutachter: ...
Gutachter: ...

Ilmenau, September 4, 2019

Acknowledgments

optional

Zusammenfassung

maximum of 2400 chars; one paragraph

Abstract

maximum of 2400 chars; one paragraph

Contents

Chapter 1

Introduction

general motivation for your work, context and goals: 1-2 pages

- **Context:** make sure to link where your work fits in
- **Problem:** gap in knowledge, too expensive, too slow, a deficiency, superseded technology
- **Strategy:** the way you will address the problem

1.1 Sample Section

The following samples explain how to insert references, figures and tables, how to set math, algorithms and program code.

1.1.1 Figures

Figure 1.1 shows something.

You can also use tikz for your figures, see Figure **??**. However other tools, like `https://www.yworks.com/products/yed` are more suitable.

1.1.2 Tables

Short tables, e.g., Table 1.1 are straighforward to define.

Figure 1.1: Example Figure

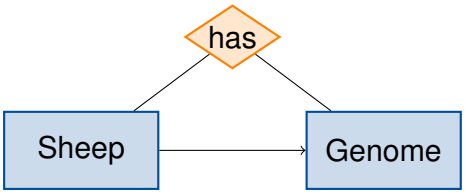

Figure 1.2: Tikz Example

left aligned	same here	right aligned
1	2	3
4	5	6
7	8	9

Table 1.1: Short table

Class	application examples	lifetime aspects
Critical, coverage	Forest fire detection, flood detection, nuclear/chemical/biological attack detection, battlefield surveillance, intrusion detection	$c_{ca}/c_{ct}/c_{cb}$, c_{ln}, c_{la}, c_{lo}
Critical, no coverage	Monitoring human physiological data, military monitoring of friendly forces, machine monitoring	c_{cc}, c_{ln}, c_{la}, c_{lo}
Noncritical, coverage	Agriculture, smart buildings, habitat monitoring (sensors monitor the inhabitants in a region)	$c_{ac}/c_{tc}/c_{bc}$, c_{cc}, c_{sd}
Noncritical, no coverage	Home automation, habitat monitoring (sensors are attached to animals and monitor their health and social contacts)	c_{cc}, c_{sd}

Table 1.2: Sensor network applications

Multi-line cells can be set as shown in Table 1.2.

1.1.3 Math

Simple inlined equations: $\zeta(t) = \min(\zeta_{**}(t))$. The same in a numbered equation, i.e. Eq. 1.1, which states

$$\zeta(t) = \min\left(\zeta_{**}(t)\right). \tag{1.1}$$

$$e = m \cdot c^2 \tag{1.2}$$

$$v = \frac{s}{t}$$

$$\ln(e) + \sin^2(p) + \cos^2(p) = \sum_{n=0}^{\infty} \left(\frac{1}{2}\right)^n \tag{1.3}$$

Equations covering multiple lines should be aligned. Note that the numbering is added automatically, independent of whether the equation is actually referenced or not, as in

$$sd_{max} = \max\left((t_{i+1} - t_i) : \zeta(t_i) < 1, i \in [0, |T| - 1]\right), \tag{1.4}$$

$$\psi_{sd}(t) = \begin{cases} \dfrac{\Delta t_{sd}}{sd_{max}} & \text{if } sd_{max} > 0, \\ 1 & \text{if } sd_{max} = 0, \end{cases} \tag{1.5}$$

$$\zeta_{sd}(t) = \frac{\psi_{sd} - cl_{sd}}{c_{sd} - cl_{sd}}. \tag{1.6}$$

1.1.4 Algorithms

Algorithm 1 is an example algorithm.

Data: this text
Result: how to write algorithm with LaTeX2e
initialization;
while *not at end of this document* **do**
    read current;
    if *understand* **then**
        go to next section;
        current section becomes this one;
    else
        go back to the beginning of current section;
    end
end

Algorithm 1: How to write algorithms

1.1.5 Program Code

Program code should be omitted, but if absolutely necessary, it should be set as seen in Listing 1.

Listing 1: Sample application

```
#include <iostream>
int main() {
    std::cout << "Hello world" << std::endl;
    return 0;
}
```

1.1.6 References

You can cite something with [**Berlin**]. Or **raake2014quality** for Authors [**raake2014quality**]. Or [**coresparql**]. Or [**sparqlAlgebra**]

For bibtex entries you can use different sources, e.g.,

- http://scholar.google.de/
- http://books.google.de
- http://citeseerx.ist.psu.edu
- http://ieeexplore.ieee.org/
- http://dblp.uni-trier.de/

1.1.7 TODOs and FIXMEs

You can use the the `\todoI` command to add short “sticky notes” to your document.

This is what a TODO looks like

This will also trigger generation of a list-of-TODOs at the end of the document. The same goes for the `\note`

This is what a NOTE looks like

command.

Chapter 2

Fundamentals

Fundamentals / environment and related work: 1/3

- comment on employed hardware and software
- describe methods and techniques that build the basis of your work
- review related work(!)

Chapter 3

Architecture/Implementation

Developed architecture / system design / implementation: 1/3

- start with a theoretical approach
- describe the developed system/algorithm/method from a high-level point of view
- go ahead in presenting your developments in more detail

Chapter 4

Analysis/ Evaluation

Measurement results / analysis / discussion: 1/3

- ▷ whatever you have done, you must comment it, compare it to other systems, evaluate it, using e.g. subjective tests
- ▷ usually, adequate graphs help to show the benefits of your approach
- ▷ caution: each result/graph must be discussed! what's the reason for this peak or why have you ovserved this effect

Chapter 5

Conclusion

Conclusion: 1 page

- ▷ summarize again what your thesis did, but now emphasize more the results, and comparisons
- ▷ write conclusions that can be drawn from the results found and the discussion presented in the paper
- ▷ future work (be very brief, explain what, but not much how)

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Appendix A

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Declaration

Ich versichere, dass ich die vorliegende Arbeit ohne unzulässige Hilfe Dritter und ohne Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe. Die aus anderen Quellen direkt oder indirekt übernommenen Daten und Konzepte sind unter Angabe der Quelle gekennzeichnet.

Bei der Auswahl und Auswertung folgenden Materials haben mir die nachstehend aufgeführten Personen in der jeweils beschriebenen Weise ~~entgeltlich~~/unentgeltlich geholfen:

1. ....
2. ...
3. ...

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Die Arbeit wurde bisher weder im In- noch im Ausland in gleicher oder ähnlicher Form einer Prüfungsbehörde vorgelegt. Ich bin darauf hingewiesen worden, dass die Unrichtigkeit der vorstehenden Erklärung als Täuschungsversuch bewertet wird und gemäß § 7 Abs. 10 der Promotionsordnung den Abbruch des Promotionsverfahrens zur Folge hat.

Ilmenau, September 4, 2019

JAMES T. KIRK _____

Todo list