IPAM-TOOL

(IP Address Management)

Bachelorarbeit

zur Erlangung des akademischen Grades

Bachelor of Science

im Rahmen des Studiums

Angewandte Informatik

eingereicht von

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Ich bin mir bewusst, dass eine falsche Erklärung rechtliche Folgen haben wird.

(Unterschrift) (Ort, Datum)

Zusammenfassung

Die Zusamenfassung gibt einen kurzen Überblick über die Arbeit und soll einen Umfang von 300 bis 500 Woerter haben.

The German abstract is optional for a thesis written in English, but we recommend to write it.

Abstract

This is the English version.

Acknowledgments

You should acknowledge support you received during your studies.

The acknowledgment section is optional. However, if you have received any financial support you should acknowledge the sponsor.

Contents

List of Figures

List of Tables

Chapter 1

Introduction

This document should serve as template for your thesis and as a quick-start for LaTeX. In this document we give a generic *example* of a thesis organization and we demonstrate the usage of some basic commands typically required for writing a scientific report. This document is neither complete nor does it represent the ”only” possible solution for a scientific report. There are many sources for more information about LaTeX [7] or writing a scientific report [4]. Note that we **do not require** you to use LaTeX for writing your thesis, but we strongly recommend it.

Organization of this template

This template consists of the following files:

- `masterthesis.tex` Main file (Latex)
- `titlepage.tex` Title page (Latex)
- `stmt.tex` Text for the statutory declaration (Latex)
- `abstract_e.tex` Text for the English abstract (Latex)
- `abstract_g.tex` Text for the German abstract (Latex)
- `acknow.tex` Text for the acknowledgements (Latex)
- `chapter1.tex` Text for chapter 1 (Latex)
- `chapter2.tex` Text for chapter 2 (Latex)
- `chapter3.tex` Text for chapter 3 (Latex)
- `KLU-logo.eps` Logo of Klagenfurt University (image)
- `fig.eps` Sample figure (image)
- `reference.bib` References for this text (Bibtex)
- `masterthesis.pdf` Final output (PDF)

The remainder of this document consists of dummy text to demonstrate frequently used commands.

A chapter can be organized in several sections, subsections, subsubsections and paragraphs.

1.1 Motivation

1.1.1 A Subsection

A Subsubsection

This is the text which follows a heading.

A new paragraph can be simply started by inserting an empty line. Note that in the standard documentstyle all but the first paragraphs are indented.

1.2 Goals

1.3 Outline of the Thesis

Chapter 2

State of the Art

Chapter 2 gives a brief overview of the state of the art of this research.

2.1 A Sample Text

Over the years, human experts have gained sufficient experience to solve a lot of problems efficiently. During the last years, much work has been done to build machines that imitate the description of human thinking and acting. Expert systems are computer programs which use knowledge and inference mechanisms to solve problems where normally expert knowledge is required. One important class of problems is *diagnostic reasoning*. Diagnostic reasoning can be seen as a classification problem, since it involves identifying current behavior with a set of known classes of behavior. It can also be considered as an abduction problem, concerned with generating plausible explanations for observations [5].

Diagnostic reasoning systems are important in many technical systems. As these systems—like electronic circuits, assembly lines or nuclear power plants—are becoming more complex, the need for automatic reasoning systems to support troubleshooting is increasing enormously.

Most diagnostic expert systems can be classified into the following categories:

Statistical approach. The statistical approach determines the probabilities of a diagnosis. This approach is mainly based on the *Bayes Theorem*. Due to the lack of causal inference, the statistical reasoning process has only a very limited ability for explanation.

Associative approach. Associative diagnosis systems are built by accumulating the experience of expert troubleshooters in the form of empirical associations. The associative approach became popular, in part, because it permitted easy construction of expert systems by encoding heuristic information in the form of *if–then* rules. However, a big problem is the knowledge accumulation of rule-based systems.

Model-based approach. Model-based diagnosis can be viewed as an interaction between prediction and observation. The knowledge is represented by different models for the *structure* and the *behavior* of the system. The predicted behavior is compared with the actual observation, producing discrepancies. Discrepancies then give rise to a possible diagnosis. A Model-based diagnosis covers a broader range of faults by viewing misbehavior as anything other than what the model predicts. This approach also better captures the causal dependencies of the system than the other two approaches.

The key units of a model-based diagnostic expert system are the *models* which describe behavior and structure and the *inference mechanism* for predicting the behavior given the structure of the system. Reasoning with models can be broken down into two major subproblems [5]. *Model building* starts with a description of the physical situation and builds an appropriate simplified model. *Model simulation* starts with a model and predicts the possible behaviors consistent with the model. A system can be modeled at different levels of abstractions. These levels range from detailed numerical descriptions up to rather coarse and incomplete descriptions at a qualitative level. The selected abstraction level depends basically on the domain, the information available about the system and the inference mechanism which must correspond to the model description. In many cases, the behavior is predicted by simulators. Therefore, numerical, discrete or qualitative simulators are often applied. Sometimes system descriptions at different levels are combined to achieve diagnosis at an appropriate level of detail.

2.1.1 A few References

Model-based fault diagnosis is applied more and more nowadays. This reasoning technique is used in both static as well as dynamic systems. In dynamic systems, the parameters of the system change over time. Hence, the behavior also changes over time. Examples for model-based diagnosis in static systems are [3, 2]. Model-based diagnosis in dynamic systems is demonstrated in [6] [1].

Chapter 3

Implementation

3.1 Implementation

3.1.1 How to include figures

It is pretty easy to include figures in your document. As a basic rule, let LaTeX place figures and tables. Figure 3.1 shows a simple example.

3.1.2 How to include tables

Part 1	Part 2	Part 3	Part 4
test 1	1	2	3
test 2	4	5	6
test 3	7	8	9

Table 3.1: This is my first table.

Table 3.1 presents a brief example of how to organize a table. Every table and figure should include a descriptive caption and should be referenced in the text.

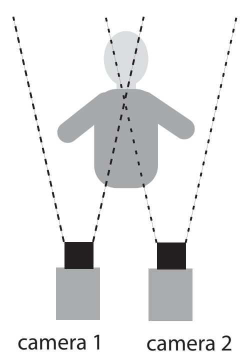

Figure 3.1: This is my first figure.

Bibliography

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[2] Michael Bramberger, Josef Brunner, Bernhard Rinner, and Helmut Schwabach. Real-Time Video Analysis on an Embedded Smart Camera for Traffic Surveillance. In *Proceedings of the 10th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2004)*, pages 174–181, Toronto, Canada, May 2004.

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[7] Jürgen Weinelt. Der LaTeX Index – Eine Befehlsübersicht im World Wide Web. `http://www.weinelt.de/latex`. [last visited, Feb. 12, 2008].