



TAMPERE UNIVERSITY OF TECHNOLOGY

**Author Name**

**TITLE**

Master of Science Thesis

Examiner: —

Examiner and topic approved by the

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on 31 November 2014

# ABSTRACT

TAMPERE UNIVERSITY OF TECHNOLOGY

Master's Degree Programme in Signal Processing

**SURNAME, FIRST NAME:** Title

Master of Science Thesis, 45 pages, 4 Appendix pages

November 2014

Major: Computational Systems Biology

Examiner: Dr. John Doe

Keywords: Object Recognition, Image Processing

The abstract is a distillation of your thesis: a self-contained, concise description of the significance and content of your research.

The abstract describes your main research objectives, materials, key methods and results, conclusions and recommendations for further research. The abstract must be understandable even to people who are not familiar with the topic. Avoid charts and tables, unless they are necessary for the reader to understand the content. Abstracts never contain information that is not mentioned in the main body of the thesis. Abstracts contain no references or quotations.

# TIIVISTELMÄ

TAMPEREEN TEKNILLINEN YLIOPISTO

Signaalinkäsittelyn ja tietoliikennetekniikan koulutusohjelma

**SUKUNIMI, ETUNIMI:** Työn nimi Suomeksi

Diplomityö, 45 sivua, 4 liitesivua

Marraskuu 2014

Pääaine: Laskennallinen systeemibiologia

Tarkastaja: Dr. Matti Meikäläinen

Avainsanat: Hahmontunnistus, Digitaalinen kuvankäsittely

Tähän tiivistelmä. Ääkköset toimii. Jee.

## PREFACE

The preface contains general information about the thesis process. The preface must include a statement indicating the relative contributions of the thesis supervisor and possible other collaborators (instructions, advice and so on). If the research was undertaken by a group, the preface must detail the student's contribution to the research and the writing process. Acknowledgements to those who contributed to the thesis are generally presented in the preface. It is not appropriate to criticize anyone in the preface.

The maximum length of the preface is one page. Add the date, after which you have not made any revisions to the text, your signature (in the case of bound copies), your name in block letters and, if you want to, your address and other contact information at the end of the preface.

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## TERMS AND DEFINITIONS

$\hbar$  Redusoitu Planckin vakio

SNR Signaali-kohinasuhde (engl.: Signal to Noise Ratio)

# 1. INTRODUCTION

An effective introduction arouses the reader's interest, establishes the topic and prepares the reader for the content that follows. The introduction outlines the purpose and objectives of the research and defines the topic and content of the thesis. You must also specify the research problems and questions that your thesis attempts to resolve in the introduction. In addition, you must briefly describe your research methods and how you are planning to achieve your objectives.

The introduction should contain short references to earlier or contemporary research in your field to demonstrate that your work builds on earlier research. Earlier research results are described in more detail in the chapter Theoretical background/Starting point, but placing your thesis in a theoretical context helps the reader understand the purpose and relevance of your research. If the thesis is part of a larger project, the author's contribution to the project must be clearly stated.

Based on the introduction, the reader forms an overview of what to expect. This is why the introduction should briefly describe the content and structure of your thesis and specify how the different chapters are connected to each other. However, the purpose of the introduction is to outline your research methods and results and not to describe them in detail. Do not present any conclusions or recommendations for further research in the introduction.

## 2. THEORETICAL BACKGROUND OR STARTING POINT

Hello world!

### 2.1 Example of section

Hello world!

#### 2.1.1 Example of subsection

Hello world!

##### 2.1.1.1 Example of subsubsection

Hello world!



## 3. RESEARCH METHOD AND MATERIALS

Hello world!

### 3.1 How to Include Figures

Example of figure is presented in Figure 3.1.

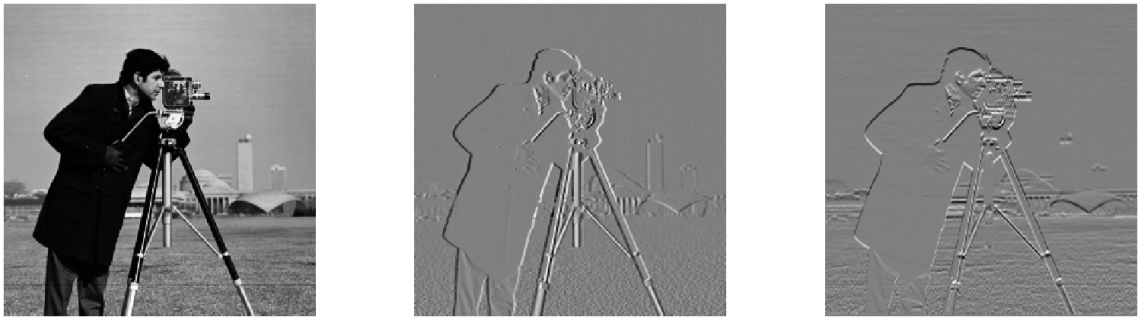


Figure 3.1: There is original image on the left followed by x-gradient in the center and y-gradient on the right. Gray pixels have small gradient while black and white pixels represent large gradient.

### 3.2 How to Make Citation

This sentence demonstrates the use of references [1].

### 3.3 How to Make Tables

Example of table is presented in Table 3.3.

Item	Quantity
Widgets	42
Gadgets	13

Table 3.1: An example table.

### 3.4 How to Write Mathematics

Example of equation is presented in Equation 3.1. Inline mathematics is done like this:  $(\mathbf{x}_1, \mathbf{x}_2, \dots, \mathbf{x}_n)$ .

$$\text{magnitude} = \sqrt{\nabla_x^2 + \nabla_y^2} \quad \text{orientation} = \arctan\left(\frac{\nabla_y}{\nabla_x}\right). \quad (3.1)$$

### 3.5 How to Make Lists

You can make lists with automatic numbering ...

1. Like this,
2. and like this.

...or bullet points ...

- Like this,
- and like this.

...or with words and descriptions ...

**Word** Definition

**Concept** Explanation

**Idea** Text

## 4. RESULTS AND DISCUSSION

Hello world!

## 5. CONCLUSIONS

Hello world!

## REFERENCES

- [1] Hirsjarvi, S., Remes, P., ja Sajavaara, P. 2005. Tutki ja kirjoita, 11. painos. Helsinki, Tammi. 436 s.
- [2] Mittelbach, F., Goossens, M., Braams, J., Carlisle, D., Rowley, C. 2004. The Latex Companion, 2. painos. Boston, Addison-Wesley. 1120 s.