



CHALMERS
UNIVERSITY OF TECHNOLOGY



UNIVERSITY OF GOTHENBURG

Simulation of traffic flows and road network analysis

A tool for simulating road networks

Bachelor's thesis in Computer science and engineering

MARTIN BLOM
FELIX JÖNSSON
HANNES KAULIO
MARCUS SCHAGERBERG
JAKOB WINDT

BACHELOR'S THESIS 2023

Simulation of traffic flows and road network analysis

A tool for simulating road networks

MARTIN BLOM
FELIX JÖNSSON
HANNES KAULIO
MARCUS SCHAGERBERG
JAKOB WINDT



UNIVERSITY OF
GOTHENBURG



CHALMERS
UNIVERSITY OF TECHNOLOGY

Department of Computer Science and Engineering
CHALMERS UNIVERSITY OF TECHNOLOGY
UNIVERSITY OF GOTHENBURG
Gothenburg, Sweden 2023

Simulation of Traffic Flows

A tool for simulating road networks

MARTIN BLOM FELIX JÖNSSON HANNES KAULIO

MARCUS SCHAGERBERG JAKOB WINDT

© MARTIN BLOM, FELIX JÖNSSON, HANNES KAULIO, MARCUS SCHAGERBERG, JAKOB WINDT 2023.

Supervisor: Natasha Bianca Mangan, Interaction Design and Software Engineering

(if applicable) Advisor: Name, Company or Institute

Examiner: Name, Department

Bachelor's Thesis 2023

Department of Computer Science and Engineering

Chalmers University of Technology and University of Gothenburg

SE-412 96 Gothenburg

Telephone +46 31 772 1000

Cover: Description of the picture on the cover page (if applicable)

Typeset in L^AT_EX

Gothenburg, Sweden 2023

Simulation of Traffic Flows

A tool for simulating road networks

MARTIN BLOM, FELIX JÖNSSON, HANNES KAULIO, MARCUS SCHAGER-
BERG, JAKOB WINDT

Department of Computer Science and Engineering

Chalmers University of Technology and University of Gothenburg

Abstract

This document is *only* a L^AT_EX template. It is not meant to suggest a particular structure. Also, even if this document is written in English, it is not meant to suggest a report language. You can adopt it to your language of choice. In this document, the bibliography is hand made. However, we suggest that you strongly consider using B_IB_TE_X, to further automate the creation of the bibliography.

Keywords: put, here, keywords, describing, areas, the, work, belongs, to

Acknowledgements

If you want, you can here say thank your supervisor(s), company advisors, or other people that supported you during your project.

Martin Blom, Felix Jönsson, Hannes Kaulio, Marcus Schagerberg, Jakob Windt
Gothenburg, February 2023

Contents

List of Figures	xi
List of Tables	xiii
1 Introduction	1
1.1 Section levels	1
1.2 Section	1
1.2.1 Subsection	1
2 Theory	3
2.1 Figure	3
2.2 Equation	3
2.3 Table	3
2.4 Source code listing	3
3 Methods	5
4 Results	7
5 Conclusion	9
Bibliography	11
A Appendix 1	I
B Appendix 2	III

List of Figures

2.1	Surface and contour plots showing the two dimensional function $z(x, y) = \sin(x + y) \cos(2x)$	3
A.1	Unity logo	I

List of Tables

2.1	Values of $f(t)$ for $t = 0, 1, \dots, 5$	3
-----	---	---

Glossary

1

Introduction

Make sure you have read the abstract of this template. This chapter presents the section levels that can be used in the template.

1.1 Section levels

The following table presents an overview of the section levels that are used in this document. The number of levels that are numbered and included in the table of contents is set in the settings file `settings.tex`. The levels are shown in Section 1.2.

Name	Command
Chapter	<code>\chapter{<i>Chapter name</i>}</code>
Section	<code>\section{<i>Section name</i>}</code>
Subsection	<code>\subsection{<i>Subsection name</i>}</code>

1.2 Section

1.2.1 Subsection

2

Theory

In the following sections, examples of a figure, an equation, a table and a source code listing are shown.

2.1 Figure

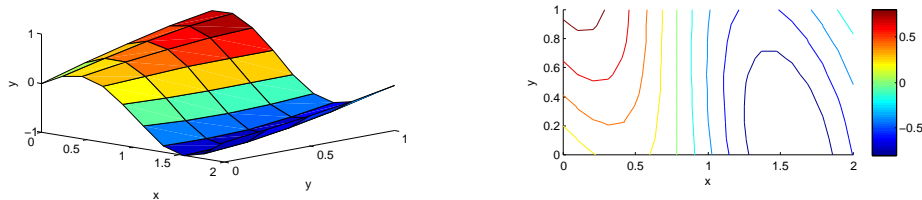


Figure 2.1: Surface and contour plots showing the two dimensional function $z(x, y) = \sin(x + y) \cos(2x)$.

2.2 Equation

$$f(t) = \begin{cases} 1, & t < 1 \\ t^2 & t \geq 1 \end{cases} \quad (2.1)$$

2.3 Table

Table 2.1: Values of $f(t)$ for $t = 0, 1, \dots, 5$.

t	0	1	2	3	4	5
$f(t)$	1	1	4	9	16	25

2.4 Source code listing

```
% Generate x- and y-nodes
x=linspace(0,1); y=linspace(0,1);
```

2. Theory

```
% Calculate  $z=f(x,y)$   
for i=1:length(x)  
    for j=1:length(y)  
        z(i,j)=x(i)+2*y(j);  
    end  
end
```

3

Methods

Text ...

4

Results

Text ...

5

Conclusion

Text ...

Bibliography

A

Appendix 1



Figure A.1: Unity logo

B

Appendix 2

This is where we will place appendix 2