ETH
Swiss Federal Institute of Technology Zurich

Seminar for Statistics

Department of Mathematics

Master Thesis Spring 2015

Nicolas Bennett

The title of my thesis which should be split on several lines if it is too long

Submission Date: August 19th 2015

Co-Adviser Anna Drewek
Adviser: Prof. Dr. Peter Bühlmann

To some special person

Preface

First words and acknowledgements. bla

Abstract

Short summary of my thesis.

Contents

List of Figures

List of Tables

Notation

Explain your symbols and abbreviations.

Chapter 1

Introduction

Description of the work. Prepare the reader for the following chapters.

You will cite litterature here, typically

Chapter 2

First Chapter

2.1 To include a picture

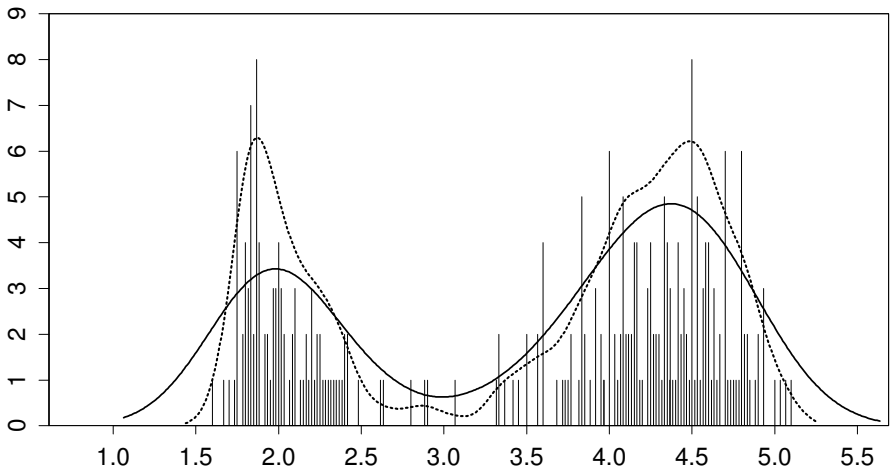

Figure 2.1: Old Faithful Geyser eruption lengths, $n = 272$; binned data and two (Gaussian) kernel density estimates ($\times 10$) with $h = h^* = .3348$ and $h = .1$ (dotted).

Or also with `includegraphics`:

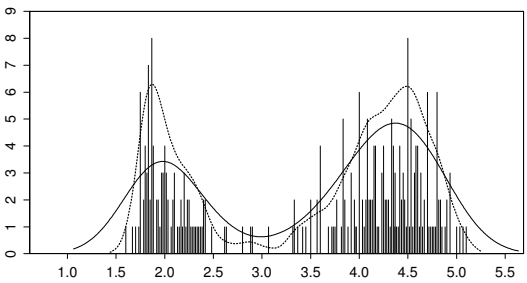

Figure 2.2: Old Faithful Geyser eruption lengths, $n = 272$; binned data and two (Gaussian) kernel density estimates ($\times 10$) with $h = h^* = .3348$ and $h = .1$ (dotted).

2.2 To make a proof

Proof. $1 + 1 = 2$ □

2.3 To include R code

See information in Appendix A.

2.4 Other information

Put a text between quotes: make sure to use nice quotes, such as “quote”.

Cite a document in the bibliography (an example here): Gelman, Jakulin, Pittau, and Su (2008). Or mention that Hastie, Tibshirani, and Friedman (a person) or Bühlmann and van de Geer (two persons) have already done quite a bit work.

Referencing a different part of your work: please refer to Appendix A.

Chapter 3

Summary

Summarize the presented work. Why is it useful to the research field or institute?

3.1 Future Work

Possible ways to extend the work.

Bibliography

Bühlmann, P. and S. van de Geer (2011). *Statistics for High-Dimensional Data: Methods, Theory and Applications* (1st ed.). Springer Publishing Company, Incorporated.

Gelman, A., A. Jakulin, M. G. Pittau, and Y.-S. Su (2008). A weakly informative default prior distribution for logistic and other regression models. *Ann. Appl. Stat. 2*(4), 1360–1383.

Hastie, T., R. Tibshirani, and J. Friedman (2009). *The Elements of Statistical Learning*, Volume 1.

Appendix A

Complementary information

Additional material. For example long mathematical derivations could be given in the appendix. Or you could include part of your code that is needed in printed form. You can add several Appendices to your thesis (as you can include several chapters in the main part of your work).

A.1 Including R code with verbatim

A simple (rather too simple, see A.2) way to include code or *R* output is to use `verbatim`. It just prints the text however it is (including all spaces, "strange" symbols,...) in a slightly different font.

```
## loading packages
library(RBGL)
library(Rgraphviz)
library(boot)

## global variables
X_MAX <- 150

   This allows me to put as many s  p a   c es   as I want.
I can also use \ and ‘ and & and all the rest that is usually only
accepted in the math mode.

I can also make as
                  many
             line
    breaks as
I want... and
             where I want.
```

A.2 Including R code with the *listings* package

However, it is much nicer to use the *listings* package to include R code in your report. It allows you to number the lines, color the comments differently than the code, and so on.

```
## example to generate an .eps file with the function ps.latex()
## Author: Sarah Gerster and Martin Mächler
## Last revision: 16 Aug 2011

require("sfsmisc") # pdf.latex(), pdf.end(), etc

pdf.latex(file='test_plot.pdf') #, main=TRUE)
## no main=TRUE is needed to leave enough space for the plot title
## but see below

## make sure the legends are large enough
par(cex=1.5)

## Make sure your lines are "visible" enough. Otherwise your plot
## won't look very nicely in your text.
plot(-10:10, (-10:10)**2, type="l", lty=5,
     xlab="my_x", ylab="my_y",
     ## no main title: NOT recommended for figures in text which
     ## have a \caption{..}
     lwd=4, col='blue')
lines(-10:10, 0:20, type="p", lwd=4, pch=23,col='red')
legend(-3, 90, c("func1","func2"),lwd=4,col=c('blue', 'red'),
       lty=c(1,1),cex=1)
pdf.end() # starts the previewer (which refreshes itself;
          # at least on Linux at SfS
```

A.3 Using Sweave to include R code (and more) in your report

The easiest (and most elegant) way to include R code and its output (and have all your figures up to date with your report) is to use Sweave. You can find an introduction Sweave in `/u/sfs/StatSoftDoc/Sweave/Sweave-tutorial.pdf`.

Appendix B

Yet another appendix....

B.1 Description

Something details.

Something else other definition.

B.2 Tables

Refer to Table B.1 to see a left justified table with caption on top.

Table B.1: Results.

Student	**Grade**
Marie	6
Alain	5.5
Josette	4.5
Pierre	5

Epilogue

A few final words. Test 2

Declaration of Originality

The signed declaration of originality is a component of every semester paper, Bachelor's thesis, Master's thesis and any other degree paper undertaken during the course of studies, including the respective electronic versions.

Lecturers may also require a declaration of originality for other written papers compiled for their courses.

I hereby confirm that I am the sole author of the written work here enclosed and that I have compiled it in my own words. Parts excepted are corrections of form and content by the supervisor .

Title of work (in block letters):

. . .

Authored by (in block letters):
For papers written by groups the names of all authors are required.

Name(s):	**First name(s):**
Muster	Student

With my signature I confirm that

- I have committed none of the forms of plagiarism described in the Citation etiquette information sheet.
- I have documented all methods, data and processes truthfully.
- I have not manipulated any data.
- I have mentioned all persons who were significant facilitators of the work .
- I am aware that the work may be screened electronically for plagiarism.
- I have understood and followed the guidelines in the document *Scientific Works in Mathematics.*

Place, date:

Zurich August 19th 2009

Signature(s):

bla

For papers written by groups the names of all authors are required. Their signatures collectively guarantee the entire content of the written paper.