

A Minimal Book Example

Yihui Xie

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Chapter 1

Prerequisites

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports, e.g., a math equation $a^2 + b^2 = c^2$.

The **bookdown** package can be installed from CRAN or Github:

```
install.packages("bookdown")  
# or the development version  
# devtools::install_github("rstudio/bookdown")
```

Remember each Rmd file contains one and only one chapter, and a chapter is defined by the first-level heading #.

To compile this example to PDF, you need XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): <https://yihui.org/tinytex/>.

Chapter 2

Introduction to tidymodels

Chapter 3

Statistical learning

Here is a review of existing methods.

Chapter 4

Linear Regression

4.1 Libraries

4.2 Simple linear regression

4.3 Multiple linear regression

4.4 Interaction terms

4.5 Non-linear transformations of the predictors

4.6 Qualitative predictors

4.7 Writing functions

Chapter 5

Classification

5.1 The Stock Market Data

5.2 Logistic Regression

5.3 Linear Discriminant Analysis

5.4 Quadratic Discriminant Analysis

5.5 K-Nearest Neighbors

5.6 An Application to Caravan Insurance Data

Chapter 6

Resampling Methods

6.1 The Validation Set Approach

6.2 Leave-One-Out Cross-Validation

6.3 k-Fold Cross-Validation

6.4 The Bootstrap

Chapter 7

Linear Model Selection and Regularization

7.1 Best Subset Selection

7.2 Forward and Backward Stepwise Selection

7.3 Choosing Among Models Using the Validation Set Approach and Cross-Validation

7.4 Ridge Regression

7.5 The Lasso

7.6 Principal Components Regression

7.7 Partial Least Squares

Chapter 8

Moving Beyond Linearity

8.1 Polynomial Regression and Step Functions

8.2 Splines

8.3 GAMs

Chapter 9

Tree-Based Methods

9.1 Fitting Classification Trees

9.2 Fitting Regression Trees

9.3 Bagging and Random Forests

9.4 Boosting

Chapter 10

Support Vector Machines

10.1 Support Vector Classifier

10.2 Support Vector Machine

10.3 ROC Curves

10.4 SVM with Multiple Classes

10.5 Application to Gene Expression Data

Chapter 11

Unsupervised Learning

11.1 Principal Components Analysis

11.2 K-Means Clustering

11.3 Hierarchical Clustering

11.4 PCA on the NCI60 Data

11.5 Clustering the Observations of the NCI60
Data