Mastering .NET Machine Learning

Master the art of machine learning with .NET and gain insight into real-world applications

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**Synopsis**

About This Book

Based on .NET framework 4.6.1, includes examples on ASP.NET Core 1.0

Set up your business application to start using machine learning techniques

Familiarize the user with some of the more common .NET libraries for machine learning

Implement several common machine learning techniques

Evaluate, optimize and adjust machine learning models

Who This Book Is For

This book is targeted at .NET developers who want to build complex machine learning systems.

Some basic understanding of data science is required.

What You Will Learn

Write your own machine learning applications and experiments using the latest .NET Framework, including .NET Core 1.0

Set up your business application to start using machine learning

Accurately predict the future of your data using simple, multiple, and logistic regressions

Discover hidden patterns using decision trees

Acquire, prepare, and combine datasets to drive insights

Optimize business throughput using Bayes Classifier

Discover (more) hidden patterns using k-NN and Naive Bayes

Discover (even more) hidden patterns using k-means and PCA

Use Neural Networks to improve business decision making while using the latest ASP.NET technologies

In Detail

.NET is one of the widely used platforms for developing applications. With the meteoric rise of machine learning, developers are now keen on finding out how to make their .NET applications smarter using machine learning.

Mastering .NET Machine Learning is packed with real-world examples to explain how to easily use machine learning techniques in your business applications. You will begin with an introduction to F# and prepare yourselves for machine learning using the .NET Framework. You will then learn how to write a simple linear regression model and, forming a base with the regression model, you will start using machine learning libraries available in .NET Framework such as Math.NET, numl, and Accord.NET with examples. Next, you are going to take a deep dive into obtaining, cleaning, and organizing your data. You will learn the implementation of k-means and PCA using Accord.NET and numl libraries.

You will be using Neural Networks, AzureML, and Accord.NET to transform your application into a hybrid scientific application. You will also see how to deal with very large datasets using MBrace and deploy machine learning models to IoT devices so that the machine can learn and adapt on the fly.

**Book Information**

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I often return to this book’s discussion of cross validation in chapter 8 because the conversational tone, exercises, and topical breadth were didactically effective. This is an example of the book’s especially helpful data science coverage, even for those like myself who are not, or only occasionally, developing in .NET. I primarily program in R and enjoyed learning about F#, a functional language like R that is open source and "runs great on Windows, Linux, and OS X". Open data uses feature prominently in "Mastering .NET Machine Learning", propelling the reader into an exciting world of free data opportunities for learning and social good. One needs no background with F#, .NET, or Visual Studio to progress through and enjoy this book. Jamie pleasantly discusses the basics, starting with installation, and empowers the reader with smart progressions. He takes the time to lead the reader through hands-on exercises that sometimes, particularly in the early sections (e.g., linear regression), include working through the underlying mathematics in a way just deep enough to encourage understanding without risking frustration. I suggest peering at the table of contents to appreciate the diverse topics and analytical techniques covered such as using k-means clustering and principal components analysis to identify high-crash areas in Chapter 7’s "Code-4-Good" application and the aforementioned linear regression coverage. The occasional typo or omission (e.g., TDD is wrongly referenced in Chapter 7 as something that will be touched upon in Chapter 8) does not detract from the value of this one-of-a-kind data-science / web development / functional programming book.

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