

**COMMERCIAL DATA MINING:
PROCESSING, ANALYSIS AND
MODELING FOR PREDICTIVE ANALYTICS
PROJECTS**

BY DAVID NETTLETON

MORGAN KAUFMANN-ELSEVIER, 2014,
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304 PAGES

REVIEWER: LUCJAN JANOWSKI

Data mining has become a must-know topic for any scientist, and still it becomes increasingly important for the companies. Such a popular topic has already been described in many books, therefore a question may arise: Why should I read this new and rather thin volume? A fast look inside will convince a potential reader about the lack of equations, a fact surprising for a book describing a mathematical tool, which data mining indeed is. However, lack of equations and thin size appears to be one of many advantages of this book. It is a detailed description of a data mining project. From the first question, “Is it really worth it to start a data mining project?”, which is, unfortunately, asked so rarely in practice, to the last, “How to feed the data mining results to the organization decision-making and operative procedures?”, a data mining project is described with all its important steps.

The book is divided into 19 chapters and contains appendices with some examples. The chapters are grouped into different data mining project steps (chapters 2 to 10), and specific data mining

domains (chapters 11 to 19). Chapter 2 describes business objectives definition, the element of data mining projects that is often forgotten or lost in the process of data analysis. Any book related to data mining describes data preparation at least briefly, even if it is typically the most time consuming process. Here, this topic is divided into five chapters. First, Chapter 3 describes potential sources of information, including the related classification, various source specific aspects, and data accuracy. In Chapter 4, data representation is discussed by a short description of basic data types, normalization, and outliers detection. The difference between categorical and numerical variables is discussed. The chapter elaborates on data representation. Chapter 5 presents an important difference between having data and trusting data, dealing with the fact that only after getting to know which data pieces are relevant and reliable, the selection of variables is possible. This topic is described thoroughly in Chapter 6. The next three chapters are focused on the most classical data mining problems. Chapter 7 overviews data sampling and partitioning. Chapter 8 describes data analysis, while Chapter 9 presents data modeling. A very practical problem of using the analysis obtained by a data mining project is described in chapter 10. Chapters 11 to 17 present specific data mining tools and use cases that help a reader to understand the differences between data mining projects. Chapter 18 raises the important problem of data

privacy that often limits a range of applicable techniques that can be used by a particular data mining project. The appendices make it possible to follow selected data mining projects in detail.

This work should be at least browsed by a broad range of potential readers, and many classes of them can be envisaged. The volume will be interesting for a specialist working on data mining algorithms and will enable them to understand in a better way how such an algorithms will be used. On the other hand, a company executive director, who makes decisions based on the outcome of a data mining project, and wishes to understand better what stands behind the presented data, will also benefit from the reading. In general, Nettleton’s book is a mandatory volume for anyone who runs data mining projects, since all the steps and most important details that should not be forgotten are described here. Due to the author’s focus on the topic, finding the most important information is easy. The added examples make it easy to understand the presented concept in practical use cases. I strongly recommend this book for anyone even slightly involved with data mining projects.

**MACHINE-TO-MACHINE
COMMUNICATIONS: ARCHITECTURES,
TECHNOLOGY, STANDARDS, AND
APPLICATIONS**

EDITED BY VOJISLAV B. MISIC AND
JELENA MISIC

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REVIEWER: EDDY BAJIC

An explosion of communication technologies and of connected objects have invaded our everyday life, as before they have submerged industries and companies in the 90s with the spreading of automatic identification technologies, robotics, and industrial communication networks. Currently, at the dawn of the 4th Industrial Revolution, we entered the era of machine-to-machine (M2M) communications that is tenfold by the profusion of objects connected to the Internet in a wide open cyber-physical world. At a time when more things rather than people are connecting to the Internet, forecasts say that 25 billion devices will be connected by 2015, and 50 billion by 2020. The question is thus arising: How will all those devices communicate and exchange information and for what benefits and applications? That is what this book is about, presenting how M2M communications offer new opportunities for modern machines to

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cooperate with and without human interaction, up to the implementation of Internet of Things (IoT) concepts. Being part of a global cyber physical system, M2M communications offers relevant solutions to address the challenges of innovative intelligent control, monitoring, and reporting for manufacturing systems and servicing applications in suitable domains, such as smart grid, e-health, or transportation management.

The book offers a coherent collection of chapters developing the scientific study and analysis of cutting-edge topics in M2M networking, all written by scientists and researchers from several universities in different countries, also accompanied by experts from telecom companies. The book is organized in three parts, with 10 well-balanced chapters, providing a wide cross section of many topics related to M2M communications, such as architecture, standards, technologies, and applications.

The first chapter presents a description of modern M2M architectures and communication standards from ETSI and 3GPP with a scan of relevant case stud-

ies. Chapter 2 presents a specific focus on communication modeling, presenting the elementary principles and formulations of traffic factors. Chapter 3 suitably shows how the M2M and IoT concepts are beset with important new challenges, including big data analysis, reliability, privacy, and security issues, which are critical for large scale applications such as manufacturing automation and smart cities on a wider scope. The second part, embracing Chapters 4 through 7, provides several detailed scientific studies and presents the research breakthrough on methods and technologies allowing development of reliable and energy-efficient M2M communications. In particular, an interesting focus sharply oriented toward a scientist audience is put on modeling of throughput performance of wireless standard 802.15.4. This standard is currently implemented on widespread protocols for IoT device communication such as Zigbee and 6LoWPAN, though never cited in the text. Remarkably, Chapter 7 treats energy-efficiency in M2M communications by reporting how access control, routing, and quality of

service impact energy consumption, a critical issue for deployment of a large number of autonomous communicating devices. The last part presents three chapters (8 through 10) focused on specific issues on relevant application cases for smart grid and mobile crowd-sensing. This chapter, being more technological, will be received with pleasure by engineering readers, who will find presentations of available M2M technologies that implement M2M concepts to build the current and future cyber-physical world of communication solutions.

This book is built on a scientific structure with each chapter giving a relevant reference list of standards and research papers. Therefore, it can be recommended principally to scientists, researchers, and students. It will also serve as an introduction to the baseline concepts and technologies of M2M. Mainly, it provides analysis of M2M protocols, architectures, and standards embracing the development of the cyber physical world surrounding us by billions of communicating devices, the world that we are very close to living in already.



September 16-18, 2015

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Call for Papers

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Authors are invited to submit their high-quality papers representing original results in all areas of communications software, services and applications, telecommunications and computer networks. Accepted and presented papers will be published in the conference proceedings, and submitted to IEEE Xplore as well as other Abstracting and Indexing (A&I) databases.

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IMPORTANT DATES

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