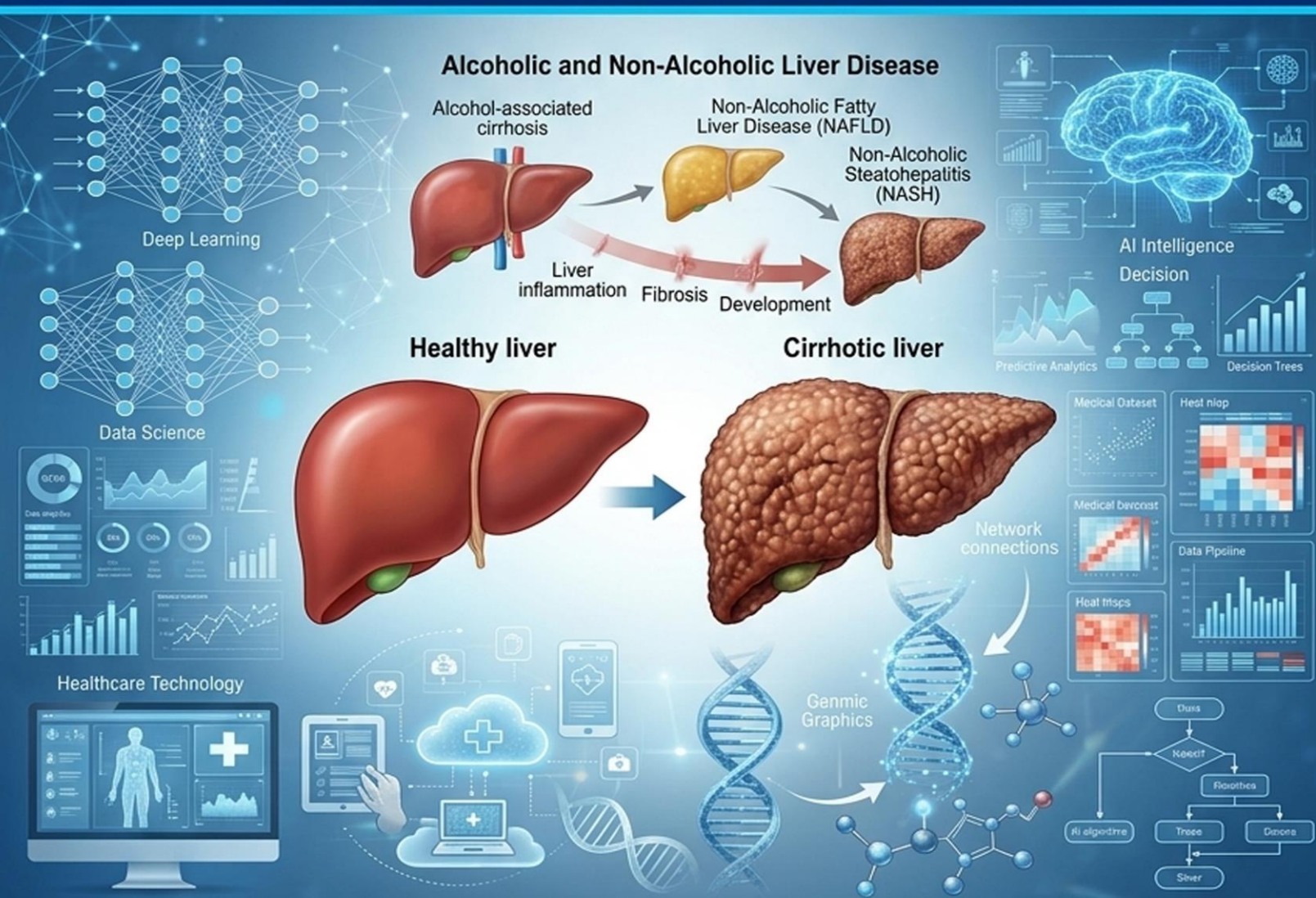
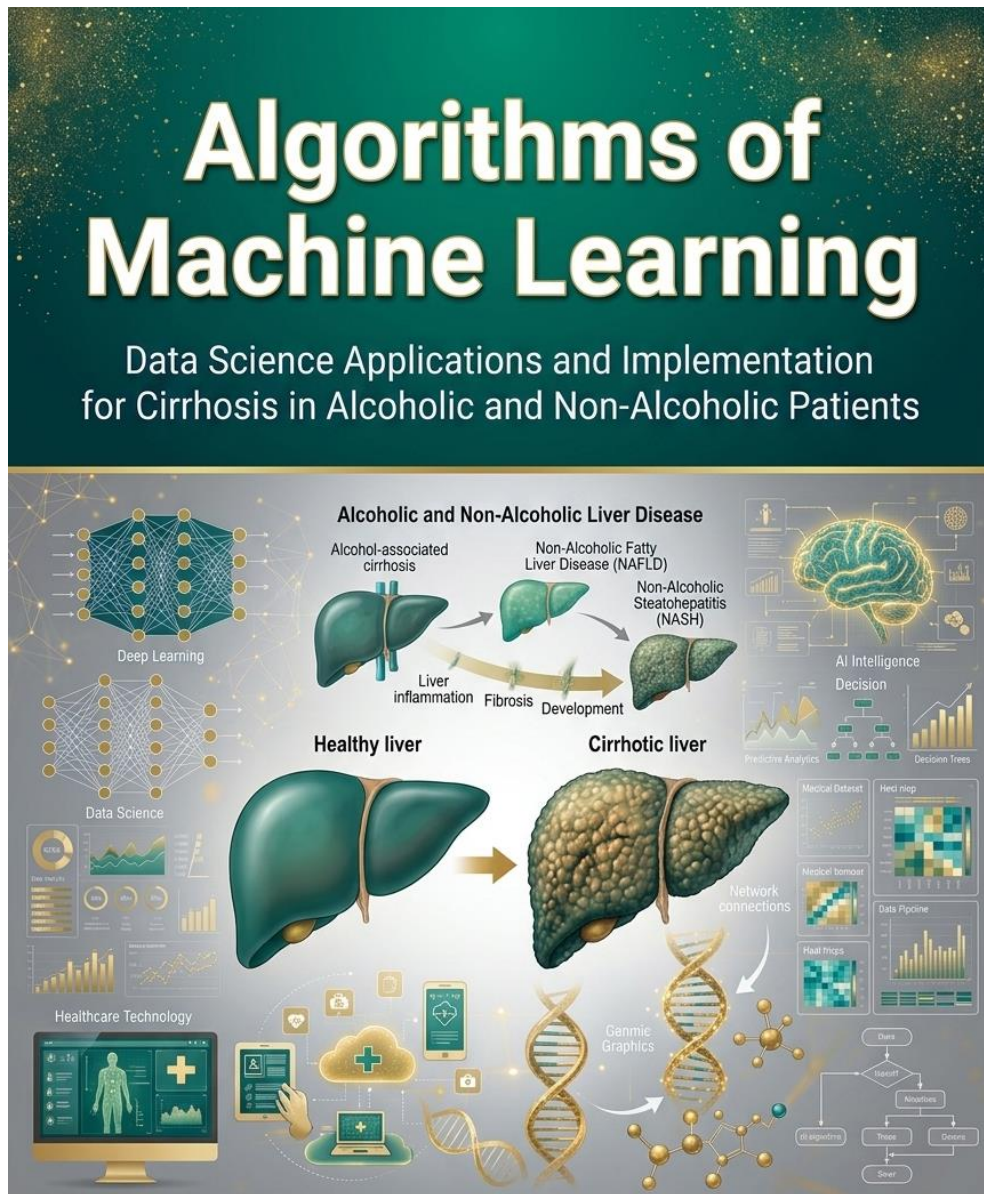


Algorithms of Machine Learning

Data Science Applications and Implementation for Cirrhosis in Alcoholic and Non-Alcoholic Patients



Rajani Kumari and Daya Shankar Singh



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Algorithms of Machine Learning, Data Science Applications and Implementation for Cirrhosis in Alcoholic and Non-Alcoholic Patients

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PREFACE

Dear Reader,

Chapter 1, of this book, you will be introduced to the rapidly growing area of Machine Learning, which is essential for any IT professional, analyst, data scientist, or engineer interested in mastering methods for trend prediction, classification, clustering, and natural language processing. Your abilities will gradually be developed throughout each chapter, where you will step-by-step master each of the essential topics. Practical Python code examples used in each chapter help you understand the concepts and put them into practice.

Chapter 2, An introductory knowledge of mathematics is required to understand these topics. This knowledge helps you understand algorithms, hyperparameters, and machine learning concepts, which in turn facilitates your understanding of predictive analytics and Machine Learning in Python.

Designed for Machine Learning engineers, data engineers, and data scientists, this book allows you to expand your knowledge about Machine Learning or describe concepts of predictive analytics and Machine Learning in Python. You will be guided from the basics to practical applications. Discover the foundations of Machine Learning, understand how intelligent systems have evolved and been used, and learn the basics of supervised, unsupervised, and reinforcement learning.

Step-by-step algorithms will teach you how to gather and process data, choose a model, and evaluate the output. The book will also help you understand the mathematical theory that lies at the root of various issues in Machine Learning, including linear regression, classification, and clustering, through key concepts in linear algebra, calculus, probability, and statistics. They will reveal the inner workings of popular algorithms and their applications in data design and analysis.

Chapter 3 covers the importance of selecting and processing features to create a solid foundation for your analysis.

Chapter 4 The focus here will be on classification algorithms such as naive Bayes, support vector machines, and decision trees. It also covers model combination in classification algorithms. This chapter gives an overview of the classification methods, including linear classification and logistic regression. The gradient descent algorithm, performance measurement, and parameter tuning will also be discussed.

Chapter 5, Bayesian inference in Chapter 5 enhances the practicality of statistics by applying Bayes' theorem to update predictions based on new data. The Naïve Bayes classifier is based on Bayes' theorem and the assumption of independence among features for easy classification.

Chapter 6, deals with more sophisticated classification models and ends with an analysis of Support Vector Machine (SVM) algorithms. The final section describes SVM's ability to tackle simple and complex classification tasks using kernels [15].

Chapter 7, In this part, one can learn about the concept of a hierarchical decision-making process and get familiar with such notions as decision trees, random forest, bagged trees, and voting classifiers.

All of the Python samples provided within this guide make use of scikit-learn and NLTK. Both of these flexible packages work on Linux, Mac, and Windows, as well as Python 2.7 and 3.3 or newer. For maximum efficiency and speed, it is best to use a data science toolkit with Python 3 or above and access to Google Colab.

The Anaconda distribution for machine learning and data science is available at <http://www.anaconda.com/download/>.

It would be great to hear your opinion on the book. The opinions you write will benefit other readers in deciding if this book suits them and will provide useful feedback to the author. A Journey through Algorithms of Machine Learning, Data Science Applications and Implementation for Cirrhosis in Alcoholic and Non-Alcoholic Patients.

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Predictive analysis

After the model is developed, it predicts using input data. It tries to make its predictions as accurate as possible, just like shops try to predict what customers will buy. After training, the model can work independently. For instance, a self-driving car model predicts where nearby objects are, their size, and speed. Models are designed to achieve objectives, which may include improving efficiency, among others. In this book, we shall discuss one such objective. Structured methods are used in machine learning to analyse data and predict. There are basically three types of learning. Machine Learning: Supervised Learning - in this type of learning, the system compares its prediction with the actual result. Unsupervised Learning - here the system discovers some hidden patterns and groups similar items.

Hard to learn Algorithms for machine learning, applications in data science, and Implementation for Cirrhosis in Alcoholic and Non-Alcoholic Patients.

Learning algorithms use mathematical models that make decisions to realize their objectives and subsequently evaluate the effectiveness of these decisions. Employing statistics, the models uncover hidden patterns, support decision-making, and estimate the value of different actions. The term 'prediction' is used frequently even for complicated problems such as image classification through convolutional networks, which rely on shapes, colours, and image features to make sense of the world.

Sincerely,

Rajani Kumari

About Author

Ms. Rajani Kumari

Ms. Rajani Kumari is a scholar in the ITCA Department at Madan Mohan Malaviya University of Technology in Gorakhpur, India. Her main interests include Computer Science Engineering and Information Technology, with a focus on Machine Learning for Artificial Intelligence, Data Science, Deep Learning, and Computer Vision. She has worked for two years as guest faculty at REC Bijnor and spent seven years as an Assistant Professor in the private sector at IICL Lucknow. She has also earned several certifications and completed academic courses, faculty development programs, and online MOOC courses through SWAYAM.

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