

Introduction To Artificial Intelligence Solution Manual

[Artificial Intelligence for Big Data](#) [Artificial Intelligence in Practice](#) [Cognitive Computing Recipes](#) [The Machine Learning Solutions Architect Handbook](#) [Artificial Intelligence](#) [Artificial Intelligence \(AI\)](#) [Artificial Intelligence Problems and Their Solutions](#) [Artificial Intelligence Paradigms for Smart Cyber-Physical Systems](#) [Transactional Machine Learning with Data Streams and AutoML](#) [Introduction to Artificial Intelligence Machine Learning with Dynamics 365 and Power Platform](#) [Optimization in Machine Learning and Applications](#) [Operating AI](#) [Artificial Intelligence for Audit, Forensic Accounting, and Valuation](#) [Enterprise Artificial Intelligence Transformation](#) [Artificial Intelligence for Big Data](#) [Machine Learning in Insurance](#) [Artificial Intelligence for Managers](#) [AIX: Artificial Intelligence Needs EXplanation: Why and how Transparency Increases the Success of AI Solutions](#) [Machine Learning Design Patterns](#) [Practical Artificial Intelligence](#) [Artificial Intelligence to Solve Pervasive Internet of Things Issues](#) [Artificial Intelligence By Example](#) [Hands-On Machine Learning with Azure](#) [Artificial Intelligence and Big Data](#) [IoT, AI, and Blockchain for .NET](#) [Artificial Intelligence Practical Automated Machine Learning on Azure](#) [Artificial Intelligence and Machine Learning Methods in COVID-19 and Related Health Diseases](#) [Artificial Intelligence for Business](#) [Oracle Business Intelligence with Machine Learning](#) [Advanced Solutions in Power Systems](#) [Machine Learning with Microsoft Technologies](#) [How to Compete in the Age of Artificial Intelligence](#) [Artificial Intelligence in Behavioral and Mental Health Care](#) [Keeping Your AI Under Control](#) [Oracle Business Intelligence with Machine Learning](#) [Artificial Intelligence Design and Solution for Risk and Security](#) [Artificial Intelligence for IoT Cookbook](#) [Big Data Analysis with Python](#)

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[Hands-On Machine Learning with Azure](#) [Nov 08 2020](#) [Implement machine learning, cognitive services, and artificial intelligence solutions by leveraging Azure cloud technologies](#) [Key Features](#) [Learn advanced concepts in Azure ML and the Cortana Intelligence Suite architecture](#) [Explore ML Server using SQL Server and HDInsight capabilities](#) [Implement various tools in Azure to build and deploy machine learning models](#) [Book Description](#) [Implementing Machine learning \(ML\) and Artificial Intelligence \(AI\) in the cloud had not been possible earlier due to the lack of processing power and storage. However, Azure has created ML and AI services that are easy to implement in the cloud. Hands-On Machine Learning with Azure teaches you how to perform advanced ML projects in the cloud in a cost-effective way. The book begins by covering the benefits of ML and AI in the cloud. You will then explore Microsoft's Team Data Science Process to establish a repeatable process for successful AI development and implementation. You will also gain an understanding of AI technologies available in Azure and the Cognitive Services APIs to integrate them into bot applications. This book lets you explore prebuilt templates with Azure Machine Learning Studio and build a model using canned algorithms that can be deployed as web services. The book then takes you through a preconfigured series of virtual machines in Azure targeted at AI development scenarios. You will get to grips with the ML Server and its capabilities in SQL and HDInsight. In the concluding chapters, you'll integrate patterns with other non-AI services in Azure. By the end of this book, you will be fully equipped to implement smart cognitive actions in your models. What you will learn](#) [Discover the benefits of leveraging the cloud for ML and AI](#) [Use Cognitive Services APIs to integrate them into bot applications](#) [Build a model using canned algorithms from Microsoft and deploy it as a web service](#) [Deploy virtual machines in AI development scenarios](#) [Apply R, Python, SQL Server, and Spark in Azure](#) [Build and deploy deep learning solutions with CNTK, MMLSpark, and TensorFlow](#) [Implement model retraining in IoT, Streaming, and Blockchain solutions](#) [Explore best practices for integrating ML and AI functions with ADLA and logic apps](#) [Who this book is for](#) [If you are a data scientist or developer familiar with Azure ML and cognitive services and want to create smart models and make sense of data in the cloud, this book is for you. You'll also find this book useful if you want to bring powerful machine learning services into your cloud applications. Some experience with data manipulation and processing, using languages like SQL, Python, and R, will aid in understanding the concepts covered in this book](#)

[Artificial Intelligence for IoT Cookbook](#) [Jul 25 2019](#) [Implement machine learning and deep learning techniques to perform predictive analytics on real-time IoT data](#) [Key Features](#) [Discover quick solutions to common problems that you'll face while building smart IoT applications](#) [Implement advanced techniques such as computer vision, NLP, and embedded machine learning](#) [Build, maintain, and deploy machine learning systems to extract key insights from IoT data](#) [Book Description](#) [Artificial intelligence \(AI\) is rapidly finding practical applications across a wide variety of industry verticals, and the Internet of Things \(IoT\) is one of them. Developers are looking for ways to make IoT devices smarter and to make users' lives easier. With this AI cookbook, you'll be able to implement smart analytics using IoT data to gain insights, predict outcomes, and make informed decisions, along with covering advanced AI techniques that facilitate analytics and learning in various IoT applications. Using a recipe-based approach, the book will take you through essential processes such as data collection, data analysis, modeling, statistics and monitoring, and deployment. You'll use real-life datasets from smart homes, industrial IoT, and smart devices to train and evaluate simple to complex models and make predictions using trained models. Later chapters will take you through the key challenges faced while implementing machine learning, deep learning, and other AI techniques, such as natural language processing \(NLP\), computer vision, and embedded machine learning for building smart IoT systems. In addition to this, you'll learn how to deploy models and improve their performance with ease. By the end of this book, you'll be able to package and deploy end-to-end AI apps and apply best practice solutions to common IoT problems. What you will learn](#) [Explore various AI techniques to build smart IoT solutions from scratch](#) [Use machine learning and deep learning techniques to build smart voice recognition and facial detection systems](#) [Gain insights into IoT data using algorithms and implement them in projects](#) [Perform anomaly detection for time series data and other types of IoT data](#) [Implement embedded systems learning techniques for machine learning on small devices](#) [Apply pre-trained machine learning models to an edge device](#) [Deploy machine learning models to web apps and mobile using TensorFlow.js and Java](#) [Who this book is for](#) [If you're an IoT practitioner looking to incorporate AI techniques to build smart IoT solutions without having to trawl through a lot of AI theory, this AI IoT book is for you. Data scientists and AI developers who want to build IoT-focused AI](#)

solutions will also find this book useful. Knowledge of the Python programming language and basic IoT concepts is required to grasp the concepts covered in this artificial intelligence book more effectively.

Artificial Intelligence to Solve Pervasive Internet of Things Issues Jan 11 2021 Artificial Intelligence to Solve Pervasive Internet of Things Issues discusses standards and technologies and wide-ranging technology areas and their applications and challenges, including discussions on architectures, frameworks, applications, best practices, methods and techniques required for integrating AI to resolve IoT issues. Chapters also provide step-by-step measures, practices and solutions to tackle vital decision-making and practical issues affecting IoT technology, including autonomous devices and computerized systems. Such issues range from adopting, mitigating, maintaining, modernizing and protecting AI and IoT infrastructure components such as scalability, sustainability, latency, system decentralization and maintainability. The book enables readers to explore, discover and implement new solutions for integrating AI to solve IoT issues. Resolving these issues will help readers address many real-world applications in areas such as scientific research, healthcare, defense, aeronautics, engineering, social media, and many others. Discusses intelligent techniques for the implementation of Artificial Intelligence in Internet of Things Prepared for researchers and specialists who are interested in the use and integration of IoT and Artificial Intelligence technologies

Big Data Analysis with Python Jun 23 2019 Get to grips with processing large volumes of data and presenting it as engaging, interactive insights using Spark and Python. Key Features Get a hands-on, fast-paced introduction to the Python data science stack Explore ways to create useful metrics and statistics from large datasets Create detailed analysis reports with real-world data Book Description Processing big data in real time is challenging due to scalability, information inconsistency, and fault tolerance. Big Data Analysis with Python teaches you how to use tools that can control this data avalanche for you. With this book, you'll learn practical techniques to aggregate data into useful dimensions for posterior analysis, extract statistical measurements, and transform datasets into features for other systems. The book begins with an introduction to data manipulation in Python using pandas. You'll then get familiar with statistical analysis and plotting techniques. With multiple hands-on activities in store, you'll be able to analyze data that is distributed on several computers by using Dask. As you progress, you'll study how to aggregate data for plots when the entire data cannot be accommodated in memory. You'll also explore Hadoop (HDFS and YARN), which will help you tackle larger datasets. The book also covers Spark and explains how it interacts with other tools. By the end of this book, you'll be able to bootstrap your own Python environment, process large files, and manipulate data to generate statistics, metrics, and graphs. What you will learn Use Python to read and transform data into different formats Generate basic statistics and metrics using data on disk Work with computing tasks distributed over a cluster Convert data from various sources into storage or querying formats Prepare data for statistical analysis, visualization, and machine learning Present data in the form of effective visuals Who this book is for Big Data Analysis with Python is designed for Python developers, data analysts, and data scientists who want to get hands-on with methods to control data and transform it into impactful insights. Basic knowledge of statistical measurements and relational databases will help you to understand various concepts explained in this book.

Artificial Intelligence Problems and Their Solutions Apr 25 2022 This book lends insight into solving some well-known AI problems using the most efficient methods by humans and computers. The book discusses the importance of developing critical-thinking methods and skills, and develops a consistent approach toward each problem: 1) a precise description of a well-known AI problem coupled with an effective graphical representation; 2) discussion of possible approaches to solving each problem; 3) identifying and presenting the best known human solution to each problem; 4) evaluation and discussion of the Human Window aspects for the best solution; 5) a playability site where students can exercise the process of developing their solutions, as well as "experiencing" the best solution; 6) code or pseudo-code implementing the solution algorithm, and 7) academic references for each problem. Features: Addresses AI problems well known to computer science and mathematics students from a number of perspectives Covers classic AI problems such as Twelve Coins, Red Donkey, Cryptarithms, Rubik's Cube, Missionaries/Cannibals, Knight's Tour, Monty Hall, and more Includes a companion CD-ROM with source code, solutions, figures, and more Includes playability sites where students can exercise the process of developing their solutions Describes problem-solving methods which may be applied to many problem situations

Advanced Solutions in Power Systems Mar 01 2020 Provides insight on both classical means and new trends in the application of power electronic and artificial intelligence techniques in power system operation and control This book presents advanced solutions for power system controllability improvement, transmission capability enhancement and operation planning. The book is organized into three parts. The first part describes the CSC-HVDC and VSC-HVDC technologies, the second part presents the FACTS devices, and the third part refers to the artificial intelligence techniques. All technologies and tools approached in this book are essential for power system development to comply with the smart grid requirements. Discusses detailed operating principles and diagrams, theory of modeling, control strategies and physical installations around the world of HVDC and FACTS systems Covers a wide range of Artificial Intelligence techniques that are successfully applied for many power system problems, from planning and monitoring to operation and control Each chapter is carefully edited, with drawings and illustrations that helps the reader to easily understand the principles of operation or application Advanced Solutions in Power Systems: HVDC, FACTS, and Artificial Intelligence is written for graduate students, researchers in transmission and distribution networks, and power system operation. This book also serves as a reference for professional software developers and practicing engineers.

Machine Learning Design Patterns Mar 13 2021 The design patterns in this book capture best practices and solutions to recurring problems in machine learning. The authors, three Google engineers, catalog proven methods to help data scientists tackle common problems throughout the ML process. These design patterns codify the experience of hundreds of experts into straightforward, approachable advice. In this book, you will find detailed explanations of 30 patterns for data and problem representation, operationalization, repeatability, reproducibility, flexibility, explainability, and fairness. Each pattern includes a description of the problem, a variety of potential solutions, and recommendations for choosing the best technique for your situation. You'll learn how to: Identify and mitigate common challenges when training, evaluating, and deploying ML models Represent data for different ML model types, including embeddings, feature crosses, and more Choose the right model type for specific problems Build a robust training loop that uses checkpoints, distribution strategy, and hyperparameter tuning Deploy scalable ML systems that you can retrain and update to reflect new data Interpret model predictions for stakeholders and ensure models are treating users fairly

Cognitive Computing Recipes Aug 30 2022 Solve your AI and machine learning problems using complete and real-world code examples. Using a problem-solution approach, this book makes deep learning and machine learning accessible to everyday developers, by providing a combination of tools such as cognitive services APIs, machine learning platforms, and libraries. Along with an overview of the contemporary technology landscape, Machine Learning and Deep Learning with Cognitive Computing Recipes covers the business case for machine learning and deep learning. Covering topics such as digital assistants, computer vision, text analytics, speech, and robotics process automation this book offers a comprehensive toolkit that you can apply quickly and easily in your own projects. With its focus on Microsoft Cognitive Services offerings, you'll see recipes using multiple different environments including TensorFlow and CNTK to give you a broader perspective of the deep learning ecosystem. What You Will Learn Build production-ready solutions using Microsoft Cognitive Services APIs Apply deep learning

using TensorFlow and Microsoft Cognitive Toolkit (CNTK) Solve enterprise problems in natural language processing and computer vision Discover the machine learning development life cycle – from formal problem definition to deployment at scale Who This Book Is For Software engineers and enterprise architects who wish to understand machine learning and deep learning by building applications and solving real-world business problems.

Operating AI Oct 20 2021 A holistic and real-world approach to operationalizing artificial intelligence in your company In Operating AI, Director of Technology and Architecture at Ericsson AB, Ulrika Jägare, delivers an eye-opening new discussion of how to introduce your organization to artificial intelligence by balancing data engineering, model development, and AI operations. You'll learn the importance of embracing an AI operational mindset to successfully operate AI and lead AI initiatives through the entire lifecycle, including key areas such as; data mesh, data fabric, aspects of security, data privacy, data rights and IPR related to data and AI models. In the book, you'll also discover: How to reduce the risk of entering bias in our artificial intelligence solutions and how to approach explainable AI (XAI) The importance of efficient and reproducible data pipelines, including how to manage your company's data An operational perspective on the development of AI models using the MLOps (Machine Learning Operations) approach, including how to deploy, run and monitor models and ML pipelines in production using CI/CD/CT techniques, that generates value in the real world Key competences and toolsets in AI development, deployment and operations What to consider when operating different types of AI business models With a strong emphasis on deployment and operations of trustworthy and reliable AI solutions that operate well in the real world—and not just the lab—Operating AI is a must-read for business leaders looking for ways to operationalize an AI business model that actually makes money, from the concept phase to running in a live production environment.

Machine Learning with Dynamics 365 and Power Platform Dec 22 2021 Apply cutting-edge AI techniques to your Dynamics 365 environment to create new solutions to old business problems In Machine Learning with Dynamics 365 and Power Platform: The Ultimate Guide to Apply Predictive Analytics, an accomplished team of digital and data analytics experts delivers a practical and comprehensive discussion of how to integrate AI Builder with Dataverse and Dynamics 365 to create real-world business solutions. It also walks you through how to build powerful machine learning models using Azure Data Lake, Databricks, Azure Synapse Analytics. The book is filled with clear explanations, visualizations, and working examples that get you up and running in your development of supervised, unsupervised, and reinforcement learning techniques using Microsoft machine learning tools and technologies. These strategies will transform your business verticals, reducing costs and manual processes in finance and operations, retail, telecommunications, and manufacturing industries. The authors demonstrate: What machine learning is all about and how it can be applied to your organization's Dynamics 365 and Power Platform Projects The creation and management of environments for development, testing, and production of a machine learning project How adopting machine learning techniques will redefine the future of your ERP/CRM system Perfect for Technical Consultants, software developers, and solution architects, Machine Learning with Dynamics 365 and Power Platform is also an indispensable guide for Chief Technology Officers seeking an intuitive resource for how to implement machine learning in modern business applications to solve real-world problems.

Practical Automated Machine Learning on Azure Jul 05 2020 Develop smart applications without spending days and weeks building machine-learning models. With this practical book, you'll learn how to apply automated machine learning (AutoML), a process that uses machine learning to help people build machine learning models. Deepak Mukunthu, Parashar Shah, and Wee Hyong Tok provide a mix of technical depth, hands-on examples, and case studies that show how customers are solving real-world problems with this technology. Building machine-learning models is an iterative and time-consuming process. Even those who know how to create ML models may be limited in how much they can explore. Once you complete this book, you'll understand how to apply AutoML to your data right away. Learn how companies in different industries are benefiting from AutoML Get started with AutoML using Azure Explore aspects such as algorithm selection, auto featurization, and hyperparameter tuning Understand how data analysts, BI professions, developers can use AutoML in their familiar tools and experiences Learn how to get started using AutoML for use cases including classification, regression, and forecasting.

Artificial Intelligence in Behavioral and Mental Health Care Nov 28 2019 Artificial Intelligence in Behavioral and Mental Health Care summarizes recent advances in artificial intelligence as it applies to mental health clinical practice. Each chapter provides a technical description of the advance, review of application in clinical practice, and empirical data on clinical efficacy. In addition, each chapter includes a discussion of practical issues in clinical settings, ethical considerations, and limitations of use. The book encompasses AI based advances in decision-making, in assessment and treatment, in providing education to clients, robot assisted task completion, and the use of AI for research and data gathering. This book will be of use to mental health practitioners interested in learning about, or incorporating AI advances into their practice and for researchers interested in a comprehensive review of these advances in one source. Summarizes AI advances for use in mental health practice Includes advances in AI based decision-making and consultation Describes AI applications for assessment and treatment Details AI advances in robots for clinical settings Provides empirical data on clinical efficacy Explores practical issues of use in clinical settings

The Machine Learning Solutions Architect Handbook Jul 29 2022 Build highly secure and scalable machine learning platforms to support the fast-paced adoption of machine learning solutions Key Features Explore different ML tools and frameworks to solve large-scale machine learning challenges in the cloud Build an efficient data science environment for data exploration, model building, and model training Learn how to implement bias detection, privacy, and explainability in ML model development Book Description When equipped with a highly scalable machine learning (ML) platform, organizations can quickly scale the delivery of ML products for faster business value realization. There is a huge demand for skilled ML solutions architects in different industries, and this handbook will help you master the design patterns, architectural considerations, and the latest technology insights you'll need to become one. You'll start by understanding ML fundamentals and how ML can be applied to solve real-world business problems. Once you've explored a few leading problem-solving ML algorithms, this book will help you tackle data management and get the most out of ML libraries such as TensorFlow and PyTorch. Using open source technology such as Kubernetes/Kubeflow to build a data science environment and ML pipelines will be covered next, before moving on to building an enterprise ML architecture using Amazon Web Services (AWS). You'll also learn about security and governance considerations, advanced ML engineering techniques, and how to apply bias detection, explainability, and privacy in ML model development. And finally, you'll get acquainted with AWS AI services and their applications in real-world use cases. By the end of this book, you'll be able to design and build an ML platform to support common use cases and architecture patterns like a true professional. What you will learn Apply ML methodologies to solve business problems Design a practical enterprise ML platform architecture Implement MLOps for ML workflow automation Build an end-to-end data management architecture using AWS Train large-scale ML models and optimize model inference latency Create a business application using an AI service and a custom ML model Use AWS services to detect data and model bias and explain models Who this book is for This book is for data scientists, data engineers, cloud architects, and machine learning enthusiasts who want to become machine learning solutions architects. You'll need basic knowledge of the Python programming language, AWS, linear algebra, probability, and networking concepts before you get started with this handbook.

Enterprise Artificial Intelligence Transformation Aug 18 2021 Enterprise Artificial Intelligence Transformation AI is everywhere. From doctor's offices to cars and even refrigerators, AI technology is quickly infiltrating our daily lives. AI has the ability to transform simple tasks into

technological feats at a human level. This will change the world, plain and simple. That's why AI mastery is such a sought-after skill for tech professionals. Author Rashed Haq is a subject matter expert on AI, having developed AI and data science strategies, platforms, and applications for Publicis Sapient's clients for over 10 years. He shares that expertise in the new book, *Enterprise Artificial Intelligence Transformation*. The first of its kind, this book grants technology leaders the insight to create and scale their AI capabilities and bring their companies into the new generation of technology. As AI continues to grow into a necessary feature for many businesses, more and more leaders are interested in harnessing the technology within their own organizations. In this new book, leaders will learn to master AI fundamentals, grow their career opportunities, and gain confidence in machine learning. *Enterprise Artificial Intelligence Transformation* covers a wide range of topics, including: Real-world AI use cases and examples Machine learning, deep learning, and semantic modeling Risk management of AI models AI strategies for development and expansion AI Center of Excellence creating and management If you're an industry, business, or technology professional that wants to attain the skills needed to grow your machine learning capabilities and effectively scale the work you're already doing, you'll find what you need in *Enterprise Artificial Intelligence Transformation*.

Keeping Your AI Under Control Oct 27 2019 Much of our daily lives intertwine with artificial intelligence. From watching movies recommended by our entertainment streaming service, to interacting with customer service chatbots, to autotagging photos of friends in our social media apps, AI plays an invisible part in enriching our lives. While AI may be seen as a panacea for enterprise advancement and consumer convenience, it is still an emerging technology, and its explosive growth needs to be approached with proper care and preparation. How do we tackle the challenges it presents, and how do we make sure that it does precisely what it is supposed to do? In *Keeping Your AI Under Control*, author Anand Tamboli explores the inherent risk factors of the widespread implementation of artificial intelligence. The author delves into several real-life case studies of AI gone wrong, including Microsoft's 2016 chatbot disaster, Uber's autonomous vehicle fatally wounding a pedestrian, and an entire smart home in Germany dangerously malfunctioning because of one bad lightbulb. He expertly addresses the need to challenge our current assumptions about the infallibility of technology. The importance of data governance, rigorous testing before roll-out, a chain of human accountability, ethics, and much more are all detailed in *Keeping Your AI Under Control*. Artificial intelligence will not solve all of our problems for good, but it can (and will) present us with new solutions. These solutions can only be achieved with proper planning, continued maintenance, and above all, a foundation of attuned human supervision. What You Will Learn Understand various types of risks involved in developing and using AI solutions Identify, evaluate, and quantify risks pragmatically Utilize AI insurance to support residual risk management Who This Book Is For Progressive businesses that are on a journey to use AI (buyers/customers), technical and financial leaders in AI solution companies (solution vendors), AI system integrators (intermediaries), project and technology leads of AI deployment projects, technology purchase decision makers, CXOs and legal officers (solution users).

Oracle Business Intelligence with Machine Learning Apr 01 2020 Use machine learning and Oracle Business Intelligence Enterprise Edition (OBIEE) as a comprehensive BI solution. This book follows a when-to, why-to, and how-to approach to explain the key steps involved in utilizing the artificial intelligence components now available for a successful OBIEE implementation. Oracle Business Intelligence with Machine Learning covers various technologies including using Oracle OBIEE, R Enterprise, Spatial Maps, and machine learning for advanced visualization and analytics. The machine learning material focuses on learning representations of input data suitable for a given prediction problem. This book focuses on the practical aspects of implementing machine learning solutions using the rich Oracle BI ecosystem. The primary objective of this book is to bridge the gap between the academic state-of-the-art and the industry state-of-the-practice by introducing you to machine learning with OBIEE. What You Will Learn See machine learning in OBIEE Master the fundamentals of machine learning and how it pertains to BI and advanced analytics Gain an introduction to Oracle R Enterprise Discover the practical considerations of implementing machine learning with OBIEE Who This Book Is For Analytics managers, BI architects and developers, and data scientists.

Practical Artificial Intelligence Feb 09 2021 Discover how all levels Artificial Intelligence (AI) can be present in the most unimaginable scenarios of ordinary lives. This book explores subjects such as neural networks, agents, multi agent systems, supervised learning, and unsupervised learning. These and other topics will be addressed with real world examples, so you can learn fundamental concepts with AI solutions and apply them to your own projects. People tend to talk about AI as something mystical and unrelated to their ordinary life. *Practical Artificial Intelligence* provides simple explanations and hands on instructions. Rather than focusing on theory and overly scientific language, this book will enable practitioners of all levels to not only learn about AI but implement its practical uses. What You'll Learn Understand agents and multi agents and how they are incorporated Relate machine learning to real-world problems and see what it means to you Apply supervised and unsupervised learning techniques and methods in the real world Implement reinforcement learning, game programming, simulation, and neural networks Who This Book Is For Computer science students, professionals, and hobbyists interested in AI and its applications.

AIX: Artificial Intelligence Needs EXplanation: Why and how Transparency Increases the Success of AI Solutions Apr 13 2021 Making predictions and good decisions is difficult. Huge amounts of data are available, and it promises a new source for knowledge to improve human decision making. However, the available technology is not transparent, the resulting decisions may be biased, and people question the ethics of AI. This book offers the solution: explainable (XAI) AI. It provides 5 reasons why explainable AI is more successful and six steps to start successfully applying XAI. In *AIX*, an acknowledged expert in the field of AI provides practical guidance and convincing arguments for responsible business managers to take ownership of the intelligence required to design effective decision support systems. Easy to read, using many examples and by demystifying AI technology this book will replace fear for AI with a simple and responsible strategy. Insightful for managers and specialists.

Machine Learning in Insurance Jun 15 2021 Machine learning is a relatively new field, without a unanimous definition. In many ways, actuaries have been machine learners. In both pricing and reserving, but also more recently in capital modelling, actuaries have combined statistical methodology with a deep understanding of the problem at hand and how any solution may affect the company and its customers. One aspect that has, perhaps, not been so well developed among actuaries is validation. Discussions among actuaries' "preferred methods" were often without solid scientific arguments, including validation of the case at hand. Through this collection, we aim to promote a good practice of machine learning in insurance, considering the following three key issues: a) who is the client, or sponsor, or otherwise interested real-life target of the study? b) The reason for working with a particular data set and a clarification of the available extra knowledge, that we also call prior knowledge, besides the data set alone. c) A mathematical statistical argument for the validation procedure.

Artificial Intelligence and Big Data Oct 08 2020 With the idea of "deep learning" having now become the key to this new generation of solutions, major technological players in the business intelligence sector have taken an interest in the application of Big Data. In this book, the author explores the recent technological advances associated with digitized data flows, which have recently opened up new horizons for AI. The reader will gain insight into some of the areas of application of Big Data in AI, including robotics, home automation, health, security, image recognition and natural language processing.

Artificial Intelligence Jun 27 2022 Companies that don't use AI to their advantage will soon be left behind. Artificial intelligence and machine learning will drive a massive reshaping of the economy and society. What should you and your company be doing right now to ensure that your

business is poised for success? These articles by AI experts and consultants will help you understand today's essential thinking on what AI is capable of now, how to adopt it in your organization, and how the technology is likely to evolve in the near future. *Artificial Intelligence: The Insights You Need* from Harvard Business Review will help you spearhead important conversations, get going on the right AI initiatives for your company, and capitalize on the opportunity of the machine intelligence revolution. Catch up on current topics and deepen your understanding of them with the *Insights You Need* series from Harvard Business Review. Featuring some of HBR's best and most recent thinking, *Insights You Need* titles are both a primer on today's most pressing issues and an extension of the conversation, with interesting research, interviews, case studies, and practical ideas to help you explore how a particular issue will impact your company and what it will mean for you and your business.

[Artificial Intelligence for Big Data](#) Jul 17 2021 Build next-generation Artificial Intelligence systems with Java Key Features Implement AI techniques to build smart applications using Deeplearning4j Perform big data analytics to derive quality insights using Spark MLlib Create self-learning systems using neural networks, NLP, and reinforcement learning Book Description In this age of big data, companies have larger amount of consumer data than ever before, far more than what the current technologies can ever hope to keep up with. However, Artificial Intelligence closes the gap by moving past human limitations in order to analyze data. With the help of Artificial Intelligence for big data, you will learn to use Machine Learning algorithms such as k-means, SVM, RBF, and regression to perform advanced data analysis. You will understand the current status of Machine and Deep Learning techniques to work on Genetic and Neuro-Fuzzy algorithms. In addition, you will explore how to develop Artificial Intelligence algorithms to learn from data, why they are necessary, and how they can help solve real-world problems. By the end of this book, you'll have learned how to implement various Artificial Intelligence algorithms for your big data systems and integrate them into your product offerings such as reinforcement learning, natural language processing, image recognition, genetic algorithms, and fuzzy logic systems. What you will learn Manage Artificial Intelligence techniques for big data with Java Build smart systems to analyze data for enhanced customer experience Learn to use Artificial Intelligence frameworks for big data Understand complex problems with algorithms and Neuro-Fuzzy systems Design stratagems to leverage data using Machine Learning process Apply Deep Learning techniques to prepare data for modeling Construct models that learn from data using open source tools Analyze big data problems using scalable Machine Learning algorithms Who this book is for This book is for you if you are a data scientist, big data professional, or novice who has basic knowledge of big data and wish to get proficiency in Artificial Intelligence techniques for big data. Some competence in mathematics is an added advantage in the field of elementary linear algebra and calculus.

[How to Compete in the Age of Artificial Intelligence](#) Dec 30 2019 Get started with artificial intelligence in your business. This book will help you understand AI, its implications, and how to adopt a strategy that is rational, relevant, and practical. Beyond the buzzwords and the technology complexities, organizations are struggling to understand what AI means for their industry and how they can start their journey. *How to Compete in the Age of Artificial Intelligence* is not a book about complex formulas or solution architectures. It goes deeper into explaining the meaning and relevance of AI for your business. You will learn how to apply AI thinking across enterprise functions—including disruptive technologies such as IoT, Blockchain, and cloud—and transform your organization. What You'll Learn Know how to spot AI opportunities and establish the right organizational imperatives to grow your business Understand AI in the context of changing business dynamics and the workforce/skills required to succeed Discover how to apply AI thinking across enterprise functions—from the boardroom to cybersecurity, IoT, IT operations, policies—and implement a sustainable and integrated human-machine collaboration strategy Who This Book is For CxOs, senior executives, mid-level managers, AI evangelists, digital leads, and technology directors

[Artificial Intelligence for Managers](#) May 15 2021 Understand how to adopt and implement AI in your organization Key Features 7 Principles of an AI Journey 7 The TUSCANE Approach to Become Data Ready 7 The FAB-4 Model to Choose the Right AI Solution 7 Major AI Techniques & their Applications: - CART & Ensemble Learning - Clustering, Association Rules & Search - Reinforcement Learning - Natural Language Processing - Image Recognition Description Most AI initiatives in organizations fail today not because of a lack of good AI solutions, but because of a lack of understanding of AI among its end users, decision makers and investors. Today, organizations need managers who can leverage AI to solve business problems and provide a competitive advantage. This book is designed to enable you to fill that need, and create an edge for your career. The chapters offer unique managerial frameworks to guide an organization's AI journey. The first section looks at what AI is; and how you can prepare for it, decide when to use it, and avoid pitfalls on the way. The second section dives into the different AI techniques and shows you where to apply them in business. The final section then prepares you from a strategic AI leadership perspective to lead the future of organizations. By the end of the book, you will be ready to offer any organization the capability to use AI successfully and responsibly - a need that is fast becoming a necessity. What will you learn 7 Understand the major AI techniques & how they are used in business. 7 Determine which AI technique(s) can solve your business problem. 7 Decide whether to build or buy an AI solution. 7 Estimate the financial value of an AI solution or company. 7 Frame a robust policy to guide the responsible use of AI. Who this book is for This book is for Executives, Managers and Students on both Business and Technical teams who would like to use Artificial Intelligence effectively to solve business problems or get an edge in their careers. Table of Contents 1.Preface 2.Acknowledgement 3.About the Author 4.Section 1: Beginning an AI Journey a. AI Fundamentals b. 7 Principles of an AI Journey c. Getting Ready to Use AI 5.Section 2: Choosing the Right AI Techniques a. Inside the AI Laboratory b. How AI Predicts Values & Categories c. How AI Understands and Predicts Behaviors & Scenarios d. How AI Communicates & Learns from Mistakes e. How AI Starts to Think Like Humans 6.Section 3: Using AI Successfully & Responsibly a. AI Adoption & Valuation b. AI Strategy, Policy & Risk Management 7.Epilogue

[Artificial Intelligence for Business](#) May 03 2020 Artificial Intelligence for Business: A Roadmap for Getting Started with AI will provide the reader with an easy to understand roadmap for how to take an organization through the adoption of AI technology. It will first help with the identification of which business problems and opportunities are right for AI and how to prioritize them to maximize the likelihood of success. Specific methodologies are introduced to help with finding critical training data within an organization and how to fill data gaps if they exist. With data in hand, a scoped prototype can be built to limit risk and provide tangible value to the organization as a whole to justify further investment. Finally, a production level AI system can be developed with best practices to ensure quality with not only the application code, but also the AI models. Finally, with this particular AI adoption journey at an end, the authors will show that there is additional value to be gained by iterating on this AI adoption lifecycle and improving other parts of the organization.

[Artificial Intelligence and Machine Learning Methods in COVID-19 and Related Health Diseases](#) Jun 03 2020 This Springer book provides a perfect platform to submit chapters that discuss the prospective developments and innovative ideas in artificial intelligence and machine learning techniques in the diagnosis of COVID-19. COVID-19 is a huge challenge to humanity and the medical sciences. So far as of today, we have been unable to find a medical solution (Vaccine). However, globally, we are still managing the use of technology for our work, communications, analytics, and predictions with the use of advancement in data science, communication technologies (5G & Internet), and AI. Therefore, we might be able to continue and live safely with the use of research in advancements in data science, AI, machine learning, mobile apps, etc., until we can find a medical solution such as a vaccine. We have selected eleven chapters after the vigorous review process. Each

chapter has demonstrated the research contributions and research novelty. Each group of authors must fulfill strict requirements.

Artificial Intelligence Design and Solution for Risk and Security Aug 25 2019 Artificial Intelligence (AI) Design and Solutions for Risk and Security targets readers to understand, learn, define problems, and architect AI projects. Starting from current business architectures and business processes to futuristic architectures. Introduction to data analytics and life cycle includes data discovery, data preparation, data processing steps, model building, and operationalization are explained in detail. The authors examine the AI and ML algorithms in detail, which enables the readers to choose appropriate algorithms during designing solutions. Functional domains and industrial domains are also explained in detail. The takeaways are learning and applying designs and solutions to AI projects with risk and security implementation and knowledge about futuristic AI in five to ten years.

Optimization in Machine Learning and Applications Nov 20 2021 This book discusses one of the major applications of artificial intelligence: the use of machine learning to extract useful information from multimodal data. It discusses the optimization methods that help minimize the error in developing patterns and classifications, which further helps improve prediction and decision-making. The book also presents formulations of real-world machine learning problems, and discusses AI solution methodologies as standalone or hybrid approaches. Lastly, it proposes novel metaheuristic methods to solve complex machine learning problems. Featuring valuable insights, the book helps readers explore new avenues leading toward multidisciplinary research discussions.

Machine Learning with Microsoft Technologies Jan 29 2020 Know how to do machine learning with Microsoft technologies. This book teaches you to do predictive, descriptive, and prescriptive analyses with Microsoft Power BI, Azure Data Lake, SQL Server, Stream Analytics, Azure Databricks, HD Insight, and more. The ability to analyze massive amounts of real-time data and predict future behavior of an organization is critical to its long-term success. Data science, and more specifically machine learning (ML), is today's game changer and should be a key building block in every company's strategy. Managing a machine learning process from business understanding, data acquisition and cleaning, modeling, and deployment in each tool is a valuable skill set. Machine Learning with Microsoft Technologies is a demo-driven book that explains how to do machine learning with Microsoft technologies. You will gain valuable insight into designing the best architecture for development, sharing, and deploying a machine learning solution. This book simplifies the process of choosing the right architecture and tools for doing machine learning based on your specific infrastructure needs and requirements. Detailed content is provided on the main algorithms for supervised and unsupervised machine learning and examples show ML practices using both R and Python languages, the main languages inside Microsoft technologies. What You'll Learn Choose the right Microsoft product for your machine learning solution Create and manage Microsoft's tool environments for development, testing, and production of a machine learning project Implement and deploy supervised and unsupervised learning in Microsoft products Set up Microsoft Power BI, Azure Data Lake, SQL Server, Stream Analytics, Azure Databricks, and HD Insight to perform machine learning Set up a data science virtual machine and test-drive installed tools, such as Azure ML Workbench, Azure ML Server Developer, Anaconda Python, Jupyter Notebook, Power BI Desktop, Cognitive Services, machine learning and data analytics tools, and more Architect a machine learning solution factoring in all aspects of self service, enterprise, deployment, and sharing Who This Book Is For Data scientists, data analysts, developers, architects, and managers who want to leverage machine learning in their products, organization, and services, and make educated, cost-saving decisions about their ML architecture and tool set.

Artificial Intelligence By Example Dec 10 2020 Understand the fundamentals and develop your own AI solutions in this updated edition packed with many new examples Key Features AI-based examples to guide you in designing and implementing machine intelligence Build machine intelligence from scratch using artificial intelligence examples Develop machine intelligence from scratch using real artificial intelligence Book Description AI has the potential to replicate humans in every field. Artificial Intelligence By Example, Second Edition serves as a starting point for you to understand how AI is built, with the help of intriguing and exciting examples. This book will make you an adaptive thinker and help you apply concepts to real-world scenarios. Using some of the most interesting AI examples, right from computer programs such as a simple chess engine to cognitive chatbots, you will learn how to tackle the machine you are competing with. You will study some of the most advanced machine learning models, understand how to apply AI to blockchain and Internet of Things (IoT), and develop emotional quotient in chatbots using neural networks such as recurrent neural networks (RNNs) and convolutional neural networks (CNNs). This edition also has new examples for hybrid neural networks, combining reinforcement learning (RL) and deep learning (DL), chained algorithms, combining unsupervised learning with decision trees, random forests, combining DL and genetic algorithms, conversational user interfaces (CUI) for chatbots, neuromorphic computing, and quantum computing. By the end of this book, you will understand the fundamentals of AI and have worked through a number of examples that will help you develop your AI solutions. What you will learn Apply k-nearest neighbors (KNN) to language translations and explore the opportunities in Google Translate Understand chained algorithms combining unsupervised learning with decision trees Solve the XOR problem with feedforward neural networks (FNN) and build its architecture to represent a data flow graph Learn about meta learning models with hybrid neural networks Create a chatbot and optimize its emotional intelligence deficiencies with tools such as Small Talk and data logging Building conversational user interfaces (CUI) for chatbots Writing genetic algorithms that optimize deep learning neural networks Build quantum computing circuits Who this book is for Developers and those interested in AI, who want to understand the fundamentals of Artificial Intelligence and implement them practically. Prior experience with Python programming and statistical knowledge is essential to make the most out of this book.

Artificial Intelligence Paradigms for Smart Cyber-Physical Systems Mar 25 2022 Cyber-physical systems (CPS) have emerged as a unifying name for systems where cyber parts (i.e., the computing and communication parts) and physical parts are tightly integrated, both in design and during operation. Such systems use computations and communication deeply embedded in and interacting with human physical processes as well as augmenting existing and adding new capabilities. As such, CPS is an integration of computation, networking, and physical processes. Embedded computers and networks monitor and control the physical processes, with feedback loops where physical processes affect computations and vice versa. The economic and societal potential of such systems is vastly greater than what has been realized, and major investments are being made worldwide to develop the technology. Artificial Intelligence Paradigms for Smart Cyber-Physical Systems focuses on the recent advances in Artificial intelligence-based approaches towards affecting secure cyber-physical systems. This book presents investigations on state-of-the-art research issues, applications, and achievements in the field of computational intelligence paradigms for CPS. Covering topics that include autonomous systems, access control, machine learning, and intrusion detection and prevention systems, this book is ideally designed for engineers, industry professionals, practitioners, scientists, managers, students, academicians, and researchers seeking current research on artificial intelligence and cyber-physical systems.

Artificial Intelligence (AI) May 27 2022 This book aims to bring together leading academic scientists, researchers, and research scholars to exchange and share their experiences and research results on all aspects of Artificial Intelligence. The book provides a premier interdisciplinary platform to present practical challenges and adopted solutions. The book addresses the complete functional framework workflow in Artificial Intelligence technology. It explores the basic and high-level concepts and can serve as a manual for the industry for beginners and the more advanced. It covers intelligent and automated systems and its implications to the real-world, and offers data acquisition and case studies related

to data-intensive technologies in AI-based applications. The book will be of interest to researchers, professionals, scientists, professors, students of computer science engineering, electronics and communications, as well as information technology.

Artificial Intelligence in Practice Sep 30 2022 Cyber-solutions to real-world business problems *Artificial Intelligence in Practice* is a fascinating look into how companies use AI and machine learning to solve problems. Presenting 50 case studies of actual situations, this book demonstrates practical applications to issues faced by businesses around the globe. The rapidly evolving field of artificial intelligence has expanded beyond research labs and computer science departments and made its way into the mainstream business environment. Artificial intelligence and machine learning are cited as the most important modern business trends to drive success. It is used in areas ranging from banking and finance to social media and marketing. This technology continues to provide innovative solutions to businesses of all sizes, sectors and industries. This engaging and topical book explores a wide range of cases illustrating how businesses use AI to boost performance, drive efficiency, analyse market preferences and many others. Best-selling author and renowned AI expert Bernard Marr reveals how machine learning technology is transforming the way companies conduct business. This detailed examination provides an overview of each company, describes the specific problem and explains how AI facilitates resolution. Each case study provides a comprehensive overview, including some technical details as well as key learning summaries: Understand how specific business problems are addressed by innovative machine learning methods Explore how current artificial intelligence applications improve performance and increase efficiency in various situations Expand your knowledge of recent AI advancements in technology Gain insight on the future of AI and its increasing role in business and industry *Artificial Intelligence in Practice: How 50 Successful Companies Used Artificial Intelligence to Solve Problems* is an insightful and informative exploration of the transformative power of technology in 21st century commerce.

Transactional Machine Learning with Data Streams and AutoML Feb 21 2022 Understand how to apply auto machine learning to data streams and create transactional machine learning (TML) solutions that are frictionless (require minimal to no human intervention) and elastic (machine learning solutions that can scale up or down by controlling the number of data streams, algorithms, and users of the insights). This book will strengthen your knowledge of the inner workings of TML solutions using data streams with auto machine learning integrated with Apache Kafka. *Transactional Machine Learning with Data Streams and AutoML* introduces the industry challenges with applying machine learning to data streams. You will learn the framework that will help you in choosing business problems that are best suited for TML. You will also see how to measure the business value of TML solutions. You will then learn the technical components of TML solutions, including the reference and technical architecture of a TML solution. This book also presents a TML solution template that will make it easy for you to quickly start building your own TML solutions. Specifically, you are given access to a TML Python library and integration technologies for download. You will also learn how TML will evolve in the future, and the growing need by organizations for deeper insights from data streams. By the end of the book, you will have a solid understanding of TML. You will know how to build TML solutions with all the necessary details, and all the resources at your fingertips. **What You Will Learn** Discover transactional machine learning Measure the business value of TML Choose TML use cases Design technical architecture of TML solutions with Apache Kafka Work with the technologies used to build TML solutions Build transactional machine learning solutions with hands-on code together with Apache Kafka in the cloud *Who This Book Is For* Data scientists, machine learning engineers and architects, and AI and machine learning business leaders.

IoT, AI, and Blockchain for .NET Sep 06 2020 Create applications using Industry 4.0. Discover how artificial intelligence (AI) and machine learning (ML) capabilities can be enhanced using the Internet of things (IoT) and secured using Blockchain, so your latest app can be not just smarter but also more connected and more secure than ever before. This book covers the latest easy-to-use APIs and services from Microsoft, including Azure IoT, Cognitive Services APIs, Blockchain as a Service (BaaS), and Machine Learning Studio. As you work through the book, you'll get hands-on experience building an example solution that uses all of these technologies—an IoT suite for a smart healthcare facility. Hosted on Azure and networked using Azure IoT, the solution includes centralized patient monitoring, using Cognitive Services APIs for face detection, recognition, and tracking. Blockchain is used to create trust-based security and inventory management. Machine learning is used to create predictive solutions to proactively improve quality of life. By the end of the book, you'll be confident creating richer and smarter applications using these technologies. **What You'll Learn** Know the technologies underpinning Industry 4.0 and AI 2.0 Develop real-time solutions using IoT in Azure Bring the smart capabilities of AI 2.0 into your application using a simple API call Host and manage your solution on Azure Understand Blockchain as a Service Capture and analyze data on the fly Make predictions using existing data *Who This Book Is For* Novice and intermediate .NET developers and architects who want to learn what it takes to create a modern or next-generation application

Oracle Business Intelligence with Machine Learning Sep 26 2019 Use machine learning and Oracle Business Intelligence Enterprise Edition (OBIEE) as a comprehensive BI solution. This book follows a when-to, why-to, and how-to approach to explain the key steps involved in utilizing the artificial intelligence components now available for a successful OBIEE implementation. *Oracle Business Intelligence with Machine Learning* covers various technologies including using Oracle OBIEE, R Enterprise, Spatial Maps, and machine learning for advanced visualization and analytics. The machine learning material focuses on learning representations of input data suitable for a given prediction problem. This book focuses on the practical aspects of implementing machine learning solutions using the rich Oracle BI ecosystem. The primary objective of this book is to bridge the gap between the academic state-of-the-art and the industry state-of-the-practice by introducing you to machine learning with OBIEE. **You will:** See machine learning in OBIEE Master the fundamentals of machine learning and how it pertains to BI and advanced analytics Gain an introduction to Oracle R Enterprise Discover the practical considerations of implementing machine learning with OBIEE.

Artificial Intelligence for Audit, Forensic Accounting, and Valuation Sep 18 2021 Strategically integrate AI into your organization to compete in the tech era The rise of artificial intelligence is nothing short of a technological revolution. AI is poised to completely transform accounting and auditing professions, yet its current application within these areas is limited and fragmented. Existing AI implementations tend to solve very narrow business issues, rather than serving as a powerful tech framework for next-generation accounting. *Artificial Intelligence for Audit, Forensic Accounting, and Valuation* provides a strategic viewpoint on how AI can be comprehensively integrated within audit management, leading to better automated models, forensic accounting, and beyond. No other book on the market takes such a wide-ranging approach to using AI in audit and accounting. With this guide, you'll be able to build an innovative, automated accounting strategy, using artificial intelligence as the cornerstone and foundation. This is a must, because AI is quickly growing to be the single competitive factor for audit and accounting firms. With better AI comes better results. If you aren't integrating AI and automation in the strategic DNA of your business, you're at risk of being left behind. See how artificial intelligence can form the cornerstone of integrated, automated audit and accounting services Learn how to build AI into your organization to remain competitive in the era of automation Go beyond siloed AI implementations to modernize and deliver results across the organization Understand and overcome the governance and leadership challenges inherent in AI strategy Accounting and auditing firms need a comprehensive framework for intelligent, automation-centric modernization. *Artificial Intelligence for Audit, Forensic Accounting, and Valuation* delivers just that—a plan to evolve legacy firms by building firmwide AI capabilities.

Artificial Intelligence Aug 06 2020 *Artificial Intelligence: A Modern Approach* offers the most comprehensive, up-to-date introduction to the theory and practice of artificial intelligence. Number one in its field, this textbook is ideal for one or two-semester, undergraduate or graduate-

level courses in Artificial Intelligence.

Artificial Intelligence for Big Data Nov 01 2022 Build next-generation Artificial Intelligence systems with Java Key Features Implement AI techniques to build smart applications using Deeplearning4j Perform big data analytics to derive quality insights using Spark MLlib Create self-learning systems using neural networks, NLP, and reinforcement learning Book Description In this age of big data, companies have larger amount of consumer data than ever before, far more than what the current technologies can ever hope to keep up with. However, Artificial Intelligence closes the gap by moving past human limitations in order to analyze data. With the help of Artificial Intelligence for big data, you will learn to use Machine Learning algorithms such as k-means, SVM, RBF, and regression to perform advanced data analysis. You will understand the current status of Machine and Deep Learning techniques to work on Genetic and Neuro-Fuzzy algorithms. In addition, you will explore how to develop Artificial Intelligence algorithms to learn from data, why they are necessary, and how they can help solve real-world problems. By the end of this book, you'll have learned how to implement various Artificial Intelligence algorithms for your big data systems and integrate them into your product offerings such as reinforcement learning, natural language processing, image recognition, genetic algorithms, and fuzzy logic systems. What you will learn Manage Artificial Intelligence techniques for big data with Java Build smart systems to analyze data for enhanced customer experience Learn to use Artificial Intelligence frameworks for big data Understand complex problems with algorithms and Neuro-Fuzzy systems Design stratagems to leverage data using Machine Learning process Apply Deep Learning techniques to prepare data for modeling Construct models that learn from data using open source tools Analyze big data problems using scalable Machine Learning algorithms Who this book is for This book is for you if you are a data scientist, big data professional, or novice who has basic knowledge of big data and wish to get proficiency in Artificial Intelligence techniques for big data. Some competence in mathematics is an added advantage in the field of elementary linear algebra and calculus.

Introduction to Artificial Intelligence Jan 23 2022 This accessible and engaging textbook presents a concise introduction to the exciting field of artificial intelligence (AI). The broad-ranging discussion covers the key subdisciplines within the field, describing practical algorithms and concrete applications in the areas of agents, logic, search, reasoning under uncertainty, machine learning, neural networks, and reinforcement learning. Fully revised and updated, this much-anticipated second edition also includes new material on deep learning. Topics and features: presents an application-focused and hands-on approach to learning, with supplementary teaching resources provided at an associated website; contains numerous study exercises and solutions, highlighted examples, definitions, theorems, and illustrative cartoons; includes chapters on predicate logic, PROLOG, heuristic search, probabilistic reasoning, machine learning and data mining, neural networks and reinforcement learning; reports on developments in deep learning, including applications of neural networks to generate creative content such as text, music and art (NEW); examines performance evaluation of clustering algorithms, and presents two practical examples explaining Bayes' theorem and its relevance in everyday life (NEW); discusses search algorithms, analyzing the cycle check, explaining route planning for car navigation systems, and introducing Monte Carlo Tree Search (NEW); includes a section in the introduction on AI and society, discussing the implications of AI on topics such as employment and transportation (NEW). Ideal for foundation courses or modules on AI, this easy-to-read textbook offers an excellent overview of the field for students of computer science and other technical disciplines, requiring no more than a high-school level of knowledge of mathematics to understand the material.