

Artificial Intelligence Course Prof Deepak Khemani Nptel

The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

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 use AutoML in their familiar tools and experiences Learn how to get started using AutoML for use cases including classification, regression, and forecasting.

Knowledge representation is at the very core of a radical idea for understanding intelligence. This book talks about the central concepts of knowledge representation developed over the years. It is suitable for researchers and practitioners in database management, information retrieval, object-oriented systems and artificial intelligence.

During the past decade there has been an explosion in computation and information technology. With it have come vast amounts of data in a variety of fields such as medicine, biology, finance, and marketing. The challenge of understanding these data has led to the development of new tools in the field of statistics, and spawned new areas such as data mining, machine learning, and bioinformatics. Many of these tools have common underpinnings but are often expressed with different terminology. This book describes the important ideas in these areas in a common conceptual framework. While the approach is statistical, the emphasis is on concepts rather than mathematics. Many examples are given, with a liberal use of color graphics. It should be a valuable resource for statisticians and anyone interested in data mining in science or industry. The book's coverage is broad, from supervised learning (prediction) to unsupervised learning. The many topics include neural networks, support vector machines, classification trees and boosting---the first comprehensive treatment of this topic in any book. This major new edition features many topics not covered in the original, including graphical models, random forests, ensemble methods, least angle regression, path algorithms for the lasso, non-negative matrix factorization, and spectral clustering. There is also a chapter on methods for handling "wide" data (p bigger than n), including multiple testing and false discovery rates. Trevor Hastie, Robert Tibshirani, and Jerome Friedman are professors of statistics at Stanford University. They are prominent researchers in this area: Hastie and Tibshirani developed generalized additive models and wrote a popular book of that title. Hastie co-developed much of the statistical modeling software and environment in R/S-PLUS and invented principal curves and surfaces. Tibshirani proposed the lasso and is co-author of the very successful *An Introduction to the Bootstrap*. Friedman is the co-inventor of many data-mining tools including CART, MARS, projection pursuit and gradient boosting.

U-M Computing News

Theory and Applications

Data Science for COVID-19 Volume 1

Constraint Processing

Privacy and Incentive

Artificial Intelligence for eHealth

This book discusses research in Artificial Intelligence for the Internet of Health Things. It investigates and explores the possible applications of machine learning, deep learning, soft computing, and evolutionary computing techniques in design, implementation, and optimization of challenging healthcare solutions. This book features a wide range of topics such as AI techniques, IoT, cloud, wearables, and secured data transmission. Written for a broad audience, this book will be useful for clinicians, health professionals, engineers, technology developers, IT consultants, researchers, and students interested in the AI-based healthcare applications. Provides a deeper understanding of key AI algorithms and their use and implementation within the wider healthcare sector Explores different disease diagnosis models using machine learning, deep learning, healthcare data analysis, including machine learning, and data mining and soft computing algorithms Discusses detailed IoT, wearables, and cloud-based disease diagnosis model for intelligent systems and healthcare Reviews different applications and challenges across the design, implementation, and management of intelligent systems and healthcare data networks Introduces a new applications and case studies across all areas of AI in healthcare data K. Shankar (Member, IEEE) is a Postdoctoral Fellow of the Department of Computer Applications, Alagappa University, Karaikudi, India. Eswaran Perumal is an Assistant Professor of the Department of Computer Applications, Alagappa University, Karaikudi, India. Dr. Deepak Gupta is an Assistant Professor of the Department Computer Science & Engineering, Maharaja Agrasen Institute of Technology (GGSIPTU), Delhi, India.

Is it possible to venture beyond daily living and experience heightened states of awareness? Deepak Chopra says that higher consciousness is available here and now. "Metahuman helps us harvest peak experiences so we can see our truth and mold the universe's chaos into a form that brings light to the world."—Dr. Mehmet Oz, attending physician, New York—Presbyterian, Columbia University New York Times

bestselling author Deepak Chopra unlocks the secrets to moving beyond our present limitations to access a field of infinite possibilities. How does one do this? By becoming metahuman. To be metahuman, however, isn't science fiction and is certainly not about being a superhero. To be metahuman means to move past the limitation constructed by the mind and enter a new state of awareness where we have deliberate and concrete access to peak experiences that can transform people's lives from the inside out. Humans do this naturally—to a point. For centuries the great artists, scientists, writers, and many so-called ordinary people have gone beyond the everyday physical world. But if we could channel these often bewildering experiences, what would happen? Chopra argues we would wake up to experiences that would blow open your body, mind, and soul. Metahuman invites the reader to walk the path here and now. Waking up, we learn, isn't just about mindfulness or meditation. Waking up, to become metahuman, is to expand our consciousness in all that we think, say, and do. By going beyond, we liberate ourselves from old conditioning and all the mental constructs that underlie anxiety, tension, and ego-driven demands. Waking up allows life to make sense as never before. To make this as practical as possible, Chopra ends the book with a 31-day guide to becoming metahuman. Once you wake up, he writes, life becomes transformed, because pure consciousness—which is the field of all possibilities—dawns in your life. Only then does your infinite potential become your personal reality.

Data Science for COVID-19, Volume 2: Societal and Medical Perspectives presents the most current and leading-edge research into the applications of a variety of data science techniques for the detection, mitigation, treatment and elimination of the COVID-19 virus. At this point, Cognitive Data Science is the most powerful tool for researchers to fight COVID-19. Thanks to instant data-analysis and predictive techniques, including Artificial Intelligence, Machine Learning, Deep Learning, Data Mining, and computational modeling for processing large amounts of data, recognizing patterns, modeling new techniques, and improving both research and treatment outcomes is now possible. Provides a leading-edge survey of Data Science techniques and methods for research, mitigation and the treatment of the COVID-19 virus Integrates various Data Science techniques to provide a resource for COVID-19 researchers and clinicians around the world, including the wide variety of impacts the virus is having on societies and medical practice Presents insights into innovative, data-oriented modeling and predictive techniques from COVID-19 researchers around the world, including geoprocessing and tracking, lab data analysis, and theoretical views on a variety of technical applications Includes real-world feedback and user experiences from physicians and medical staff from around the world for medical treatment perspectives, public safety policies and impacts, sociological and psychological perspectives, the effects of COVID-19 in agriculture, economies, and education, and insights on future pandemics

There is no industry left where artificial intelligence is not used in some capacity. The application of this technology has already stretched across a multitude of domains including law and policy; it will soon permeate areas beyond anyone's imagination. Technology giants such as Google, Apple, and Facebook are already investing their money, effort, and time toward integrating artificial intelligence. As this technology continues to develop and expand, it is critical for everyone to understand the various applications of artificial intelligence and its full potential. *The Handbook of Research on Innovative Management Using AI in Industry 5.0* uncovers new and innovative features of artificial intelligence and how it can help in raising economic efficiency at both micro and macro levels and provides a deeper understanding of the relevant aspects of artificial intelligence impacting efficacy for better output. Covering topics such as consumer behavior, information technology, and personalized banking, it is an ideal resource for researchers, academicians, policymakers, business professionals, companies, and students.

Data Science for COVID-19

Concepts, Algorithms, Tools and Applications

Knowledge Representation and Reasoning

Artificial Intelligence for Future Generation Robotics

ICACA 2021

This book is dedicated to addressing the major challenges in fighting COVID-19 using artificial intelligence (AI) and machine learning (ML) – from cost and complexity to availability and accuracy. The aim of this book is to focus on both the design and implementation of AI-based approaches in proposed COVID-19 solutions that are enabled and supported by sensor networks, cloud computing, and 5G and beyond. This book presents research that contributes to the application of ML techniques to the problem of computer communication-assisted diagnosis of COVID-19 and similar diseases. The authors present the latest theoretical developments, real-world applications, and future perspectives on this topic. This book brings together a broad multidisciplinary community, aiming to integrate ideas, theories, models, and techniques from across different disciplines on intelligent solutions/systems, and to inform how cognitive systems in Next Generation Networks (NGN) should be designed, developed, and evaluated while exchanging and processing critical health information. Targeted readers are from varying disciplines who are interested in implementing the smart planet/environments vision via wireless/wired enabling technologies.

Artificial Intelligence for Future Generation Robotics offers a vision for potential future robotics applications for AI technologies. Each chapter includes theory and mathematics to stimulate novel research directions based on the state-of-the-art in AI and smart robotics. Organized by application into ten chapters, this book offers a practical tool for researchers and engineers looking for new avenues and use-cases that combine AI with smart robotics. As we witness exponential growth in automation and the rapid advancement of underpinning technologies, such as ubiquitous computing, sensing, intelligent data processing, mobile computing and context aware applications, this book is an ideal resource for future innovation. Brings AI and smart robotics into imaginative, technically-informed dialogue Integrates fundamentals with real-world applications Presents potential applications for AI in smart robotics by use-case Gives detailed theory and mathematical calculations for each application Stimulates new thinking and research in applying AI to

robotics

This book collects research works of data-driven medical diagnosis done via Artificial Intelligence based solutions, such as Machine Learning, Deep Learning and Intelligent Optimization. Physical devices powered with Artificial Intelligence are gaining importance in diagnosis and healthcare. Medical data from different sources can also be analyzed via Artificial Intelligence techniques for more effective results.

Search has been vital to artificial intelligence from the very beginning as a core technique in problem solving. The authors present a thorough overview of heuristic search with a balance of discussion between theoretical analysis and efficient implementation and application to real-world problems. Current developments in search such as pattern databases and search with efficient use of external memory and parallel processing units on main boards and graphics cards are detailed. Heuristic search as a problem solving tool is demonstrated in applications for puzzle solving, game playing, constraint satisfaction and machine learning. While no previous familiarity with heuristic search is necessary the reader should have a basic knowledge of algorithms, data structures, and calculus. Real-world case studies and chapter ending exercises help to create a full and realized picture of how search fits into the world of artificial intelligence and the one around us. Provides real-world success stories and case studies for heuristic search algorithms Includes many AI developments not yet covered in textbooks such as pattern databases, symbolic search, and parallel processing units

Artificial Intelligence for the Internet of Health Things

Computational Perspectives

Handbook of Research on Engineering Innovations and Technology Management in Organizations

Artificial Intelligence and Machine Learning for COVID-19

Intelligent Data Analysis

Handbook of Research on Innovative Management Using AI in Industry 5.0

As today's world continues to advance, Artificial Intelligence (AI) is a field that has become a staple of technological development and led to the advancement of numerous professional industries. An application within AI that has gained attention is machine learning. Machine learning uses statistical techniques and algorithms to give computer systems the ability to understand and its popularity has circulated through many trades. Understanding this technology and its countless implementations is pivotal for scientists and researchers across the world. The Handbook of Research on Emerging Trends and Applications of Machine Learning provides a high-level understanding of various machine learning algorithms along with modern tools and techniques using Artificial Intelligence. In addition, this book explores the critical role that machine learning plays in a variety of professional fields including healthcare, business, and computer science. While highlighting topics including image processing, predictive analytics, and smart grid management, this book is ideally designed for developers, data scientists, business analysts, information architects, finance agents, healthcare professionals, researchers, retail traders, professors, and graduate students seeking current research on the benefits, implementations, and trends of machine learning.

The book will focus on the applications of machine learning for sustainable development. Machine learning (ML) is an emerging technique whose diffusion and adoption in various sectors (such as energy, agriculture, internet of things, infrastructure) will be of enormous benefit. The state of the art of machine learning models is most useful for forecasting and prediction of various sectors for sustainable development.

Can we trust our senses to tell us the truth? Challenging leading scientific theories that claim that our senses report back objective reality, cognitive scientist Donald Hoffman argues that while we should take our perceptions seriously, we should not take them literally. How can it be possible that the world we see is not objective reality? And how can our senses be useful if they are not communicating the truth? Hoffman grapples with these questions and more over the course of this eye-opening work. Ever since Homo sapiens has walked the earth, natural selection has favored perception that hides the truth and guides us toward useful action, shaping our senses to keep us alive and reproducing. We observe a speeding car and do not walk in front of it; we see mold growing on bread and do not eat it. These impressions, though, are not objective reality. Just like a file icon on a desktop screen is a useful symbol rather than a genuine representation of what a computer file looks like, the objects we see every day are merely icons, allowing us to navigate the world safely and with ease. The real-world implications for this discovery are huge. From examining why fashion designers create clothes that give the illusion of a more "attractive" body shape to studying how companies use color to elicit specific emotions in consumers, and even dismantling the very notion that spacetime is objective reality, The Case Against Reality dares us to question everything we thought we knew about the world we see.

India, That Is Bharat, the first book of a comprehensive trilogy, explores the influence of European 'colonial consciousness' (or 'coloniality'), in particular its religious and racial roots, on Bharat as the successor state to the Indic civilisation and the origins of the Indian Constitution. It lays the foundation for its sequels by covering the period between the Age of Discovery, marked by Christopher Columbus' expedition in 1492, and the reshaping of Bharat through a British-made constitution-the Government of India Act of 1919. This includes international developments leading to the founding of the League of Nations by Western powers that tangibly impacted this journey. Further, this work also traces the origins of seemingly universal constructs such as 'toleration', 'secularism' and 'humanism' to Christian political theology. Their subsequent role in subverting the indigenous Indic consciousness through a secularised and universalised Reformation, that is, constitutionalism, is examined. It also puts forth the concept of Middle Eastern coloniality, which preceded its European variant and allies with it in the context of Bharat to advance their shared antipathy towards the Indic worldview. In order to liberate Bharat's distinctive indigeneity, 'decoloniality' is presented as a civilisational imperative in the spheres of nature, religion, culture, history, education, language and, crucially, in the realm of constitutionalism.

Behavioral and Cognitive Modeling of the Human Brain

Federated Learning

Big Data Analytics in the Insurance Market

Handbook of Research on Multimedia Cyber Security

Artificial Intelligence for Data-Driven Medical Diagnosis

Dimensionality Reduction in Data Science

Constraint satisfaction is a simple but powerful tool. Constraints identify the impossible and reduce the realm of possibilities effectively focus on the possible, allowing for a natural declarative formulation of what must be satisfied, without expressing field of constraint reasoning has matured over the last three decades with contributions from a diverse community of research artificial intelligence, databases and programming languages, operations research, management science, and applied mathematics. Today, constraint problems are used to model cognitive tasks in vision, language comprehension, default reasoning, diagnosis, scheduling, temporal and spatial reasoning. In *Constraint Processing*, Rina Dechter, synthesizes these contributions, along with her own significant work, to provide the first comprehensive examination of the theory that underlies constraint processing algorithms. Throughout, she focuses on fundamental tools and principles, emphasizing the representation and analysis of algorithms. ·Examines basic practical aspects of each topic and then tackles more advanced issues, including current research challenges ·Builds the understanding with definitions, examples, theory, algorithms and complexity analysis ·Synthesizes three decades of research on constraint processing in AI, databases and programming languages, operations research, management science, and applied mathematics

"This book explores the key concepts of data mining and utilizing them on online social media platforms, offering valuable insights into data mining approaches for big data and sentiment analysis in online social media and covering many important security and privacy aspects and current trends"--

A leading artificial intelligence researcher lays out a new approach to AI that will enable people to coexist successfully with intelligent machines.

This book gathers selected high-quality research papers presented at the 2nd International Conference on Advanced Computing Applications (ICACA 2021), held virtually during 27--28 March 2021. The book is divided into four sections. These are communication and computing, signal processing and multimedia, computational intelligence and data analytics and decision computing. The topics covered are advanced communication technologies, IoT-based systems and applications, network security, reliability, virtualization technologies, compressed sensors and multimedia applications, signal image and video processing, machine learning, pattern recognitions, intelligent computing, big data analytics, analytics in bio-computing, AI-driven 6G mobile wireless networks and autonomous driving.

Mathematics for Machine Learning

Artificial Intelligence and the Problem of Control

Practical Automated Machine Learning on Azure

Machine Learning and Big Data

Handbook of Research on Emerging Trends and Applications of Machine Learning

Data Mining Approaches for Big Data and Sentiment Analysis in Social Media

This book focuses on methods and tools for intelligent data analysis, aimed at narrowing the increasing gap between data gathering and data comprehension, and emphasis will also be given to solving of problems which result from automated data collection, such as analysis of computer-based patient records, data warehousing tools, intelligent alarming, effective and efficient monitoring, and so on. This book aims to describe the different approaches of Intelligent Data Analysis from a practical point of view: solving common life problems with data analysis tools.

Provides a practical guide to get started and execute on machine learning within a few days without necessarily knowing much about machine learning. The first five chapters are enough to get you started and the next few chapters provide you a good feel of more advanced topics to pursue.

Big Data Analytics in the Insurance Market is an industry-specific guide to creating operational effectiveness, managing risk, improving financials, and retaining customers. A must for people seeking to broaden their knowledge of big data concepts and their real-world applications, particularly in the field of insurance.

The New York Times-bestselling author unlocks the secrets to moving beyond one's present limitations to access infinite possibilities by becoming metahuman, liberating oneself from old conditioning and the mental constructs that underlie anxiety and ego-driven demands.

A First Course in Artificial Intelligence

From Data Gathering to Data Comprehension

The Case Against Reality: Why Evolution Hid the Truth from Our Eyes

Using Azure Machine Learning to Quickly Build AI Solutions

Metahuman

Unleashing Your Infinite Potential

With all the material available in the field of artificial intelligence (AI) and soft computing-texts, monographs, and journal articles remains a serious gap in the literature. Until now, there has been no comprehensive resource accessible to a broad audience with a depth and breadth of information that enables the reader to fully understand and readily apply AI and soft computing concepts. *Artificial Intelligence and Soft Computing* fills this gap. It presents both the traditional and the modern aspects of AI and soft computing in an insightful, and highly comprehensive style. It provides an in-depth analysis of mathematical models and algorithms and demonstrates their applications in real world problems. Beginning with the behavioral perspective of "human cognition," the text covers the tools and techniques required for its intelligent realization on machines. The author addresses the classical aspects-search, symbolic logic, and machine learning-in detail and includes the latest research in these areas. He introduces the modern aspects of soft computing from first principles and discusses them in a manner that enables a beginner to grasp the subject. He also covers a number of other aspects of AI research, including nonmonotonic and spatio-temporal reasoning, knowledge acquisition, and much more. *Artificial Intelligence and Soft Computing: Behavioral and Cognitive Modeling of the Human Brain* is unique for its diverse content, clear presentation, and overall completeness. It provides a practical, detailed introduction that will prove valuable to computer scientists, practitioners and students as well as to researchers migrating to the subject from other disciplines.

In the constant battle between human intelligence and machine intelligence, machines are close to surpassing human intelligence

unrestrained use of digital technologies in automating processes is one of the prime advantages of the third industrial revolution. As a result, all developed and developing nations have started to digitalize mundane tasks. Thus, digital technologies for information and communication technologies (ICT) have achieved high market space in terms of infrastructure building, employment generation, sector reforms, funds mobilization, electronic governance, hardware manufacturing, software development, etc. Hence, it is evident that every segment of society has been penetrated by ICT or digitalization. This book attempts to spotlight areas where AI is thriving.

FEATURES

- Impact of digitalization and AI on governance
- Novel AI practices being followed across the global community in sectors like healthcare, crime prevention and detection, education, agriculture, sensor networks, etc.
- Innovative techniques that can be adopted to ensure better quality and better delivery of services to the society
- Avenues for further research by the research community
- Fraternity

This book is a guide for university students (especially those from technical backgrounds), industries, NGOs, and public sector. **Data Science for COVID-19** presents leading-edge research on data science techniques for the detection, mitigation, treatment, and elimination of COVID-19. Sections provide an introduction to data science for COVID-19 research, considering past and future research as well as related Coronavirus variations. Other chapters cover a wide range of Data Science applications concerning COVID-19, including Image Analysis and Data Processing, Geoprocessing and tracking, Predictive Systems, Design Cognition, mobile technology, and telemedicine solutions. The book then covers Artificial Intelligence-based solutions, innovative treatment methods, and public health. Finally, readers will learn about applications of Big Data and new data models for mitigation. Provides a leading-edge survey of Data Science techniques and methods for research, mitigation and treatment of the COVID-19 virus. Integrates various Data Science techniques to provide a resource for COVID-19 researchers and clinicians around the world, including both positive and negative research. Provides insights into innovative data-oriented modeling and predictive techniques from COVID-19 researchers. Includes real-world feedback and user experiences from physicians and medical staff from around the world on the effectiveness of applied Data Science solutions.

Designing algorithms to recommend items such as news articles and movies to users is a challenging task in numerous web applications. The crux of the problem is to rank items based on users' responses to different items to optimize for multiple objectives. Major challenges are high dimensional prediction with sparse data and constructing high dimensional sequential designs to collect data for modeling and system design. This comprehensive treatment of the statistical issues that arise in recommender systems includes in-depth discussions of current state-of-the-art methods such as adaptive sequential designs (multi-armed bandit methods), bilinear effects models (matrix factorization) and scalable model fitting using modern computing paradigms like MapReduce. The authors draw upon their vast experience working with such large-scale systems at Yahoo! and LinkedIn, and bridge the gap between theory and practice by illustrating complex concepts with examples from applications they are directly involved with.

Interdisciplinary Advances in Information Technology Research

The Peacemaker's Code

Artificial Intelligence and Soft Computing

Machine Learning for Sustainable Development

Heuristic Search

Proceedings of International Conference on Advanced Computing Applications

ENABLING HEALTHCARE 4.0 for PANDEMICS The book explores the role and scope of AI, machine learning and other current technologies to handle pandemics. In this timely book, the editors explore the current state of practice in Healthcare 4.0 and provide a roadmap for harnessing artificial intelligence, machine learning, and Internet of Things, as well as other modern cognitive technologies, to aid in dealing with the various aspects of an emergency pandemic outbreak. There is a need to improvise healthcare systems with the intervention of modern computing and data management platforms to increase the reliability of human processes and life expectancy. There is an urgent need to come up with smart IoT-based systems which can aid in the detection, prevention and cure of these pandemics with more precision. There are a lot of challenges to overcome but this book proposes a new approach to organize the technological warfare for tackling future pandemics. In this book, the reader will find: State-of-the-art technological advancements in pandemic management; AI and ML-based identification and forecasting of pandemic spread; Smart IoT-based ecosystem for pandemic scenario. Audience The book will be used by researchers and practitioners in computer science, artificial intelligence, bioinformatics, data scientists, biomedical statisticians, as well as industry professionals in disaster and pandemic management.

Currently many different application areas for Big Data (BD) and Machine Learning (ML) are being explored. These promising application areas for BD/ML are the social sites, search engines, multimedia sharing sites, various stock exchange sites, online gaming, online survey sites and various news sites, and so on. To date, various use-cases for this application area are being researched and developed. Software applications are already being published and used in various settings from education and training to discover useful hidden patterns and other information like customer choices and market trends that can help organizations make more informed and customer-oriented business decisions. Combining BD with ML will provide powerful, largely unexplored application areas that will revolutionize practice in Videos Surveillance, Social Media Services, Email Spam and Malware Filtering, Online Fraud Detection, and so on. It is very important to continuously monitor and understand these effects from safety and societal point of view. Hence, the main purpose of this book is for researchers, software developers and practitioners, academicians and students to showcase novel use-cases and applications, present empirical research results from user-centered qualitative and quantitative experiments of these new applications, and facilitate a discussion forum to explore the latest trends in big data and machine learning by providing algorithms which can be trained to perform interdisciplinary techniques such as statistics, linear algebra, and optimization and also create automated systems that can sift through large volumes of data at high speed to make predictions or decisions without human intervention. This book provides a practical and fairly comprehensive review of Data Science through the lens of dimensionality reduction, as well as hands-on techniques to tackle problems with data collected in the real world. State-of-the-art results and solutions from statistics, computer science and mathematics are explained from the point of view of a

practitioner in any domain science, such as biology, cyber security, chemistry, sports science and many others. Quantitative and qualitative assessment methods are described to implement and validate the solutions back in the real world where the problems originated. The ability to generate, gather and store volumes of data in the order of tera- and exo bytes daily has far outpaced our ability to derive useful information with available computational resources for many domains. This book focuses on data science and problem definition, data cleansing, feature selection and extraction, statistical, geometric, information-theoretic, biomolecular and machine learning methods for dimensionality reduction of big datasets and problem solving, as well as a comparative assessment of solutions in a real-world setting. This book targets professionals working within related fields with an undergraduate degree in any science area, particularly quantitative. Readers should be able to follow examples in this book that introduce each method or technique. These motivating examples are followed by precise definitions of the technical concepts required and presentation of the results in general situations. These concepts require a degree of abstraction that can be followed by re-interpreting concepts like in the original example(s). Finally, each section closes with solutions to the original problem(s) afforded by these techniques, perhaps in various ways to compare and contrast dis/advantages to other solutions.

Because it makes the distribution and transmission of digital information much easier and more cost effective, multimedia has emerged as a top resource in the modern era. In spite of the opportunities that multimedia creates for businesses and companies, information sharing remains vulnerable to cyber attacks and hacking due to the open channels in which this data is being transmitted. Protecting the authenticity and confidentiality of information is a top priority for all professional fields that currently use multimedia practices for distributing digital data. The Handbook of Research on Multimedia Cyber Security provides emerging research exploring the theoretical and practical aspects of current security practices and techniques within multimedia information and assessing modern challenges. Featuring coverage on a broad range of topics such as cryptographic protocols, feature extraction, and chaotic systems, this book is ideally designed for scientists, researchers, developers, security analysts, network administrators, scholars, IT professionals, educators, and students seeking current research on developing strategies in multimedia security.

Human Compatible

India, that is Bharat

Enabling Healthcare 4.0 for Pandemics

Coloniality, Civilisation, Constitution

Statistical Methods for Recommender Systems

Volume 2: Societal and Medical Perspectives

As technology weaves itself more tightly into everyday life, socio-economic development has become intricately tied to these ever-evolving innovations. Technology management is now an integral element of sound business practices, and this revolution has opened up many opportunities for global communication. However, such swift change warrants greater research that can foresee and possibly prevent future complications within and between organizations. The Handbook of Research on Engineering Innovations and Technology Management in Organizations is a collection of innovative research that explores global concerns in the applications of technology to business and the explosive growth that resulted. Highlighting a wide range of topics such as cyber security, legal practice, and artificial intelligence, this book is ideally designed for engineers, manufacturers, technology managers, technology developers, IT specialists, productivity consultants, executives, lawyers, programmers, managers, policymakers, academicians, researchers, and students.

This book provides a comprehensive and self-contained introduction to federated learning, ranging from the basic knowledge and theories to various key applications. Privacy and incentive issues are the focus of this book. It is timely as federated learning is becoming popular after the release of the General Data Protection Regulation (GDPR). Since federated learning aims to enable a machine model to be collaboratively trained without each party exposing private data to others. This setting adheres to regulatory requirements of data privacy protection such as GDPR. This book contains three main parts. Firstly, it introduces different privacy-preserving methods for protecting a federated learning model against different types of attacks such as data leakage and/or data poisoning. Secondly, the book presents incentive mechanisms which aim to encourage individuals to participate in the federated learning ecosystems. Last but not least, this book also describes how federated learning can be applied in industry and business to address data silo and privacy-preserving problems. The book is intended for readers from both the academia and the industry, who would like to learn about federated learning, practice its implementation, and apply it in their own business. Readers are expected to have some basic understanding of linear algebra, calculus, and neural network. Additionally, domain knowledge in FinTech and marketing would be helpful."

A First Course in Artificial Intelligence Mathematics for Machine Learning Cambridge University Press

The concept of Artificial Intelligence (AI) & Machine Learning (ML) has been in practice for over years with the advent of technological progress. Over time, it has blended our lives through nearly every narration of learning, teaching, enjoyment, normal routine operations and what not. The aspect delivers a common understanding of the topics with reference to it making an impact on our lives, with a better framework of technology affecting our lives in particular. Let us look up to science for a change to be brought about in us. Let us create awareness of making technology available to people, in a broader sense. As that happens, people who are responsible need to be told about the use and misuse of the same. As we lead our lives, we come across the fact that AI, Robotics and Learning Machines seem to be the household topic of discussion. Earlier, AI was perceived to be reserved for only 'Geniuses' or 'Researchers' or the 'computer' community, but it very aptly integrates and impacts each and every aspect of our lives. Knowingly or unknowingly, it has become intellectually influential in shaping our thoughts, actions and the day-to-day chores.

Artificial Intelligence and Global Society

The Elements of Statistical Learning

Data Mining, Inference, and Prediction

BASICS OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

The Hundred-page Machine Learning Book

Impact and Practices

Over the last few decades, the constant developments in the IT field have expanded into nearly every discipline and aspect of life. Interdisciplinary Advances in Information

Technology Research explores multiple fields and the research done as well as how they

differentiate and relate to one another. This collection provides focused discussions from unique perspectives on the latest information technology research. Researchers, practitioners, and professionals will benefit from this publication's broad perspective. A Roadmap Using AI, Machine Learning, IoT and Cognitive Technologies