Improving Ai Decision Modeling Through Utility Theory

Most of the high-profile cases of real or perceived unethical activity in data science aren’t matters of bad intent. Rather, they occur because the ethics simply aren’t thought through well enough. Being ethical takes constant diligence, and in many situations identifying the right choice can be difficult. In this in-depth book, contributors from top companies in technology, finance, and other industries share experiences and lessons learned from collecting, managing, and analyzing data ethically. Data science professionals, managers, and tech leaders will gain a better understanding of ethics through powerful, real-world best practices. Articles include: Ethics Is Not a Binary Concept—Tim Wilson How to Approach Ethical Transparency—Rado Kotorov Unbiased ? Fair—Doug Hague Rules and Rationality—Christof Wolf Brenner The Truth About AI Bias—Cassie Kozyrkov Cautionary Ethics Tales—Sherrill Hayes Fairness in the Age of Algorithms—Anna Jacobson The Ethical Data Storyteller—Brent Dykes Introducing Ethicize™, the Fully AI-Driven Cloud-Based Ethics Solution!—Brian O’Neill Be Careful with "Decisions of the Heart"—Hugh Watson Understanding Passive Versus Proactive Ethics—Bill Schmarzo

Work with data like a pro using this guide that breaks down how to organize, apply, and most importantly, understand what you are analyzing in order to become a true data ninja. From the stock market to genomics laboratories, census figures to marketing email blasts, we are awash with data. But as anyone who has ever opened up a spreadsheet packed with seemingly infinite lines of data knows, numbers aren't enough: we need to know how to make those numbers talk. In The Model Thinker, social scientist Scott E. Page shows us the mathematical, statistical, and computational models—from linear regression to random walks and far beyond—that can turn anyone into a genius. At the core of the book is Page's "many-model paradigm," which shows the reader how to apply multiple models to organize the data, leading to wiser choices, more accurate predictions, and more robust designs. The Model Thinker provides a toolkit for business people, students, scientists, pollsters, and bloggers to make them better, clearer thinkers, able to leverage data and information to their advantage.

This text examines new research at the interface of operations research, behavioral and cognitive sciences, and decision analysis. From the cognitive behaviorist who collects empirical evidence as to how people make decisions to the engineer and economist who are the consumers of such understanding, the reader encounters the familiar Traveling Salesman Problem and Prisoner's dilemma, how agricultural decisions are made in Argentina's Pampas region, and some social goals that come into play as an element of rational decision-making. In these 14 self-contained chapters, broad topics covered include the integration of decision analysis and behavioral models, innovations in behavioral models, exploring descriptive behavior models, and experimental studies.

Why aren't the most powerful new technologies being used to solve the world's most important problems: hunger, poverty, conflict, employment, disease? In Link, Dr. Lorien Pratt answers these questions by exploring the solution that is emerging worldwide to take Artificial Intelligence to the next level: Decision Intelligence.

Blockchain is emerging as a powerful technology, which has attracted the wider attention of all businesses across the globe. In addition to financial businesses, IT companies and business organizations are keenly analyzing and adapting this technology for improving business processes. Security is the primary enterprise application. There are other crucial applications that include creating decentralized applications and smart contracts, which are being touted as the key differentiator of this pioneering technology. The power of any technology lies in its ecosystem. Product and tool vendors are building and releasing a variety of versatile and robust toolsets and platforms in order to speed up and simplify blockchain application development, deployment and management. There are other infrastructure-related advancements in order to streamline blockchain adoption. Cloud computing, big data analytics, machine and deep learning algorithm, and connected and embedded devices all are driving blockchain application development and deployment. Blockchain Technology and Applications illustrates how blockchain is being sustained through a host of platforms, programming languages, and enabling tools. It examines: Data confidential, integrity, and authentication Distributed consensus protocols and algorithms Blockchain systems design criteria and systems interoperability and scalability Integration with other technologies including cloud and big data It also details how blockchain is being blended with cloud computing, big data analytics and IoT across all industry verticals. The book gives readers insight into how this path-breaking technology can be a value addition in several business domains ranging from healthcare, financial services, government, supply chain and retail.

This volume constitutes the proceedings of the 20th IFIP WG 6.11 Conference on e-Business, e-Services, and e-Society, I3E 2021, held in Galway, Ireland, in September 2021.* The total of 57 full and 8 short papers presented in these volumes were carefully reviewed and selected from 141 submissions. The papers are organized in the following topical sections: AI for Digital Transformation and Public Good; AI & Analytics Decision Making; AI Philosophy, Ethics & Governance; Privacy & Transparency in a Digitized Society; Digital Enabled Sustainable Organizations and Societies; Digital Technologies and Organizational Capabilities; Digitized Supply Chains; Customer Behavior and E-business; Blockchain; Information Systems Development; Social Media & Analytics; and Teaching & Learning. *The conference was held virtually due to the COVID-19 pandemic.

Intelligent Decision Support Systems have the potential to transform human decision making by combining research in artificial intelligence, information technology, and systems engineering. The field of intelligent decision making is expanding rapidly due, in part, to advances in artificial intelligence and network-centric environments that can deliver the technology. Communication and coordination between dispersed systems can deliver just-in-time information, real-time processing, collaborative environments, and globally up-to-date information to a human decision maker. At the same time, artificial intelligence techniques have demonstrated that they have matured sufficiently to provide computational assistance to humans in practical applications. This book includes contributions from leading researchers in the field beginning with the foundations of human decision making and the complexity of the human cognitive system. Researchers contrast human and artificial intelligence, survey computational intelligence, present pragmatic systems, and discuss future trends. This book will be an invaluable resource to anyone interested in the current state of knowledge and key research gaps in the rapidly developing field of intelligent decision support.
--Book Jacket.

In January 2019, the National Academies of Sciences, Engineering, and Medicine convened the 2-day Workshop on Resourcing, Workforce Modeling, and Staffing. This workshop is one of several data-gathering sessions to support the committee's iterative study. The overarching goal of the study is to help the Veterans Health Administration (VHA) assess the overall resource needs of its Facilities Management Program and to develop budget and staffing methodologies. Such methodologies can provide better

justification for ensuring that local VHA programs are adequately and consistently staffed to accomplish the mission and meet all requirements. This publication summarizes the presentations and discussions from the workshop.

This book constitutes the refereed proceedings of the 12th IFIP WG 5.5/SOCOLNET Advanced Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2021, held in Costa de Caparica, Portugal, in July 2021.* The 34 papers presented were carefully reviewed and selected from 92 submissions. The papers present selected results produced in engineering doctoral programs and focus on technological innovation for industry and service systems. Research results and ongoing work are presented, illustrated and discussed in the following areas: collaborative networks; smart manufacturing; cyber-physical systems and digital twins; intelligent decision making; smart energy management; communications and electronics; classification systems; smart healthcare systems; and medical devices. *The conference was held virtually.

This book provides an overview of Federated Learning and how it can be used to build real-world AI-enabled applications. Real-world AI applications frequently have training data distributed in many different locations, with data at different sites having different properties and different formats. In many cases, data movement is not permitted due to security concerns, bandwidth, cost or regulatory restriction. Under these conditions, techniques of federated learning can enable creation of practical applications. Creating practical applications requires implementation of the cycle of learning from data, inferring from data, and acting based on the inference. This book will be the first one to cover all stages of the Learn-Infer-Act cycle, and presents a set of patterns to apply federation to all stages. Another distinct feature of the book is the use of real-world applications with an approach that discusses all aspects that need to be considered in an operational system, including handling of data issues during federation, maintaining compliance with enterprise security policies, and simplifying the logistics of federated AI in enterprise contexts. The book considers federation from a manner agnostic to the actual AI models, allowing the concepts to be applied to all varieties of AI models. This book is probably the first one to cover the space of enterprise AI-based applications in a holistic manner.

Successful games merge art and technology in truly unique ways. Fused under tight production deadlines and strict performance requirements, shaped by demanding player expectations, games are among the most complex software projects created today. Game AI Pro: Collected Wisdom of Game AI Professionals covers both the art and the technology of game AI. Nothing covered is theory or guesswork. The book brings together the accumulated wisdom, cutting-edge ideas, and clever tricks and techniques of 54 of today’s top game AI professionals. Some chapters present techniques that have been developed and passed down within the community for years while others discuss the most exciting new research and ideas from today’s most innovative games. The book includes core algorithms that you’ll need to succeed, such as behavior trees, utility theory, spatial representation, path planning, motion control, and tactical reasoning. It also describes tricks and techniques that will truly bring your game to life, including perception systems, social modeling, smart camera systems, player prediction, and even an AI sound designer. Throughout, the book discusses the optimizations and performance enhancements that enable your game to run while maintaining 60 frames per second.

This book will be bought by researchers and graduates students in Artificial Intelligence and management as well as practising managers and consultants interested in the application of IT and information systems in real business environment.

The last decade has experienced major societal challenges at the intersection of technological systems and policy making. Prevalent examples are the liberalization of energy and telecommunications markets, the public aversion towards nuclear power plants, the development of high-speed trains, the debates about global warming and sustainability, the development of intelligent vehicle systems, and the controversies concerning the location of waste depositories, airports, and energy systems. These challenges, coupled with the call from industry for a systems-engineering oriented approach to policy analysis, motivated Delft University of Technology to launch the first European School of Systems Engineering, Policy Analysis. and Management (SEPA). The purpose was to educate engineering oriented policy analysts in bridging the gap between engineering systems and policy decision making processes, both for the public and private sector. Up to now, more than 500 first-year students and 30 Ph.D. students have enrolled in the program. In 1993, I set up a class called Quantitative Methods for Problem Solving which had to address the most relevant issues in decision making for policy management, such as linear and non-linear optimization, multiattribute utility theory, multicriteria decision making, concepts from game theory, outranking relations, and probabilistic influence diagrams.

Physics of Data Science and Machine Learning links fundamental concepts of physics to data science, machine learning and artificial intelligence for physicists looking to integrate these techniques into their work. This book is written explicitly for physicists, marrying quantum and statistical mechanics with modern data mining, data science, and machine learning. It also explains how to integrate these techniques into the design of experiments, whilst exploring neural networks and machine learning building on fundamental concepts of statistical and quantum mechanics. This book is a self-learning tool for physicists looking to learn how to utilize data science and machine learning in their research. It will also be of interest to computer scientists and applied mathematicians, alongside graduate students looking to understand the basic concepts and foundations of data science, machine learning, and artificial intelligence. Although specifically written for physicists, it will also help provide non-physicists with an opportunity to understand the fundamental concepts from a physics perspective to aid the development of new and innovative machine learning and artificial intelligence tools. Key features: Introduces the design of experiments and digital twin concepts in simple lay terms for physicists to understand, adopt, and adapt. Free from endless derivations, instead equations are presented and explained strategically and explain why it is imperative to use them and how they will help in the task at hand. Illustrations and simple explanations help readers visualize and absorb the difficult to understand concepts. Ijaz A. Rauf is Adjunct Professor at the School of Graduate Studies, York University, Toronto, Canada. He is also an Associate Researcher at Ryerson University, Toronto, Canada and President of the Eminent-Tech Corporation, Bradford, ON, Canada.

The OECD Business and Finance Outlook is an annual publication that presents unique data and analysis on the trends, both positive and negative, that are shaping tomorrow’s world of business, finance and investment.

Based on dozens of successful projects around the word, this book lays out the basic elements of the approach in a practical how-to guide. Aimed at managers, not technical teams, this book will focus your e?orts to apply machine learning, arti?cial intelligence and predictive analytics.

The research surrounding artificial intelligence (AI) is vast and quite diverse in both its applied and theoretical fields. AI tools and techniques, such as machine learning, data mining, neural networks, and advanced analytics, are evolving at a

high speed, creating a consistent need for updated research. This is especially relevant with frequent developments for the application of AI technology in many science and industry sectors. This rapid expansion created a need for research that focuses on the questions surrounding the development of AI such as ethical issues, responsible AI methods and applications, and its widespread implementation. Within the answers to these questions is the prevailing notion that AI should be accountable, explainable, transparent, and fair for all organizations and individuals. Responsible AI and Ethical Issues for Businesses and Governments widens the understanding of AI outside of the “narrow” technical perspective to a broader viewpoint that embraces the links between AI theory, practice, and policy. The chapters in this book discuss the basic philosophical and conceptual foundations of AI and explores the responsible application of AI tools and methods, the moral aspects of AI, practical issues, and responsible AI implementation across a range of industries. While highlighting topics that include digital transformation, ethical competence, information literacy in AI, and the interaction between AI and humans, this book is ideally designed for IT specialists, technology developers, technologists, ethicists, practitioners, stakeholders, academicians, students, and researchers who are interested in learning more about the ethical and responsible use of AI.

Steve Rabin’s Game AI Pro 360: Guide to Architecture gathers all the cutting-edge information from his previous three Game AI Pro volumes into a convenient single source anthology covering game AI architecture. This volume is complete with articles by leading game AI programmers that further explore modern architecture such as behavior trees and share architectures used in top games such as Final Fantasy XV, the Call of Duty series and the Guild War series. Key Features Provides real-life case studies of game AI in published commercial games Material by top developers and researchers in Game AI Downloadable demos and/or source code available online

This book contains selected papers presented at the 14th IFIP WG 9.2, 9.6/11.7, 11.6/SIG 9.2.2 International Summer School on Privacy and Identity Management, held in Windisch, Switzerland, in August 2019. The 22 full papers included in this volume were carefully reviewed and selected from 31 submissions. Also included are reviewed papers summarizing the results of workshops and tutorials that were held at the Summer School as well as papers contributed by several of the invited speakers. The papers combine interdisciplinary approaches to bring together a host of perspectives, which are reflected in the topical sections: language and privacy; law, ethics and AI; biometrics and privacy; tools supporting data protection compliance; privacy classification and security assessment; privacy enhancing technologies in specific contexts. The chapters "What Does Your Gaze Reveal About You? On the Privacy Implications of Eye Tracking" and "Privacy Implications of Voice and Speech Analysis - Information Disclosure by Inference" are open access under a CC BY 4.0 license at link.springer.com.

Marketing models is a core component of the marketing discipline. The recent developments in marketing models have been incredibly fast with information technology (e.g., the Internet), online marketing (e-commerce) and customer relationship management (CRM) creating radical changes in the way companies interact with their customers. This has created completely new breeds of marketing models, but major progress has also taken place in existing types of marketing models. Handbook of Marketing Decision Models presents the state of the art in marketing decision models. The book deals with new modeling areas, such as customer relationship management, customer value and online marketing, as well as recent developments in other advertising, sales promotions, sales management, and competition are dealt with. New developments are in consumer decision models, models for return on marketing, marketing management support systems, and in special techniques such as time series and neural nets.

President Putin’s explicit declaration that the country that makes progress in artificial intelligence will rule the world has launched a new race for dominance. In this era of cognitive competition and total automation, every country understands that it must rapidly adopt AI or go bust. To stay competitive a country must have a strategy. But how should a government proceed? What areas it must focus on? Where should it even start? This book provides answers to these important, yet pertinent, questions and more. Presenting the viewpoints of global experts and thought leaders on key issues relating to AI and government policies, this book directs us to the future.

Analytics and artificial intelligence (AI), what are they good for? The bandwagon keeps answering, absolutely everything! Analytics and artificial intelligence have captured the attention of everyone from top executives to the person in the street. While these disciplines have a relatively long history, within the last ten or so years they have exploded into corporate business and public consciousness. Organizations have rushed to embrace data-driven decision making. Companies everywhere are turning out products boasting that "artificial intelligence is included." We are indeed living in exciting times. The question we need to ask is, do we really know how to get business value from these exciting tools? Unfortunately, both the analytics and AI communities have not done a great job in collaborating and communicating with each other to build the necessary synergies. This book bridges the gap between these two critical fields. The book begins by explaining the commonalities and differences in the fields of data science, artificial intelligence, and autonomy by giving a historical perspective for each of these fields, followed by exploration of common technologies and current trends in each field. The book also readers introduces to applications of deep learning in industry with an overview of deep learning and its key architectures, as well as a survey and discussion of the main applications of deep learning. The book also presents case studies to illustrate applications of AI and analytics. These include a case study from the healthcare industry and an investigation of a digital transformation enabled by AI and analytics transforming a product-oriented company into one delivering solutions and services. The book concludes with a proposed AI-informed data analytics life cycle to be applied to unstructured data.

"What does AI mean for your business? Read this book to find out." -- Hal Varian, Chief Economist, Google Artificial intelligence does the seemingly impossible, magically bringing machines to life--driving cars, trading stocks, and teaching children. But facing the sea change that AI will bring can be paralyzing. How should companies set strategies,

governments design policies, and people plan their lives for a world so different from what we know? In the face of such uncertainty, many analysts either cower in fear or predict an impossibly sunny future. But in Prediction Machines, three eminent economists recast the rise of AI as a drop in the cost of prediction. With this single, masterful stroke, they lift the curtain on the AI-is-magic hype and show how basic tools from economics provide clarity about the AI revolution and a basis for action by CEOs, managers, policy makers, investors, and entrepreneurs. When AI is framed as cheap prediction, its extraordinary potential becomes clear: Prediction is at the heart of making decisions under uncertainty. Our businesses and personal lives are riddled with such decisions. Prediction tools increase productivity--operating machines, handling documents, communicating with customers. Uncertainty constrains strategy. Better prediction creates opportunities for new business structures and strategies to compete. Penetrating, fun, and always insightful and practical, Prediction Machines follows its inescapable logic to explain how to navigate the changes on the horizon. The impact of AI will be profound, but the economic framework for understanding it is surprisingly simple.

Practitioners in apparel manufacturing and retailing enterprises in the fashion industry, ranging from senior to front line management, constantly face complex and critical decisions. There has been growing interest in the use of artificial intelligence (AI) techniques to enhance this process, and a number of AI techniques have already been successfully applied to apparel production and retailing. Optimizing decision making in the apparel supply chain using artificial intelligence (AI): From production to retail provides detailed coverage of these techniques, outlining how they are used to assist decision makers in tackling key supply chain problems. Key decision points in the apparel supply chain and the fundamentals of artificial intelligence techniques are the focus of the opening chapters, before the book proceeds to discuss the use of neural networks, genetic algorithms, fuzzy set theory and extreme learning machines for intelligent sales forecasting and intelligent product cross-selling systems. Helps the reader gain an understanding of the key decision points in the apparel supply chain Discusses the fundamentals of artificial intelligence techniques for apparel management techniques Considers the use of neural networks in selecting the location of apparel manufacturing plants

Real-life examples of how to apply intelligence in the healthcare industry through innovative analytics Healthcare analytics offers intelligence for making better healthcare decisions. Identifying patterns and correlations contained in complex health data, analytics has applications in hospital management, patient records, diagnosis, operating and treatment costs, and more. Helping healthcare managers operate more efficiently and effectively. Transforming Healthcare Analytics: The Quest for Healthy Intelligence shares real-world use cases of a healthcare company that leverages people, process, and advanced analytics technology to deliver exemplary results. This book illustrates how healthcare professionals can transform the healthcare industry through analytics. Practical examples of modern techniques and technology show how unified analytics with data management can deliver insight-driven decisions. The authors—a data management and analytics specialist and a healthcare finance executive—share their unique perspectives on modernizing data and analytics platforms to alleviate the complexity of the healthcare, distributing capabilities and analytics to key stakeholders, equipping healthcare organizations with intelligence to prepare for the future, and more. This book: Explores innovative technologies to overcome data complexity in healthcare Highlights how analytics can help with healthcare market analysis to gain competitive advantage Provides strategies for building a strong foundation for healthcare intelligence Examines managing data and analytics from end-to-end, from diagnosis, to treatment, to provider payment Discusses the future of technology and focus areas in the healthcare industry Transforming Healthcare Analytics: The Quest for Healthy Intelligence is an important source of information for CFO’s, CIO, CTO, healthcare managers, data scientists, statisticians, and financial analysts at healthcare institutions.

Formal decision and evaluation models are so widespread that almost no one can pretend not to have used or suffered the consequences of one of them. This book is a guide aimed at helping the analyst to choose a model and use it consistently. A sound analysis of techniques is proposed and the presentation can be extended to most decision and evaluation models as a "decision aiding methodology".

With contributions from a wide array of economists, ecologists, and government agency professionals, Economics and Ecological Risk Assessment: Applications to Watershed Management provides a multidisciplinary approach to environmental decision-making at a watershed level. It introduces the fields of ecological risk assessment (ERA) and economic ana

This book includes revised selected papers from five International Workshops on Artificial Intelligence Approaches to the Complexity of Legal Systems, AICOL VI to AICOL X, held during 2015-2017: AICOL VI in Braga, Portugal, in December 2015 as part of JURIX 2015; AICOL VII at EKAW 2016 in Bologna, Italy, in November 2016; AICOL VIII in Sophia Antipolis, France, in December 2016; AICOL IX at ICAIL 2017 in London, UK, in June 2017; and AICOL X as part of JURIX 2017 in Luxembourg, in December 2017. The 37 revised full papers included in this volume were carefully reviewed and selected form 69 submissions. They represent a comprehensive picture of the state of the art in legal informatics. The papers are organized in six main sections: legal philosophy, conceptual analysis, and epistemic approaches; rules and norms analysis and representation;legal vocabularies and natural language processing; legal ontologies and semantic annotation; legal argumentation; and courts, adjudication and dispute resolution.

This volume, developed in honor of Dr. Dundar F. Kocaoglu, aims to demonstrate the applications of the Hierarchical Decision Model (HDM) in different sectors and its capacity in decision analysis. It is comprised of essays from noted scholars, academics and researchers of engineering and technology management around the world. This book is organized into five parts: Technology Policy Planning, Strategic Technology Planning, Technology Assessment, Application Extensions, and Methodology Extensions. Dr. Dundar F. Kocaoglu is one of the pioneers of multiple decision models using hierarchies, and creator of the HDM in decision analysis. HDM is a mission-oriented method for evaluation and/or selection among alternatives. A wide range of alternatives can be considered, including but not limited to, different technologies, projects, markets, jobs, products, cities to live in, houses to buy, apartments to rent, and schools to attend. Dr. Kocaoglu’s approach has been adopted for decision problems in many industrial sectors, including electronics research and development, education, government planning, agriculture, energy, technology transfer, semiconductor manufacturing, and has influenced policy locally, nationally, and internationally. Moreover, his students developed advanced tools and software applications to further improve and enhance the robustness of the HDM approach. Dr. Kocaoglu has made many contributions to the field of Engineering and Technology Management. During his tenure at Portland State University, he founded the Engineering and Technology Management program, where he served as Program Director and later, Department Chair. He also started the Portland International Conference on Management of Engineering and Technology (PICMET), which organizes an annual conference in international locations such as Korea, Turkey, South Africa, Thailand, and Japan. His teaching has won awards and resulted in a strong sense of student loyalty among his students even decades later. Through his academic work and research, Dr. Kocaoglu has strongly supported researchers of engineering management and has provided tremendous service to the field. This volume recognizes and celebrates Dr. Kocaoglu’s profound contributions to the field, and will serve as a resource for generations of researchers, practitioners and students.

The rise of artificial intelligence and its countless branches have caused many professional industries to rethink their traditional methods of practice and develop new techniques to keep pace with technological advancement. The continued use of intelligent technologies in the professional world has propelled researchers to contemplate future opportunities and challenges that artificial intelligence may withhold.

Significant research is a necessity for understanding future trends of artificial intelligence and the preparation of prospective issues. Analyzing Future Applications of AI, Sensors, and Robotics in Society provides emerging research exploring the potential uses and future challenges of intelligent technological advancements and their impact in education, finance, politics, business, healthcare, and engineering. Featuring coverage on a broad range of topics such as neuronal networks, cognitive computing, and e-health, this book is ideally designed for practitioners, researchers, scientists, executives, strategists, policymakers, academicians, government officials, developers, and students seeking current research on future societal uses of intelligent technology.

While corporate governance has been a successful concept throughout the centuries, it is in question whether this concept can remain sustainable in the digital era and during a time of technological and managerial disruption. Under the pressure of new economic, social, and ecologic challenges, it is vital to understand how this concept needs to transform. Challenges and Opportunities of Corporate Governance Transformation in the Digital Era is an essential reference source that discusses concepts, trends, and forecasts of corporate governance and examines its transformation under the pressure of new technologies and economic changes. Featuring research on topics such as corporate identity, e-commerce, and cost management, this book is ideally designed for corporate leaders, managers, executives, business professionals, consultants, professors, researchers, and students.

The book deals with the digital turn in higher education: One aim of this book is to address the challenge by providing a multi-disciplinary, international perspective on higher education during the digital turn. It presents epistemological, ethical and theoretical approaches, and best practice examples, from universities in different countries using different learning strategies. The book can be understood as an international and interdisciplinary collection providing heuristic strategies for handling the digitalization of higher education in theory and in practice.

This book presents different techniques and methodologies that used to help improve the decision-making process and increase the likelihood of success in sector as follows: agriculture, financial services, logistics, energy services, health and others. This book collects and consolidates innovative and high-quality research contributions regarding the implementation techniques and methodologies applied in different industrial sectors. The scope is to disseminate current trends knowledge in the implementation of artificial intelligence techniques and methodologies in different fields as follows: supply chain, business intelligence, e-commerce, social media and others. The book contents are useful for Ph.D., Ph.D. students, master and undergraduate students, and professional and students in industrial engineering, computer science, information systems, data analytics and others. .

With the emergence of Artificial Intelligence (AI) in the business world, a new era of Business Intelligence (BI) has been ushered in to create real-world business solutions using analytics. BI developers and practitioners now have tools and technologies to create systems and solutions to guide effective decision making. Decisions can be made on the basis of more reliable and accurate information and intelligence, which can lead to valuable, actionable insights for business. Previously, BI professionals were stymied by bad or incomplete data, poorly architected solutions, or even just outright incapable systems or resources. With the advent of AI, BI has new possibilities for effectiveness. This is a long-awaited phase for practitioners and developers and, moreover, for executives and leaders relying on knowledgeable and intelligent decision making for their organizations. Beginning with an outline of the traditional methods for implementing BI in the enterprise and how BI has evolved into using self-service analytics, data discovery, and most recently AI, AI Meets BI first lays out the three typical architectures of the first, second, and third generations of BI. It then takes an in-depth look at various types of analytics and highlights how each of these can be implemented using AI-enabled algorithms and deep learning models. The crux of the book is four industry use cases. They describe how an enterprise can access, assess, and perform analytics on data by way of discovering data, defining key metrics that enable the same, defining governance rules, and activating metadata for AI/ML recommendations. Explaining the implementation specifics of each of these four use cases by way of using various AI-enabled machine learning and deep learning algorithms, this book provides complete code for each of the implementations, along with the output of the code, supplemented by visuals that aid in BI-enabled decision making. Concluding with a brief discussion of the cognitive computing aspects of AI, the book looks at future trends, including augmented analytics, automated and autonomous BI, and security and governance of AI-powered BI.

Technological developments in recent years have been tremendous. This evolution is visible in companies through technological equipment, computerized procedures, and management practices associated with technologies. One of the management practices that is visible is related to business intelligence and analytics (BI&A). Concepts such as data warehousing, key performance indicators (KPIs), data mining, and dashboards are changing the business arena. This book aims to promote research related to these new trends that open up a new field of research in the small and medium enterprises (SMEs) area. Features Focuses on the more recent research findings occurring in the fields of BI&A Conveys how companies in the developed world are facing today's technological challenges Shares knowledge and insights on an international scale Provides different options and strategies to manage competitive organizations Addresses several dimensions of BI&A in favor of SMEs

The past few years have seen rapid developments in computer technology, giving rise to a range of system control options which can be applied in the process industries. These include; open systems, expert systems, neural networks, fuzzy systems and object-oriented systems, all of which are covered in this key volume, which provides an invaluable summary of the latest international research in this area.