

Big Data Oil And Gas

Big Data Analytics with SAS
 IoT for Smart Operations in the Oil and Gas Industry
 Data-Driven Analytics for the Geological Storage of CO2
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 Bits, Bytes, and Barrels
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 Understanding Data Analytics and Predictive Modelling in the Oil and Gas Industry
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 Enterprise Big Data Engineering, Analytics, and Management
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 Knowledge Graphs and Big Data Processing
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 Marine Big Data
 Enhance Oil and Gas Exploration with Data-Driven Geophysical and Petrophysical Models
 Learning in the Field
 AI and Machine Learning for Coders
 Intelligent Digital Oil and Gas Fields
 Digital Oil
 Application of Big Data in Petroleum Streams

Big Data Oil And Gas

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Big Data Analytics with SAS Gulf Professional Publishing

Use big data analytics to efficiently drive oil and gas exploration and production Harness Oil and Gas Big Data with Analytics provides a complete view of big data and analytics techniques as they are applied to the oil and gas industry. Including a compendium of specific case studies, the book underscores the acute need for optimization in the oil and gas exploration and production stages and shows how data analytics can provide such optimization. This spans exploration, development, production and rejuvenation of oil and gas assets. The book serves as a guide for fully leveraging data, statistical, and quantitative analysis, exploratory and predictive modeling, and fact-based management to drive decision making in oil and gas operations. This comprehensive resource delves into the three major issues that face the oil and gas industry during the exploration and production stages: Data management, including storing massive quantities of data in a manner

conducive to analysis and effectively retrieving, backing up, and purging data Quantification of uncertainty, including a look at the statistical and data analytics methods for making predictions and determining the certainty of those predictions Risk assessment, including predictive analysis of the likelihood that known risks are realized and how to properly deal with unknown risks Covering the major issues facing the oil and gas industry in the exploration and production stages, Harness Big Data with Analytics reveals how to model big data to realize efficiencies and business benefits.

[IoT for Smart Operations in the Oil and Gas Industry](#) Columbia University Press

This comprehensive book highlights soft computing and geostatistics applications in hydrocarbon exploration and production, combining practical and theoretical aspects. It spans a wide spectrum of applications in the oil industry, crossing many discipline boundaries such as geophysics, geology, petrophysics and reservoir engineering. It is complemented by several tutorial chapters on fuzzy logic, neural networks and genetic algorithms and geostatistics to introduce these concepts to the uninitiated. The application areas include prediction of reservoir properties

(porosity, sand thickness, lithology, fluid), seismic processing, seismic and bio stratigraphy, time lapse seismic and core analysis. There is a good balance between introducing soft computing and geostatistics methodologies that are not routinely used in the petroleum industry and various applications areas. The book can be used by many practitioners such as processing geophysicists, seismic interpreters, geologists, reservoir engineers, petrophysicist, geostatisticians, asset managers and technology application professionals. It will also be of interest to academics to assess the importance of, and contribute to, R&D efforts in relevant areas.

Data-Driven Analytics for the Geological Storage of CO2 Springer

"Leverage Big Data analytics methodologies to add value to geophysical and petrophysical exploration data Enhance Oil & Gas Exploration with Data-Driven Geophysical and Petrophysical Models demonstrates a new approach to geophysics and petrophysics data analysis using the latest methods drawn from Big Data. Written by two geophysicists with a combined 30 years in the industry, this book shows you how to leverage continually maturing computational intelligence to gain deeper insight from specific exploration data. Case studies illustrate the value propositions of

this alternative analytical workflow, and in-depth discussion addresses the many Big Data issues in geophysics and petrophysics. From data collection and context through real-world everyday applications, this book provides an essential resource for anyone involved in oil and gas exploration. Recent and continual advances in machine learning are driving a rapid increase in empirical modeling capabilities. This book shows you how these new tools and methodologies can enhance geophysical and petrophysical data analysis, increasing the value of your exploration data. Apply data-driven modeling concepts in a geophysical and petrophysical context Learn how to get more information out of models and simulations Add value to everyday tasks with the appropriate Big Data application Adjust methodology to suit diverse geophysical and petrophysical contexts Data-driven modeling focuses on analyzing the total data within a system, with the goal of uncovering connections between input and output without definitive knowledge of the system's physical behavior. This multi-faceted approach pushes the boundaries of conventional modeling, and brings diverse fields of study together to apply new information and technology in new and more valuable ways. Enhance Oil & Gas Exploration with Data-Driven Geophysical and Petrophysical Models takes you beyond traditional deterministic interpretation to the future of exploration data analysis"--

New Horizons for a Data-Driven Economy Springer Nature

Intelligent Digital Oil and Gas Fields: Concepts, Collaboration, and Right-time Decisions delivers to the reader a roadmap through the fast-paced changes in the digital oil field landscape of technology in the form of new sensors, well mechanics such as downhole valves, data analytics and models for dealing with a barrage of data, and changes in the way professionals collaborate on decisions. The book introduces the new age of digital oil and gas technology and process components and provides a backdrop to the value and experience industry has achieved from these in the last few years. The book then takes the reader on a journey first at a well level through instrumentation and measurement for real-time data acquisition, and then provides practical information on analytics on the real-time data. Artificial intelligence techniques provide insights from the data. The road then travels to the "integrated asset" by detailing how companies utilize Integrated Asset Models to manage assets (reservoirs) within DOF context. From model to practice, new ways to operate smart wells enable optimizing the asset. Intelligent Digital Oil and Gas Fields is packed with examples and lessons learned from various case studies and provides extensive references for further reading and a final chapter on the "next generation digital oil field," e.g., cloud computing, big data analytics and advances in nanotechnology. This book is a reference that can help managers, engineers, operations, and IT experts understand specifics on how to filter data to create useful information, address analytics, and link workflows across the production value chain enabling teams to make better decisions with a higher degree of certainty and reduced risk. Covers multiple examples and lessons learned from a variety of reservoirs from around the world and production situations Includes techniques on change management and collaboration Delivers real and readily applicable knowledge on technical equipment, workflows and data challenges such as acquisition and quality control that make up the digital oil and gas field solutions of today Describes collaborative systems and ways of working and how companies are transitioning work force to use the technology and making more optimal decisions [Energy's Digital Future](#) Madcann Press

Leverage the capabilities of SAS to process and analyze Big Data About This Book Combine SAS with platforms such as Hadoop, SAP HANA, and Cloud Foundry-based platforms for efficient Big Data analytics Learn how to use the web browser-based SAS Studio and iPython Jupyter Notebook interfaces with SAS Practical, real-world examples on predictive modeling, forecasting, optimizing and reporting your Big Data analysis with SAS Who This Book Is For SAS professionals and data analysts who wish to perform analytics on Big Data using SAS to gain actionable insights will find this book to be very useful. If you are a data science professional looking to perform large-scale analytics with SAS, this book will also help you. A basic understanding of SAS will be helpful, but is not mandatory. What You Will Learn Configure a free version of SAS in order to do hands-on exercises dealing with data management, analysis, and reporting. Understand the basic concepts of the SAS language which consists of the data step (for data preparation) and procedures (or PROCs) for analysis. Make use of the web browser based SAS Studio and iPython Jupyter Notebook interfaces for coding in the SAS, DS2, and FedSQL programming languages. Understand how the DS2 programming language plays an important role in Big Data preparation and analysis using SAS Integrate and work efficiently with Big Data platforms like Hadoop, SAP HANA, and cloud foundry based systems. In Detail SAS has been recognized by Money Magazine and Payscale as one of the

top business skills to learn in order to advance one's career. Through innovative data management, analytics, and business intelligence software and services, SAS helps customers solve their business problems by allowing them to make better decisions faster. This book introduces the reader to the SAS and how they can use SAS to perform efficient analysis on any size data, including Big Data. The reader will learn how to prepare data for analysis, perform predictive, forecasting, and optimization analysis and then deploy or report on the results of these analyses. While performing the coding examples within this book the reader will learn how to use the web browser based SAS Studio and iPython Jupyter Notebook interfaces for working with SAS. Finally, the reader will learn how SAS's architecture is engineered and designed to scale up and/or out and be combined with the open source offerings such as Hadoop, Python, and R. By the end of this book, you will be able to clearly understand how you can efficiently analyze Big Data using SAS. Style and approach The book starts off by introducing the reader to SAS and the SAS programming language which provides data management, analytical, and reporting capabilities. Most chapters include hands on examples which highlights how SAS provides The Power to Know©. The reader will learn that if they are looking to perform large-scale data analysis that SAS provides an open platform engineered and designed to scale both up and out which allows the power of SAS to combine with open source offerings such as Hadoop, Python, and R.

Data Analytics for Drilling Engineering MIT Press

Machine Learning and Data Science in the Oil and Gas Industry explains how machine learning can be specifically tailored to oil and gas use cases. Petroleum engineers will learn when to use machine learning, how it is already used in oil and gas operations, and how to manage the data stream moving forward. Practical in its approach, the book explains all aspects of a data science or machine learning project, including the managerial parts of it that are so often the cause for failure. Several real-life case studies round out the book with topics such as predictive maintenance, soft sensing, and forecasting. Viewed as a guide book, this manual will lead a practitioner through the journey of a data science project in the oil and gas industry circumventing the pitfalls and articulating the business value. Chart an overview of the techniques and tools of machine learning including all the non-technological aspects necessary to be successful Gain practical understanding of machine learning used in oil and gas operations through contributed case studies Learn change management skills that will help gain confidence in pursuing the technology Understand the workflow of a full-scale project and where machine learning benefits (and where it does not)

Practical Big Data Analytics Gulf Professional Publishing

Get command of your organizational Big Data using the power of data science and analytics Key Features A perfect companion to boost your Big Data storing, processing, analyzing skills to help you take informed business decisions Work with the best tools such as Apache Hadoop, R, Python, and Spark for NoSQL platforms to perform massive online analyses Get expert tips on statistical inference, machine learning, mathematical modeling, and data visualization for Big Data Book Description Big Data analytics relates to the strategies used by organizations to collect, organize and analyze large amounts of data to uncover valuable business insights that otherwise cannot be analyzed through traditional systems. Crafting an enterprise-scale cost-efficient Big Data and machine learning solution to uncover insights and value from your organization's data is a challenge. Today, with hundreds of new Big Data systems, machine learning packages and BI Tools, selecting the right combination of technologies is an even greater challenge. This book will help you do that. With the help of this guide, you will be able to bridge the gap between the theoretical world of technology with the practical ground reality of building corporate Big Data and data science platforms. You will get hands-on exposure to Hadoop and Spark, build machine learning dashboards using R and R Shiny, create web-based apps using NoSQL databases such as MongoDB and even learn how to write R code for neural networks. By the end of the book, you will have a very clear and concrete understanding of what Big Data analytics means, how it drives revenues for organizations, and how you can develop your own Big Data analytics solution using different tools and methods articulated in this book. What you will learn - Get a 360-degree view into the world of Big Data, data science and machine learning - Broad range of technical and business Big Data analytics topics that caters to the interests of the technical experts as well as corporate IT executives - Get hands-on experience with industry-standard Big Data and machine learning tools such as Hadoop, Spark, MongoDB, KDB+ and R - Create production-grade machine learning BI Dashboards using R and R Shiny with step-by-step instructions - Learn how to combine open-source Big Data, machine learning and BI Tools to create low-cost business analytics

applications - Understand corporate strategies for successful Big Data and data science projects - Go beyond general-purpose analytics to develop cutting-edge Big Data applications using emerging technologies Who this book is for The book is intended for existing and aspiring Big Data professionals who wish to become the go-to person in their organization when it comes to Big Data architecture, analytics, and governance. While no prior knowledge of Big Data or related technologies is assumed, it will be helpful to have some programming experience.

A Digital Journey: the Transformation of the Oil and Gas Industry O'Reilly Media

Process Safety and Big Data discusses the principles of process safety and advanced information technologies. It explains how these principles are applied to the process industry and provides examples of applications in process safety control and decision support systems. This book helps to address problems that researchers face in industry that are the result of increased process complexity and that have an impact on safety issues. It shows ways to tackle these safety issues by implementing modern information technologies, such as big data analysis and artificial intelligence. It provides an integrated approach to modern information technologies used in control and management of process safety in industry. The book also considers indicators and criteria in effective safety decisions, and addresses the issue of how big data would provide support for improved, autonomous, data-driven decisions. Paves the way for the digital transformation of safety science and safety management Takes a system approach to advanced information technologies used in process safety Applies big data technologies to process safety Includes multiple pertinent case studies

Analytics Across the Enterprise John Wiley & Sons

Data Room Management and Rapid Asset Evaluation - Theory and Case Studies in Oil and Gas, Volume 66 introduces frameworks and workflows that help streamline the data room process, highlight the essential data that must be assembled in the permitted time window, and accelerate the subsequent assessment of the opportunity. The book combines theory with case studies, some of which describe lessons learned directly by the author himself. Methodologies are presented that can be used immediately by those involved in the technical and commercial evaluation of oil and gas exploration and production ventures. The book is suitable for readers with a wide spectrum of experience, from those who are newcomers to the strange world of data rooms, to those diehards who may have spent too many hours in them. The purposes, strategies, and tactics of data rooms are explained, along with some suggestions on how to survive them, and how to get a fit-for-purpose evaluation in front of the decision makers in the shortest timeframe possible. Demonstrates what makes a good data room, including how vendors attract potential buyers to attend and how the latter can decide whether they should go or not Presents how to prepare for a data room, what needs to be done there, and how to evaluate the assets on offer as quickly as possible Covers which essential data should be gathered and questions to ask Suggests how to avoid common 'banana skins' when under pressure to provide a rapid but reasonable evaluation

[Guide to Big Data Applications](#) IBM Press

Today, raw data on any industry is widely available. With the help of artificial intelligence (AI) and machine learning (ML), this data can be used to gain meaningful insights. In addition, as data is the new raw material for today's world, AI and ML will be applied in every industrial sector. Industry 4.0 mainly focuses on the automation of things. From that perspective, the oil and gas industry is one of the largest industries in terms of economy and energy. Applications of Artificial Intelligence (AI) and Machine Learning (ML) in the Petroleum Industry analyzes the use of AI and ML in the oil and gas industry across all three sectors, namely upstream, midstream, and downstream. It covers every aspect of the petroleum industry as related to the application of AI and ML, ranging from exploration, data management, extraction, processing, real-time data analysis, monitoring, cloud-based connectivity system, and conditions analysis, to the final delivery of the product to the end customer, while taking into account the incorporation of the safety measures for a better operation and the efficient and effective execution of operations. This book explores the variety of applications that can be integrated to support the existing petroleum and adjacent sectors to solve industry problems. It will serve as a useful guide for professionals working in the petroleum industry, industrial engineers, AI and ML experts and researchers, as well as students.

[Machine Learning and Data Science in the Oil and Gas Industry](#) John Wiley & Sons

The book aims to provide comprehensive knowledge and information pertaining to application or implementation of big data in the petroleum industry and its operations (such as exploration, production, refining and finance). The book covers intricate aspects of big data such as 6Vs, benefits, applications, implementation, research work and real-world implementation pertaining to

each petroleum-associated operation in a concise manner that aids the reader to apprehend the overview of big data's role in the industry. The book resonates with readers who wish to understand the intricate details of working with big data (along with data science, machine learning and artificial intelligence) in general and how it affects and impacts an entire industry. As the book builds various concepts of big data from scratch to industry level, readers who wish to gain big data-associated knowledge of industry level in simple language from the very fundamentals would find this a wonderful read.

Bits, Bytes, and Barrels SAGE

This handbook brings together a variety of approaches to the uses of big data in multiple fields, primarily science, medicine, and business. This single resource features contributions from researchers around the world from a variety of fields, where they share their findings and experience. This book is intended to help spur further innovation in big data. The research is presented in a way that allows readers, regardless of their field of study, to learn from how applications have proven successful and how similar applications could be used in their own field. Contributions stem from researchers in fields such as physics, biology, energy, healthcare, and business. The contributors also discuss important topics such as fraud detection, privacy implications, legal perspectives, and ethical handling of big data.

Applications of Artificial Intelligence (AI) and Machine Learning (ML) in the Petroleum Industry John Wiley & Sons

Applied Statistical Modeling and Data Analytics: A Practical Guide for the Petroleum Geosciences provides a practical guide to many of the classical and modern statistical techniques that have become established for oil and gas professionals in recent years. It serves as a "how to" reference volume for the practicing petroleum engineer or geoscientist interested in applying statistical methods in formation evaluation, reservoir characterization, reservoir modeling and management, and uncertainty quantification. Beginning with a foundational discussion of exploratory data analysis, probability distributions and linear regression modeling, the book focuses on fundamentals and practical examples of such key topics as multivariate analysis, uncertainty quantification, data-driven modeling, and experimental design and response surface analysis. Data sets from the petroleum geosciences are extensively used to demonstrate the applicability of these techniques. The book will also be useful for professionals dealing with subsurface flow problems in hydrogeology, geologic carbon sequestration, and nuclear waste disposal. Authored by internationally renowned experts in developing and applying statistical methods for oil & gas and other subsurface problem domains Written by practitioners for practitioners Presents an easy to follow narrative which progresses from simple concepts to more challenging ones Includes online resources with software applications and practical examples for the most relevant and popular statistical methods, using data sets from the petroleum geosciences Addresses the theory and practice of statistical modeling and data analytics from the perspective of petroleum geoscience applications

Oil and Gas Production Handbook: An Introduction to Oil and Gas Production Springer

The significance of big data can be observed in any decision-making process as it is often used for forecasting and predictive analytics. Additionally, big data can be used to build a holistic view of an enterprise through a collection and analysis of large data sets retrospectively. As the data deluge deepens, new methods for analyzing, comprehending, and making use of big data become necessary. *Enterprise Big Data Engineering, Analytics, and Management* presents novel methodologies and practical approaches to engineering, managing, and analyzing large-scale data sets with a focus on enterprise applications and implementation. Featuring essential big data concepts including data mining, artificial intelligence, and information extraction, this publication provides a platform for retargeting the current research available in the field. Data analysts, IT

professionals, researchers, and graduate-level students will find the timely research presented in this publication essential to furthering their knowledge in the field.

Data-Driven Analytics for the Geological Storage of CO2 Elsevier

Industry professionals will appreciate the authors' approach to developing a digital strategy from the bottom up, avoiding pitfalls from the tempting short cuts, to deliver data the business needs to gain a sustainable competitive advantage. Best practices are identified from an organization, process, and technology perspective, providing insight into how companies should prepare for and begin the digital journey. It is apparent to everyone within the Industry that significant changes are underway. These changes are being driven by the need to operate more efficiently and with fewer people. Picture a general flow of getting more for less, but on steroids! A catalyst for this change has been the application of digital technology, wherein lies a new focus on data science and analytics. This is starting to result in real and significant improvements to overall business performance for some operators. While big data and analytics get most of the attention, it is only one aspect of a broader movement that is popularly referred to as the Digital Transformation and which we have categorized as the Digital Oilfield 2.0; the next phase of the Digital Transformation. One critical aspect of the Digital Transformation that typically gets overlooked is the need for effective data management across the full Well lifecycle. The result of this lack of focus on the fundamentals is that many big data and analytics projects fail to deliver fully on the promised benefits with the occasional spectacular failure. In this book, the authors investigate and analyze the industry and technology trends that are driving the next phase of the Digital Transformation. They break this down into the component parts and present a framework for building an effective master data management platform and organization - it is not just about the technology. Combining this framework with best practices gathered over decades in the business, the authors present an approach to building out a Digital Strategy to help companies that are struggling to define their own journey towards a Digital Transformation.

Understanding Data Analytics and Predictive Modelling in the Oil and Gas Industry CRC Press

How is digitalization of the offshore oil industry fundamentally changing how we understand work and ways of knowing? Digitalization sits at the forefront of public and academic conversation today, calling into question how we work and how we know. In *Digital Oil*, Eric Monteiro uses the Norwegian offshore oil and gas industry as a lens to investigate the effects of digitalization on embodied labor, and in doing so shows how our use of new digital technology transforms work and knowing. For years, roughnecks have performed the dangerous and unwieldy work of extracting the oil that lies three miles below the seabed along the Norwegian Continental Shelf. Today, the Norwegian oil industry is largely digital, operated by sensors and driven by data. Digital representations of physical processes inform work practices and decision-making with remotely operated, unmanned deep-sea facilities. Drawing on two decades of in-depth interviews, observations, news clips, and studies of this industry, Eric Monteiro dismantles the divide between the virtual and the physical in *Digital Oil*. What is gained or lost when objects and processes become algorithmic phenomena with the digital inferred from the physical? How can data-driven work practices and operational decision-making approximate qualitative interpretation, professional judgement, and evaluation? How are emergent digital platforms and infrastructures, as machineries of knowing, enabling digitalization? In answering these questions Monteiro offers a novel analysis of digitalization as an effort to press the limits of quantification of the qualitative.

The Data Industry Springer Nature

This book presents the signal processing and data mining challenges encountered in drilling engineering, and describes the methods used to overcome them. In drilling engineering, many signal processing technologies are required to solve practical problems, such as downhole

information transmission, spatial attitude of drillstring, drillstring dynamics, seismic activity while drilling, among others. This title attempts to bridge the gap between the signal processing and data mining and oil and gas drilling engineering communities. There is an urgent need to summarize signal processing and data mining issues in drilling engineering so that practitioners in these fields can understand each other in order to enhance oil and gas drilling functions. In summary, this book shows the importance of signal processing and data mining to researchers and professional drilling engineers and open up a new area of application for signal processing and data mining scientists.

Applied Statistical Modeling and Data Analytics Gulf Professional Publishing

To help you navigate the large number of new data tools available, this guide describes 60 of the most recent innovations, from NoSQL databases and MapReduce approaches to machine learning and visualization tools. Descriptions are based on first-hand experience with these tools in a production environment. This handy glossary also includes a chapter of key terms that help define many of these tool categories: NoSQL Databases—Document-oriented databases using a key/value interface rather than SQL MapReduce—Tools that support distributed computing on large datasets Storage—Technologies for storing data in a distributed way Servers—Ways to rent computing power on remote machines Processing—Tools for extracting valuable information from large datasets Natural Language Processing—Methods for extracting information from human-created text Machine Learning—Tools that automatically perform data analyses, based on results of a one-off analysis Visualization—Applications that present meaningful data graphically Acquisition—Techniques for cleaning up messy public data sources Serialization—Methods to convert data structure or object state into a storable format

Machine Learning Guide for Oil and Gas Using Python Springer Nature

This book covers aspects of data science and predictive analytics used in the oil and gas industry by looking into the challenges of data processing and data modelling unique to this industry. It includes upstream management, intelligent/digital wells, value chain integration, crude basket forecasting, and so forth. It further discusses theoretical, methodological, well-established, and validated empirical work dealing with various related topics. Special focus has been given to experimental topics with various case studies. Features: Provides an understanding of the basics of IT technologies applied in the oil and gas sector Includes deep comparison between different artificial intelligence techniques Analyzes different simulators in the oil and gas sector as well as discussion of AI applications Focuses on in-depth experimental and applied topics Details different case studies for upstream and downstream This book is aimed at professionals and graduate students in petroleum engineering, upstream industry, data analytics, and digital transformation process in oil and gas.

Big Data Glossary Lulu.com

This book reviews the state of the art in big data analysis and networks technologies. It addresses a range of issues that pertain to: signal processing, probability models, machine learning, data mining, databases, data engineering, pattern recognition, visualization, predictive analytics, data warehousing, data compression, computer programming, smart cities, networks technologies, etc. Data is becoming an increasingly decisive resource in modern societies, economies, and governmental organizations. In turn, data science inspires novel techniques and theories drawn from mathematics, statistics, information theory, computer science, and the social sciences. All papers presented here are the product of extensive field research involving applications and techniques related to data analysis in general, and to big data and networks technologies in particular. Given its scope, the book will appeal to advanced undergraduate and graduate students, postdoctoral researchers, lecturers and industrial researchers, as well general readers interested in big data analysis and networks technologies.