# Advanced Analytical Solutions

With integrated R Services within SQL Server 2017, developers and data scientists can now benefit from the integrated, effective, efficient and more streamlined analytics environment. In this book, you will understand how to leverage the capabilities of R Services in SQL Server 2017. This short yet effective guide will help you get familiar ...

On the occasion of the 150th anniversary of Sophus Lie, an International Work shop "Modern Group Analysis: advanced analytical and computational methods in mathematical physics" has been organized in Acireale (Catania, Sicily, October 27 31, 1992). The Workshop was aimed to enlighten the present state ofthis rapidly expanding branch of applied mathematics. Main topics of the Conference were: • classical Lie groups applied for constructing invariant solutions and conservation laws; • conditional (partial) symmetries; • Backlund transformations; • approximate symmetries; • group analysis of finite-difference equations; • problems of group classification; • software packages in group analysis. The success of the Workshop was due to the participation of many experts in Group Analysis from different countries. This book consists of selected papers presented at the Workshop. We would like to thank the Scientific Committee for the generous support of recommending invited lectures and selecting the papers for this volume, as well as the members of the Organizing Committee for their help. The Workshop was made possible by the financial support of several sponsors that are listed below. It is also a pleasure to thank our colleague Enrico Gregorio for his invaluable help of this volume.

FEFLOW is an acronym of Finite Element subsurface FLOW simulation system and solves the governing flow, mass and heat transport equations in porous and fractured media by a multidimensional finite element method for complex geometric and parametric situations including variable fluid density, variable saturation, free surface(s), multispecies reaction kinetics, non-isothermal flow and multidiffusive effects. FEFLOW comprises theoretical work, modeling experiences and simulation practice from a period of about 40 years. In this light, the main objective of the present book is to share this achieved level of modeling with all required details of the physical and numerical background with the reader. The book is intended to put advanced theoretical and numerical methods into the hands of modeling practitioners and scientists. It starts with a more general theory for all relevant flow and transport phenomena on the basis of the continuum approach, systematically develops the basic framework for important classes of problems (e.g., multiphase/multispecies non-isothermal flow and transport phenomena, discrete features, aquifer-averaged equations, geothermal processes), introduces finite-element techniques for solving the basic balance equations, in detail discusses advanced numerical algorithms for the resulting nonlinear and linear problems and completes with a number of benchmarks, applications and exercises to illustrate the different types of problems and ways to tackle them successfully (e.g., flow and seepage problems, unsaturated-saturated flow, advective-diffusion transport, saltwater intrusion, geothermal and thermohaline flow).

Build neural network models in text, vision and advanced analytics using PyTorch Key Features Learn PyTorch for implementing cutting-edge deep learning algorithms. Train your neural networks for higher speed and flexibility and learn how to implement them in various scenarios; Cover various advanced neural network architecture such as ResNet, Inception, DenseNet and more with practical examples; Book Description Deep learning powers the most intelligent systems in the world, such as Google Voice, Siri, and Alexa. Advancements in powerful hardware, such as GPUs, software frameworks such as PyTorch, Keras, Tensorflow, and CNTK along with the availability of big data have

made it easier to implement solutions to problems in the areas of text, vision, and advanced analytics. This book will get you up and running with one of the most cutting-edge deep learning libraries—PyTorch. PyTorch is grabbing the attention of deep learning researchers and data science professionals due to its accessibility, efficiency and being more native to Python way of development. You'll start off by installing PyTorch, then quickly move on to learn various fundamental blocks that power modern deep learning. You will also learn how to use CNN, RNN, LSTM and other networks to solve real-world problems. This book explains the concepts of various state-of-the-art deep learning architectures, such as ResNet, DenseNet, Inception, and Seq2Seq, without diving deep into the math behind them. You will also learn about GPU computing during the course of the book. You will see how to train a model with PyTorch and dive into complex neural networks such as generative networks for producing text and images. By the end of the book, you'll be able to implement deep learning applications in PyTorch with ease. What you will learn Use PyTorch for GPU-accelerated tensor computations Build custom datasets and data loaders for images and test the models using torchvision and torchtext Build an image classifier by implementing CNN architectures using PyTorch Build systems that do text classification and language modeling using RNN, LSTM, and GRU Learn advanced CNN architectures such as ResNet, Inception, Densenet, and learn how to use them for transfer learning Learn how to mix multiple models for a powerful ensemble model Generate new images using GAN’s and generate artistic images using style transfer Who this book is for This book is for machine learning engineers, data analysts, data scientists interested in deep learning and are looking to explore implementing advanced algorithms in PyTorch. Some knowledge of machine learning is helpful but not a mandatory need. Working knowledge of Python programming is expected.
Build on the foundations of elementary mechanics of materials texts with this modern textbook that covers the analysis of stresses and strains in elastic bodies. Discover how all analyses of stress and strain are based on the four pillars of equilibrium, compatibility, stress-strain relations, and boundary conditions. These four principles are discussed and provide a bridge between elementary analyses and more detailed treatments with the theory of elasticity. Using MATLAB® extensively throughout, the author considers three-dimensional stress, strain and stress-strain relations in detail with matrix-vector relations. Based on classroom-proven material, this valuable resource provides a unified approach useful for advanced undergraduate students and graduate students, practicing engineers, and researchers.
Plate and Shell Structures: Selected Analytical and Finite Element Solutions Maria Radwa?ska, Anna Stankiewicz, Adam Wosatko, Jerzy Pamin Cracow University of Technology, Poland Comprehensively covers the fundamental theory and analytical and numerical solutions for different types of plate and shell structures Plate and Shell Structures: Selected Analytical and Finite Element Solutions not only provides the theoretical formulation of fundamental problems of mechanics of plates and shells, but also several examples of analytical and numerical solutions for different types of shell structures. The book contains advanced aspects related to stability analysis and a brief description of modern finite element formulations for plates and shells, including the discussion of mixed/hybrid models and locking phenomena. Key features: 52 example problems solved and illustrated by more than 200 figures, including 30 plots of finite element simulation results. Contents based on many years of research and teaching the mechanics of plates and shells to students of civil engineering and professional engineers. Provides the basis of an intermediate-level course on computational mechanics of shell structures. The book is essential reading for engineering students, university teachers, practitioners and researchers interested in the mechanics of plates and shells, as well as developers testing new simulation software.
The use of bioresorbable polymers in stents, fixation devices and tissue engineering is revolutionising medicine. Both industry and academic researchers are interested in using computer modelling to replace some experiments which are costly and time consuming. This book

provides readers with a comprehensive review of modelling polymers and polymeric medical devices as an alternative to practical experiments. Chapters in part one provide readers with an overview of the fundamentals of biodegradation. Part two looks at a wide range of degradation theories for bioresorbable polymers and devices. The final set of chapters look at advances in modelling biodegradation of bioresorbable polymers. This book is an essential guide to those concerned with replacing tests and experiments with modelling. Provides a comprehensive mathematical framework for computer modelling of polymers and polymeric medical devices that can significantly reduce the number of experiments needed. Reviews the fundamental methods of modelling degradation, and applies these to particular materials including amorphous bioresorbable polyesters, semicrystalline biodegradable polyesters, and composite materials made of biodegradable polyesters and triclcium phosphates

IMDC-SDSP conference offers an exceptional platform and opportunity for practitioners, industry experts, technocrats, academics, information scientists, innovators, postgraduate students, and research scholars to share their experiences for the advancement of knowledge and obtain critical feedback on their work. The timing of this conference coincides with the rise of Big Data, Artificial Intelligence powered applications, Cognitive Communications, Green Energy, Adaptive Control and Mobile Robotics towards maintaining the Sustainable Development and Smart Planning and management of the future technologies. It is aimed at the knowledge generated from the integration of the different data sources related to a number of active real-time applications in supporting the smart planning and enhance and sustain a healthy environment. The conference also covers the rise of the digital health, well-being, home care, and patient-centred era for the benefit of patients and healthcare providers; in addition to how supporting the development of a platform of smart Dynamic Health Systems and self-management.

This thesis is concerned with flows through cascades, i.e. periodic arrays of obstacles. Such geometries are relevant to a range of physical scenarios, chiefly the aerodynamics and aeroacoustics of turbomachinery flows. Despite the fact that turbomachinery is of paramount importance to a number of industries, many of the underlying mechanisms in cascade flows remain opaque. In order to clarify the function of different physical parameters, the author considers six separate problems. For example, he explores the significance of realistic blade geometries in predicting turbomachinery performance, and the possibility that porous blades can achieve noise reductions. In order to solve these challenging problems, the author deploys and indeed develops techniques from across the spectrum of complex analysis: the Wiener–Hopf method, Riemann–Hilbert problems, and the Schottky–Klein prime function all feature prominently. These sophisticated tools are then used to elucidate the underlying mathematical and physical structures present in cascade flows. The ensuing solutions greatly extend previous works and offer new avenues for future research. The results are not of simply academic value but are also useful for aircraft designers seeking to balance aeroacoustic and aerodynamic effects.

A new era of innovation is enabled by the integration of social sciences and information systems research. In this context, the adoption of Big Data and analytics technology brings new insight to the social sciences. It also delivers new, flexible responses to crucial social problems and challenges. We are proud to deliver this edited volume on the social impact of big data research. It is one of the first initiatives worldwide analyzing of the impact of this kind of research on individuals and social issues. The organization of the relevant debate is arranged around three pillars: Section A: Big Data Research for Social Impact: • Big Data and Their Social Impact; • (Smart) Citizens from Data Providers to Decision-Makers; • Towards Sustainable Development of Online Communities; • Sentiment from Online Social Networks; • Big Data for Innovation. Section B. Techniques and Methods for Big Data driven research for Social Sciences and Social Impact: • Opinion Mining on Social Media; • Sentiment Analysis of User Preferences; • Sustainable Urban Communities; • Gender Based Check-In Behavior by Using Social Media Big Data; • Web Data-Mining Techniques; • Semantic Network Analysis of Legacy News Media Perception. Section C. Big Data Research Strategies: • Skill Needs for Early Career Researchers—A Text Mining Approach; • Pattern Recognition through Bibliometric Analysis; • Assessing an Organization’s Readiness to Adopt Big Data; • Machine Learning for Predicting Performance; • Analyzing Online Reviews Using Text Mining; • Context–Problem Network and Quantitative Method of Patent Analysis. Complementary social and technological factors including: • Big Social Networks on Sustainable Economic Development; Business Intelligence.

This book describes analytical methods for modelling drop evaporation, providing the mathematical tools needed in order to generalise transport and constitutive equations and to find analytical solutions in curvilinear coordinate systems. Transport phenomena in gas mixtures are treated in considerable detail, and the basics of differential geometry are introduced in order to describe interface-related transport phenomena. One chapter is solely devoted to the description of sixteen different orthogonal curvilinear coordinate systems, reporting explicitly on the forms of their differential operators (gradient, divergent, curl, Laplacian) and transformation matrices. The book is intended to guide the reader from mathematics, to physical descriptions, and ultimately to engineering applications, in order to demonstrate the effectiveness of applied mathematics when properly adapted to the real world. Though the book primarily addresses the needs of engineering researchers, it will also benefit graduate students.

* Comprehensive textbook/reference applies mathematical methods and modern symbolic computational tools to anisotropic elasticity * Presents unified approach to a vast diversity of structural models * State-of-the-art solutions are provided for a wide range of composite material configurations, including: 3-D anisotropic bodies, 2-D anisotropic plates, laminated and thin-walled structures

Advanced Analytics with R and TableauAdvanced Visual Analytical Solutions for Your BusinessDrop Heating and Evaporation: Analytical Solutions in Curvilinear Coordinate SystemsSpringer Nature

The numerical, discrete element, Discontinuous Deformation Analysis (DDA) method was developed by Dr. Gen-hua Shi while he was working at the University of California, Berkeley, under the supervision of Prof. Richard E. Goodman in the late 1980s. Two-dimensional DDA was published in 1993 and three-dimensional DDA in 2001. Since its publication DDA has been verified, validated and applied in numerous studies worldwide and is now considered a powerful and robust method to address both static and dynamic engineering problems in discontinuous rock masses. In this book Yossef H. Hatzor and Guowei Ma, co-chairs of the International Society for Rock Mechanics (ISRM) Commission on DDA, join Dr. Shi in authoring a monograph that presents the state of the art in DDA research. A comprehensive discussion of DDA development since its publication is provided in Chapter 1, followed by concise reviews of 2D and 3D DDA in chapters 2 and 3. Procedures to select geological and numerical input parameters for DDA are discussed in Chapter 4, and DDA validation and verification is presented in Chapter 5. Applications of DDA in underground and rock slope engineering projects are discussed in chapters 6 and 7. In Chapter 8 the novel contact theory recently developed by Dr. Shi is published in its complete form, for the first time. This book is published within the framework of the ISRM Book Series and is the contribution of the ISRM DDA Commission to the international rock mechanics community.

This book explores the ways in which the adoption of new paradigms, processes, and technologies can lead to greater revenue, cost efficiency and control, as well as improved business agility in the insurance industry.

Collision avoidance maneuvers to prevent orbital collisions between two catalogued objects are typically planned multiple days in advance. If the warning time is decreased to less than half-an-orbit in advance, the problem becomes more complex. Typically, the maneuver (assumed to be impulsive) would be placed at perigee or apogee and oriented in the direction that allows for a fuel-optimal maneuver to be performed well before the predicted collision. Instead, for rapid collision avoidance scenarios, finite burn propagation was applied to determine the thrust duration and direction required to reach a desired minimum collision probability. Determining the thrust time and direction for a wide range of orbits and spacecraft properties results in a semi-analytical solution to the collision avoidance problem anywhere in Low-Earth Orbit. The speed at which this method can be applied makes it valuable when minimal time is available to perform such a maneuver. For many spacecraft missions, even the slightest change in the orbit of the spacecraft may significantly affect its ability to perform to its required specifications. With the high volume of debris in orbit, debris-creating events could occur with no advanced notice, making rapid collision avoidance scenarios a real possibility. Care must be taken to ensure that any potential collision is avoided while minimizing the effect of the maneuver on the spacecraft's mission

performance. Assuming perfect knowledge of the states of all objects and that the possible collisions occur at high relative velocities, the required thrusting time to achieve a desired collision probability is found. Varying the desired collision probability, the resulting changes in the required thrust duration time (and, thus, fuel use) can be observed, providing options for trading the fuel use and likelihood of a collision. Additionally, both of these variables contribute directly to the ability of the spacecraft to perform to the desired mission specifications. As the collision probability threshold and required burn time increase, the mission performance decreases. The level of robustness necessary in the mission specifications can be used to limit the desired collision probability threshold. This is accomplished by determining the time and fuel required to perform the collision avoidance maneuver to the desired probability level and analyzing the effect of the time spent away from the mission orbit and the quantity of fuel required to perform the maneuver on the mission performance. It was found that, for notification times less than around 20 minutes, it is best to decrease the collision probability as much as the available fuel will allow without regard for the time duration of the maneuver. As the notification time increases past 20 minutes, more emphasis can be placed on the time required to perform the entire maneuver and it was found that simultaneously minimizing the maneuver time and collision probability outweighed the slight extra fuel required for such a maneuver. Such analysis would prove significant in real-time spacecraft operations when determining an optimal collision probability threshold (typically a subjective variable) for rapid collision avoidance scenarios.

Robust Design of Microelectronics Assemblies Against Mechanical Shock, Temperature and Moisture discusses how the reliability of packaging components is a prime concern to electronics manufacturers. The text presents a thorough review of this important field of research, providing users with a practical guide that discusses theoretical aspects, experimental results, and modeling techniques. The authors use their extensive experience to produce detailed chapters covering temperature, moisture, and mechanical shock induced failure, adhesive interconnects, and viscoelasticity. Useful program files and macros are also included. Discusses how the reliability of packaging components is a prime concern to electronics manufacturers Presents a thorough review of this important field of research, providing users with a practical guide that discusses theoretical aspects, experimental results, and modeling techniques Includes program files and macros for additional study

The advent of supercomputers has brought computational fluid dynamics (CFD) to the forefront as a tool to analyze increasingly complex simulation scenarios in many fields. Computational aerodynamics problems are also increasingly moving towards being coupled, multi-physics and multi-scale with complex, moving geometries. The latter presents severe geometry handling and meshing challenges. Simulations also frequently use formal design optimization

processes. This book explains the evolution of CFD and provides a comprehensive overview of the plethora of tools and methods available for solving complex scenarios while exploring the future directions and possible outcomes. Using numerous examples, illustrations and computational methods the author discusses turbulence modeling, pre and post processing, coupled solutions, the importance of design optimization, multiphysics problems, reduced order models, and large scale computations and the future of CFD. Advanced Computational Fluid and Aerodynamics is suitable for audiences engaged in computational fluid dynamics including advanced undergraduates, researchers and industrial practitioners.

This book, based on extensive international collaborative research, highlights the state-of-the-art design of smart living for metropolises, megacities, and metacities, as well as at the community and neighbourhood level. Smart living is one of six main components of smart cities, the others being smart people, smart economy, smart environment, smart mobility and smart governance. Smart living in any smart city can only be designed and implemented with active roles for smart people and smart city government, and as a joint effort combining e-Democracy, e-Governance and ICT-IoT systems. In addition to using information and communication technologies, the Internet of Things, Internet of Governance (e-Governance) and Internet of People (e-Democracy), the design of smart living utilizes various domain-specific tools to achieve coordinated, effective and efficient management, development, and conservation, and to improve ecological, social, biophysical, psychological and economic well-being in an equitable manner without compromising the sustainability of development ecosystems and stakeholders. This book presents case studies covering more than 10 cities and centred on domain-specific smart living components. The book is issued in two volumes and this volume focus on community studies and ways and means.

Engineering applications offer benefits and opportunities across a range of different industries and fields. By developing effective methods of analysis, results and solutions are produced with higher accuracy. Numerical and Analytical Solutions for Solving Nonlinear Equations in Heat Transfer is an innovative source of academic research on the optimized techniques for analyzing heat transfer equations and the application of these methods across various fields. Highlighting pertinent topics such as the differential transformation method, industrial applications, and the homotopy perturbation method, this book is ideally designed for engineers, researchers, graduate students, professionals, and academics interested in applying new mathematical techniques in engineering sciences.

Most books on data mining focus on principles and furnish few instructions on how to carry out a data mining project. Data Mining Using SAS Applications not only introduces the key concepts but also enables readers to understand and successfully apply data mining methods using powerful yet user-friendly SAS macro-call files. These methods stress the

use of visualization to thoroughly study the structure of data and check the validity of statistical models fitted to data. Learn how to convert PC databases to SAS data Discover sampling techniques to create training and validation samples Understand frequency data analysis for categorical data Explore supervised and unsupervised learning Master exploratory graphical techniques Acquire model validation techniques in regression and classification The text furnishes 13 easy-to-use SAS data mining macros designed to work with the standard SAS modules. No additional modules or previous experience in SAS programming is required. The author shows how to perform complete predictive modeling, including data exploration, model fitting, assumption checks, validation, and scoring new data, on SAS datasets in less than ten minutes!

If you’re seeking solutions to advanced and even esoteric problems, Advanced Analytical Models goes beyond theoretical discussions of modeling by facilitating a thorough understanding of concepts and their real-world applications—including the use of embedded functions and algorithms. This reliable resource will equip you with all the tools you need to quantitatively assess risk in a range of areas, whether you are a risk manager, business decision-maker, or investor.

A step-by-step approach to problem-solving techniques using SPSS® in the fields of sports science and physical education Featuring a clear and accessible approach to the methods, processes, and statistical techniques used in sports science and physical education, Sports Research with Analytical Solution using SPSS® emphasizes how to conduct and interpret a range of statistical analysis using SPSS. The book also addresses issues faced by research scholars in these fields by providing analytical solutions to various research problems without reliance on mathematical rigor. Logically arranged to cover both fundamental and advanced concepts, the book presents standard univariate and complex multivariate statistical techniques used in sports research such as multiple regression analysis, discriminant analysis, cluster analysis, and factor analysis. The author focuses on the treatment of various parametric and nonparametric statistical tests, which are shown through the techniques and interpretations of the SPSS outputs that are generated for each analysis. Sports Research with Analytical Solution using SPSS® also features: Numerous examples and case studies to provide readers with practical applications of the analytical concepts and techniques Plentiful screen shots throughout to help demonstrate the implementation of SPSS outputs Illustrative studies with simulated realistic data to clarify the analytical techniques covered End-of-chapter short answer questions, multiple choice questions, assignments, and practice exercises to help build a better understanding of the presented concepts A companion website with associated SPSS data files and PowerPoint® presentations for each chapter Sports Research with Analytical Solution using SPSS® is an excellent textbook for upper-undergraduate, graduate, and PhD-level courses in research methods, kinesiology, sports science, medicine, nutrition, health education, and physical education. The book is also an ideal reference for researchers and professionals in the fields of sports research, sports science, physical education, and social sciences, as well as anyone interested in learning SPSS.

This accessible new textbook provides a thorough introduction toall aspects of groundwater systems and their management. Usingstraightforward language and analogies to everyday experiences, itexplains the origins, nature, and behavior of subsurface waterwithout resorting to complicated mathematics. Groundwater in the Environment draws on case studies andcutting-edge research from around the world, giving a uniqueinsight into groundwater occurring in a wide range of differentclimate zones and geological settings. This book: provides a robust, practical introduction to groundwaterquality, and a succinct summary of modern remedial technologies forpolluted groundwaters explores how groundwater fits into the wider naturalenvironment, especially in relation to freshwater ecosystems considers the vulnerability of groundwater systems and theeffects of pollution, climate change, land-use change, andoverexploitation examines human dependence on water and the effect that this hason groundwater systems presents vivid examples of geohazards associated with groundwaters explains the whys and wherefores of groundwater modeling examines competing philosophies of groundwater management,making the case for approaches which take social, economic andecological issues into account. Goundwater in the Environment provides an up-to-date,essential introduction for undergraduate students of environmentalsciences, geography and geology. It will also be invaluable toprofessionals working in various fields of natural resourcemanagement who need accessible information on groundwater but whoare reluctant to read conventional texts full of mathematicalnotation. For practicing hydrogeologists and engineers withoutformal training in freshwater ecology, this book provides a `crashcourse' in the new frontiers of groundwater management. Artwork from the book is available to instructors online at ahref="http://www.blackwellpublishing.com/younger"www.blackwellpublishing.com/younger/a.An Instructor manual CD-ROM for this title is available. Pleasecontact our Higher Education team at ahref="mailto:HigherEducation@wiley.com"HigherEducation@wiley.com/afor more information.

This book provides analytical solutions to a number of classical problems in transport processes, i.e. in fluid mechanics, heat and mass transfer. Expanding computing power and more efficient numerical methods have increased the importance of computational tools. However, the interpretation of these results is often difficult and the computational results need to be tested against the analytical results, making analytical solutions a valuable commodity. Furthermore, analytical solutions for transport processes provide a much deeper understanding of the physical phenomena involved in a given process than do corresponding numerical solutions. Though this book primarily addresses the needs of researchers and practitioners, it may also be beneficial for graduate students just entering the field.

Natural and human activities change the environment we are living in and consequently impact the quality of life. Analysing these dynamics leads to a better understanding of urban change and facilitates urban development. Research related to the management of urban data has a long tradition. Through the years a variety of challenging research quest

This book provides a dual perspective on the Internet of Things and ubiquitous computing, along with their applications in healthcare and smart cities. It also covers other interdisciplinary aspects of the Internet of Things like big data, embedded Systems and wireless Sensor Networks. Detailed coverage of the underlying architecture, framework, and state-of the art methodologies

form the core of the book.

This book contains selected papers from the 9th International Conference on Information Science and Applications (ICISA 2018) and provides a snapshot of the latest issues encountered in technical convergence and convergences of security technology. It explores how information science is core to most current research, industrial and commercial activities and consists of contributions covering topics including Ubiquitous Computing, Networks and Information Systems, Multimedia and Visualization, Middleware and Operating Systems, Security and Privacy, Data Mining and Artificial Intelligence, Software Engineering, and Web Technology. The proceedings introduce the most recent information technology and ideas, applications and problems related to technology convergence, illustrated through case studies, and reviews converging existing security techniques. Through this volume, readers will gain an understanding of the current state-of-the-art information strategies and technologies of convergence security. The intended readership includes researchers in academia, industry and other research institutes focusing on information science and technology.

Unique prospective on the big data analytics phenomenon for both business and IT professionals The availability of Big Data, low-cost commodity hardware and new information management and analytics software has produced a unique moment in the history of business. The convergence of these trends means that we have the capabilities required to analyze astonishing data sets quickly and cost-effectively for the first time in history. These capabilities are neither theoretical nor trivial. They represent a genuine leap forward and a clear opportunity to realize enormous gains in terms of efficiency, productivity, revenue and profitability. The Age of Big Data is here, and these are truly revolutionary times. This timely book looks at cutting-edge companies supporting an exciting new generation of business analytics. Learn more about the trends in big data and how they are impacting the business world (Risk, Marketing, Healthcare, Financial Services, etc.) Explains this new technology and how companies can use them effectively to gather the data that they need and glean critical insights Explores relevant topics such as data privacy, data visualization, unstructured data, crowd sourcing data scientists, cloud computing for big data, and much more.

Along with a shift towards value-based care, a digital transformation is under way in health care. However, health care enterprises are having a hard time keeping up with advances in information technology. Organizations that could once spend months or years developing a strategy to deliver solutions now must implement changes on a near real-time basis. Complicating matters is the emergence of new data sources, new technology architectures and models, and new methods to analyze an avalanche of data. This book provides a framework for understanding the competitive landscape for digital health and advanced analytics solutions that are harnessing data to unlock insights. It reveals a set of key principles, or universal themes, for success in the digital health marketplace. Whether youre a health care information technology specialist, a digital health startup or technology firm with a strategic focus on health care, a venture capitalist, or just interested in the industry structure and the emerging technology landscape in health care, youll learn how to grow revenue and profits while creating a sustainable competitive advantage. Take a key step in navigating the exciting transformation of health care, and harness the power of data and analytics with The Big Unlock.

Many senior executives talk about information as one of their most important assets, but few behave as if it is. They report to the board on the health of their workforce, their financials, their customers, and their partnerships, but rarely the health of their information assets.

Corporations typically exhibit greater discipline in tracking and accounting for their office furniture than their data. Infonomics is the theory, study, and discipline of asserting economic significance to information. It strives to apply both economic and asset management principles and practices to the valuation, handling, and deployment of information assets. This book specifically shows: CEOs and business leaders how to more fully wield information as a corporate asset CIOs how to improve the flow and accessibility of information CFOs how to help their organizations measure the actual and latent value in their information assets. More directly, this book is for the burgeoning force of chief data officers (CDOs) and other information and analytics leaders in their valiant struggle to help their organizations become more infosavvy. Author Douglas Laney has spent years researching and developing Infonomics and advising organizations on the infinite opportunities to monetize, manage, and measure information. This book delivers a set of new ideas, frameworks, evidence, and even approaches adapted from other disciplines on how to administer, wield, and understand the value of information. Infonomics can help organizations not only to better develop, sell, and market their offerings, but to transform their organizations altogether. "Doug Laney masterfully weaves together a collection of great examples with a solid framework to guide readers on how to gain competitive advantage through what he labels "the unruly asset" – data. The framework is comprehensive, the advice practical and the success stories global and across industries and applications." Liz Rowe, Chief Data Officer, State of New Jersey "A must read for anybody who wants to survive in a data centric world." Shaun Adams, Head of Data Science, Betterbathrooms.com "Phenomenal! An absolute must read for data practitioners, business leaders and technology strategists. Doug's lucid style has a set a new standard in providing intelligible material in the field of information economics. His passion and knowledge on the subject exudes thru his literature and inspires individuals like me." Ruchi Rajasekhar, Principal Data Architect, MISO Energy "I highly recommend Infonomics to all aspiring analytics leaders. Doug Laney’s work gives readers a deeper understanding of how and why information should be monetized and managed as an enterprise asset. Laney’s assertion that accounting should recognize information as a capital asset is quite convincing and one I agree with. Infonomics enjoyably echoes that sentiment!" Matt Green, independent business analytics consultant, Atlanta area "If you care about the digital economy, and you should, read this book." Tanya Shuckhart, Analyst Relations Lead, IRI Worldwide

I express my sincere gratitude to NATO Science Committee for granting me the financial award to organize and direct the Advanced Research Workshop on "MULTILAYERED and FIBRE-REINFORCED COMPOSITES: PROBLEMS AND PROSPECTS" that was held in Kiev, Ukraine, during the period of June 2 - 6, 1997, in collaboration with Professor S. A. Firstov of the Frantsevich Institute for Problems of Materials Science, National Academy of Sciences, Kiev, Ukraine. In this context I wish to convey special thanks to Dr. J. A. Raussell-Colom, NATO Programme Director for Priority Area on High Technology, for his kind efforts and continuous guidance in the course of organizing the Workshop. I appreciate sincerely the opportunity of working closely with Professor Firstov and acknowledge with deep gratitude his outstanding contribution in co-directing the Workshop. I wish to express my special thanks to Dr. N. Orlovskaya of the Frantsevich Institute, for her outstanding contribution towards both the organization and conduct of the Workshop. I wish to convey my sincere thanks to Professor V. V. Skorohord, Deputy Director of the Frantsevich Institute, on behalf of the same Institute, for hosting the Workshop and welcoming the participants to l{iev. The very kind efforts of the members of the Scientific Advisory Committee, the Local Organizing Committee and the Staff of the Frantsevich Institute towards the organization and conduct of the Workshop, are gratefully appreciated. I convey my full indebtedness to all researchers who participated in the Workshop.

Providing a unique bridge between the foundations of analytical mechanics and application to multi-body dynamical systems, this textbook is

particularly well suited for graduate students seeking an understanding of the theoretical underpinnings of analytical mechanics, as well as modern task space approaches for representing the resulting dynamics that can be exploited for real-world problems in areas such as biomechanics and robotics. Established principles in mechanics are presented in a thorough and modern way. The chapters build up from general mathematical foundations, an extensive treatment of kinematics, and then to a rigorous treatment of conservation and variational principles in mechanics. Parallels are drawn between the different approaches, providing the reader with insights that unify his or her understanding of analytical dynamics. Additionally, a unique treatment is presented on task space dynamical formulations that map traditional configuration space representations into more intuitive geometric spaces.

This uniquely accessible book helps readers use CABology to solve real-world business problems and drive real competitive advantage. It provides reliable, concise information on the real benefits, usage and operationalization aspects of utilizing the “Trio Wave” of cloud, analytic and big data. Anyone who thinks that the game changing technology is slow paced needs to think again. This book opens readers’ eyes to the fact that the dynamics of global technology and business are changing. Moreover, it argues that businesses must transform themselves in alignment with the Trio Wave if they want to survive and excel in the future. CABology focuses on the art and science of optimizing the business goals to deliver true value and benefits to the customer through cloud, analytic and big data. It offers business of all sizes a structured and comprehensive way of discovering the real benefits, usage and operationalization aspects of utilizing the Trio Wave.

It is true that "Nothing is more practical than theory" as Boltzmann said. Provided - however - that the assumptions on which The theory is founded are well understood. But. indeed. engineering costly experience shows that "Nothing can be more disastrous than a theory" when applied To a real task outside of practical limits of the assumptions made. Because of an homonymous identity with the considered problem. J.T.P The growing interest in Isodyne Stress Analysis and the related experience of the author show that the major monograph and reference book on the subject, Isodyne Stress Analysis by Jerzy T. Pindera and Marek-Jerzy Pindera, [27], does not of contain sufficiently detailed data on the theories and techniques experimentation. The purpose of this work is to close this gap. Thus, this work is an extension of Isodyne Stress Analysis and complementary to it. Consequently, only a short outline of the theory ofisodynes is given in Chapter 2. Only the basic concepts and relations are presented to provide the link between the underlying analytical and optical theories and the experimental techniques. One of the major purposes of a preface is to formulate and explain the chosen frame of reference in a condensed form, even when some components of it are discussed in the text. A main issue of the underlying frame of reference pertains to the roles of the abstract thinking and of the observation in cognition of reality.