

Mathematical Modeling Sfu

Mathematical Methods in Chemical and Biological Engineering describes basic to moderately advanced mathematical techniques useful for shaping the model-based analysis of chemical and biological engineering systems. Covering an ideal balance of basic mathematical principles and applications to physico-chemical problems, this book presents examples drawn from recent scientific and technical literature on chemical engineering, biological and biomedical engineering, food processing, and a variety of diffusional problems to demonstrate the real-world value of the mathematical methods. Emphasis is placed on the background and physical understanding of the problems to prepare students for future challenging and innovative applications.

This book constitutes the refereed post-proceedings of the *International Conference on Mathematical Modeling and Computational Physics*, MMCP 2011, held in Stará Lesná, Slovakia, in July 2011. The 41 revised papers presented were carefully reviewed and selected from numerous submissions. They are organized in topical sections on mathematical modeling and methods, numerical modeling and methods, computational support of the experiments, computing tools, and optimization and simulation.

This volume contains the proceedings of the *AMS-ASL Special Session on Model Theoretic Methods in Finite Combinatorics*, held January 5-8, 2009, in Washington, DC. Over the last 20 years, various new connections between model theory and finite combinatorics emerged. The best known of these are in the area of 0-1 laws, but in recent years other very promising interactions between model theory and combinatorics have been developed in areas such as extremal combinatorics and graph limits, graph polynomials, homomorphism functions and related counting functions, and discrete algorithms, touching the boundaries of computer science and statistical physics. This volume highlights some of the main results, techniques, and research directions of the area. Topics covered in this volume include recent developments on 0-1 laws and their variations, counting functions defined by homomorphisms and graph polynomials and their relation to logic, recurrences and spectra, the logical complexity of graphs, algorithmic meta theorems based on logic, universal and homogeneous structures, and logical aspects of Ramsey theory.

Research into social systems is challenging due to their complex nature. Traditional methods of analysis are often difficult to apply effectively as theories evolve over time. This can be due to a lack of appropriate data, or too much uncertainty. It can also be the result of problems which are not yet understood well enough in the general sense so that they can be classified, and an appropriate solution quickly identified. Simulation is one tool that deals well with these challenges, fits in well with the deductive process, and is useful for testing theory. This field is still relatively new, and much of the work is necessarily innovative, although it builds upon a rich and varied foundation. There are a number of existing modelling paradigms being applied to complex social systems research. Additionally, new methods and measures are being devised through the process of conducting research. We expect that readers will enjoy the collection of high quality research works from new and accomplished researchers.

Computer Algebra Recipes

Mathematical Models in the Applied Sciences

Mathematical Methods in Counterterrorism

ICTMA14

A Case Studies Approach

Model Theoretic Methods in Finite Combinatorics

This book provides an extensive introduction to numerical computing from the viewpoint of backward error analysis. The intended audience includes students and researchers in science, engineering and mathematics. The approach taken is somewhat informal owing to the wide variety of backgrounds of the readers, but the central ideas of backward error and sensitivity (conditioning) are systematically divided into four parts: Part I provides the background preliminaries including floating-point arithmetic, polynomials and computer evaluation of functions; Part II covers numerical linear algebra; Part III covers interpolation, the FFT and quadrature; and Part IV covers numerical solutions of differential equations including initial-value problems, boundary-value problems, delay differential equations and differential equations. The book contains detailed illustrations, chapter summaries and a variety of exercises as well as some Matlab codes provided online as supplementary material. "I really like the focus on backward error analysis and condition. This is novel in a textbook and a practical approach that will bring welcome attention." Lawrence F. Shampline A Graduate Introduction to Numerical Methods has been selected by Computing Reviews as a notable book in computing in 2013. Computing Reviews Best of 2013 list consists of book and article nominations from reviewers, CR category editors, the editors-in-chief of journals, and others in the computing community.

In the book, the relationship between affect and modeling is discussed because, as educational psychologists have suggested for decades, affect directly influences achievement. Moreover, given the importance of mathematical modeling and the applications to high level mathematics, it provides the field of mathematics psychology with insight regarding affect, in relation to mathematical modeling.

The degree to which understanding of mathematics and understanding affect in mathematical modeling episodes may have a direct effect on cognition. Presents a thorough grounding in the techniques of mathematical modelling, and proceeds to explore a range of classical and continuum models from an array of disciplines. The book, presenting the proceedings of the 2018 Future Technologies Conference (FTC 2018), is a remarkable collection of chapters covering a wide range of topics, including, but not limited to computing, electronics, artificial intelligence, robotics, security and communications and their real-world applications. The conference attracted a total of 503 submissions from pioneering researchers, students from all over the world. After a double-blind peer review process, 173 submissions (including 6 poster papers) have been selected to be included in these proceedings. FTC 2018 successfully brought together technology geniuses in one venue to not only present breakthrough research in future technologies but to also promote practicality and applications and an intra- and inter-field exchange of ideas. Computing technologies will play a very important role in the convergence of computing, communication, and all other computational sciences and applications. And as a result it will also influence the future of science, engineering, industry, business, law, politics, culture, and medicine. Providing state-of-the-art intelligent methods and techniques for solving real-world problems, as well as a vision of a valuable resource for all those interested in this area.

Mathematical Modeling

Dynamic Social Network Modeling and Analysis

RoboCup 2009: Robot Soccer World Cup XIII

DNA Computing and Molecular Programming

Affect in Mathematical Modeling

3D Modeling of Nonlinear Wave Phenomena on Shallow Water Surfaces

In the last decade there has been a phenomenal growth in interest in crime pattern analysis. Geographic information systems are now widely used in urban police agencies throughout industrial nations. With this, scholarly interest in understanding crime patterns has grown considerably. Artificial Crime Analysis Systems: Using Computer Simulations and Geographic Information Systems discusses leading research on the use of computer simulation of crime patterns to reveal hidden processes of urban crimes, taking an interdisciplinary approach by combining criminology, computer simulation, and geographic information systems into one comprehensive resource.

The definitive reference in its field, Ecological Risk Assessment, Second Edition details the latest advances in science and practice. In the fourteen years since the publication of the best-selling first edition, ecological risk assessment (ERA) has moved from the margins into the spotlight. It is now commonly applied to the regulation of chemicals, the remediation of contaminated sites, the monitoring of importation of exotic organisms, the management of watersheds, and other environmental management issues. Delineating the processes for performing an ERA, the book begins by defining the field, then goes on to describe its relationship to other environmental assessment practices and its organizational framework. The book also includes a chapter on ecological epidemiology, which has previously been treated as a type of ERA, but is now recognized as a distinct practice in itself. It explores important concepts in the ERA process including probability, uncertainty, scale, mode of action and multiple causes. Reflecting changes in the field, the book's scope has been broadened to include discussions of the application of ERA to agents other than chemical contaminants. The multitude of illustrative figures provides a flavor for the diverse practice of ERA. The author has re-organized the material, presenting a unitary process of ERA that is applicable to various problems, scales, and mandates. He keeps the emphasis squarely on providing clear, scientifically sound, and unbiased technical advice on the risks from chemicals and chemical mixtures.

Terrorism is one of the serious threats to international peace and security that we face in this decade. No nation can consider itself immune from the dangers it poses, and no society can remain disengaged from the efforts to combat it. The term counterterrorism refers to the techniques, strategies, and tactics used in the 7ght against terrorism. Counterterrorism efforts involve many segments of so-ety, especially governmental agencies including the police, military, and intelligence agencies (both domestic and international). The goal of counterterrorism efforts is to not only detect and prevent potential future acts but also to assist in the response to events that have already occurred. A terrorist cell usually forms very quietly and then grows in a pattern – spreading international borders, oceans, and hemispheres. Surprising to many, an off- live “weapon”, just as quiet – mathematics – can serve as a powerful tool to combat terrorism, providing the ability to connect the dots and reveal the organizational pattern of something so sinister. The events of 9/11 instantly changed perceptions of the word terrorist and- now, especially in the United States. The international community was confronted with the need to tackle a threat which was not con’fined to a discreet physical - calion. This is a particular challenge to the standard instruments for projecting the legal authority of states and their power to uphold public safety. As demonstrated by the events of the 9/11 attack, we know that terrorist attacks can happen anywhere.

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biology, economics, medicine, engineering, game theory, physics, and chemistry. The text includes a large number of Maple(R) recipes.

Modeling Students’ Mathematical Modeling Competencies

With Formulas, Graphs, and Mathematical Tables

CUDA Application Design and Development

Theories and Simulations of Complex Social Systems

Mathematical Modeling and Computational Science

18th International Conference, DNA 18, Aarhus, Denmark, August 14-17, 2012, Proceedings

This book contains suggestions for and reflections on the teaching, learning and assessing of mathematical modelling and applications in a rapidly changing world, including teaching and learning environments. It addresses all levels of education from universities and technical colleges to secondary and primary schools. Sponsored by the International Community of Teachers of Mathematical Modelling and Applications (ICTMA), it reflects recent ideas and methods contributed by specialists from 30 countries in Africa, the Americas, Asia, Australia and Europe. Inspired by contributions to the Fourteenth Conference on the Teaching of Mathematical Modelling and Applications (ICTMA14) in Hamburg, 2009, the book describes the latest trends in the teaching and learning of mathematical modelling at school and university including teacher education. The broad and versatile range of topics will stress the international state-of-the-art on the following issues: Theoretical reflections on the teaching and learning of modelling Modelling competencies Cognitive perspectives on modelling Modelling examples for all educational levels Practice of modelling in school and at university level Practices in Engineering and Applications

This book offers a new conceptual framework for reflecting on the role of information and communication technology in mathematics education. Discussion focuses on how computers, writing and oral discourse transform education at an epistemological as well as a political level. Building on examples, research and theory, the authors propose that knowledge is not constructed solely by humans, but by collectives of humans and technologies of intelligence.

An extensive summary of mathematical functions that occur in physical and engineering problems.

With climate change, sea level, and human encroachment on coastal environments growing all over the world, it is increasingly important to protect populations and environments close to the sea from storms, tsunamis, and other events that can be not just costly to property but deadly. This book is one step in bringing the science of protection

from these events forward, the most in-depth study of its kind ever published. The analytic and numerical modeling problems of nonlinear wave activities in shallow water are analyzed in this work. Using the author’s unique method described herein, the equations of shallow water are solved, and asymmetries that cannot be described by the Stokes theory are solved. Based on analytical expressions, the impacts of dispersion effects to wave profiles transformation are taken into account. The 3D models of the distribution and refraction of nonlinear surface gravity wave at the various coast formations are introduced, as well. The work covers the problems of numerical simulation of the run-up of nonlinear surface gravity waves in shallow water, transformation of the surface waves for the 1D case, and models for the refraction of numerical modeling of the run-up of nonlinear surface gravity waves at beach approach of various slopes. 2D and 3D modeling of nonlinear surface gravity waves are based on Navier-Stokes equations. In 2D modeling the influence of the bottom of the coastal zone on flooding of the coastal zone during storm surges was investigated. Various stages of the run-up of nonlinear surface gravity waves are introduced and analyzed. The 3D modeling process of the run-up is tested for the coast protection work of the slope type construction. Useful for students and veteran engineers and scientists alike, this is the only book covering these important issues facing anyone working with coastal models and ocean, coastal, and civil engineering in this area.

Lecture Notes in Real-Time Intelligent Systems

The Effortless Economy of Science?

A First Course in Mathematical Modeling

Building Thinking Classrooms in Mathematics, Grades K-12

The London Meetings 2012-2014

AMS-ASL Joint Special Session, January 5-8, 2009, Washington, DC

This volume teaches calculus in thebiologcontextwithcompromising the level of regular calculus. The material is organized in the standard way and explains how the different concepts are logically related. Each new concept is typically introduced with a biological example; the concept is then developedwithothe biological context and then the concept is tied into additional biological examples. This allows readers to first see why a certain concept is important, then lets them focus on how to use the concepts withoutgetting distracted by applications, and then, once readers feel more comfortable with the concepts, it revisits the biological applications to make sure that they canapply the concepts. The book features extensively detailed, step-by-step, worked-out examples and a variety of problems, including an unusually large number of word problems. The volume begins with a preview and review and moves into discrete time models, sequences, and difference equations, limits and continuity, differentiation, applications of differentiation, integration techniques and computational methods, differential equations, linear algebra and analytic geometry, multivariable calculus, systems of differential equations and probability and statistics. For faculty and postdocs in biology departments.

Offering a solid introduction to the entire modeling process, A FIRST COURSE IN MATHEMATICAL MODELING, 4th Edition delivers an excellent balance of theory and practice, giving students hands-on experience developing and sharpening their skills in the modeling process. Throughout the book, students practice key facets of modeling, including creative and empirical model construction, model analysis, and model research. The authors apply a proven six-step problem-solving process to enhance students’ problem-solving capabilities -- whatever their level. Rather than simply emphasizing the calculation step, the authors first ensure that students learn how to identify problems, construct or select models, and figure out what data needs to be collected. By involving students in the mathematical process as early as possible -- beginning with short projects -- the book facilitates their progressive development and confidence in mathematics and modeling. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This collection presents significant contributions from an international network project on mathematical cultures, including essays from leading scholars in the history and philosophy of mathematics and mathematics education. Mathematics has universal standards of validity. Nevertheless, there are local styles in mathematical research and teaching, and great variation in the place of mathematics in the larger cultures that mathematical practitioners belong to. The reflections on mathematical cultures collected in this book are of interest to mathematicians, philosophers, historians, sociologists, cognitive scientists and mathematics educators.

Modeling Students’ Mathematical Modeling Competencies offers welcome clarity and focus to the international research and professional community in mathematics, science, and engineering education, as well as those involved in the sciences of teaching and learning these subjects.

A Graduate Introduction to Numerical Methods

Proceedings of the Future Technologies Conference (FTC) 2018

Mathematics by Experiment

Plausible Reasoning in the 21st Century

Modelling in Healthcare

Broadening the Scope of Research on Mathematical Problem Solving

In the summer of 2002, the Office of Naval Research asked the Committee on Human Factors to hold a workshop on dynamic social network and analysis. The primary purpose of the workshop was to bring together scientists who represent a diversity of views and approaches to share their insights, commentary, and critiques on the developing body of social network analysis research and application. The secondary purpose was to provide sound models and applications for current problems of national importance, with a particular focus on national security. This workshop is one of several activities undertaken by the National Research Council that bears on the contributions of various scientific disciplines to understanding and defending against terrorism. The presentations were grouped in four sessions á€ Social Network Theory Perspectives, Dynamic Social Networks, Metrics and Models, and Networked Worlds á€ each of which concluded with a discussant-led roundtable discussion among the presenters and workshop attendees on the themes and issues raised in the session.

Highly useful volume discusses the types of models, how to formulate and manipulate them for best results. Numerous examples.

The second volume of the book series highlights works presented at the 2nd International Conference on Real Time Intelligent Systems, held in Casablanca on October 18-20, 2017. The book offers a comprehensive, practical review of the state-of-the-art in designing and implementing real-time intelligent computing for the areas within the conference’s scope such as robotics, intelligent alert systems, IoT, remote access control, multi-agent systems, networking, mobile smart systems, crowdsourcing, broadband systems, cloud computing, streaming data and many other applications. Research in real-time computing supports decision making in dynamic environments. Some examples include ABS, FBW flight control, automatic air-conditioning, etc. Intelligent computing relies heavily on artificial intelligence (AI) to make computers act for humans. The authors are confident that the solutions discussed in this book will provide a unique source of information and inspiration for researchers working in AI, distributed coding algorithms or smart services and platforms, and for IT professionals, who can integrate the proposed methods into their practice.

This is a book about the nature of mathematical modeling, and about the kinds of techniques that are useful for modeling. The text is in four sections. The first covers exact and approximate analytical techniques; the second, numerical methods; the third, model inference based on observations; and the last, the special role of time in modeling. Each of the topics in the book would be the worthy subject of a dedicated text, but only by presenting the material in this way is it possible to make so much material accessible to so many people. Each chapter presents a concise summary of the core results in an area. The text is complemented by extensive worked problems.

Mathematical Modeling in Chemical Engineering

Artificial Crime Analysis Systems: Using Computer Simulations and Geographic Information Systems

14 Teaching Practices for Enhancing Learning

The Nature of Mathematical Modeling

A Gourmet’s Guide to the Mathematical Models of Science

Volume 1

Mathematical modelling is a subject without boundaries. It is the means by which mathematics becomes useful to virtually any subject. Moreover, modelling has been and continues to be a driving force for the development of mathematics itself. This book explains the process of modelling real situations to obtain mathematical problems that can be analyzed, thus solving the original problem. In this book the authors have succeeded in demonstrating just how enjoyable this subject can be. Each chapter ends with a set of exercises and some suggestions for class projects. Some projects are extensive; others are more modest. The text was designed to be suitable for a one-term course for advanced undergraduates on modelling. It can also be used in seminars or as preparation for mathematical modelling competitions.

A thinking student is an engaged student Teachers often find it difficult to implement lessons that help students go beyond rote memorization and repetitive calculations. In fact, institutional norms and habits that permeate all classrooms can actually be enabling "non-thinking" student behavior. Sparked by observing teachers struggle to implement rich mathematics tasks to engage students in deep thinking, Peter Liljedahl has translated his 15 years of research into this practical guide on how to move toward a thinking classroom. Building Thinking Classrooms in Mathematics, Grades K-12 helps teachers implement 14 optimal practices for thinking that create an ideal setting for deep mathematics learning to occur. This guide Provides the what, why, and how of each practice and answers teachers’ most frequently asked questions Includes firsthand accounts of how these practices foster thinking through teacher and student interviews and student work samples Offers a plethora of macro moves, micro moves, and rich tasks to get started Organizes the 14 practices into four toolkits that can be implemented in order and built on throughout the year When combined, these unique research-based practices create the optimal conditions for learner-centered, student-owned deep mathematical thinking and learning, and have the power to transform mathematics classrooms like never before.

The innovative volume seeks to broaden the scope of research on mathematical problem solving in different educational environments. It brings together contributions not only from leading researchers, but also highlights collaborations with younger researchers to broadly explore mathematical problem-solving across many fields: mathematics education, psychology of education, technology education, mathematics popularization, and more. The volume’s three major themes—technology, creativity, and affect—represent key issues that are crucially embedded in the activity of problem solving in mathematics teaching and learning, both within the school setting and beyond the school. Through the book’s new pedagogical perspectives on these themes, it advances the field of research towards a more comprehensive approach on mathematical problem solving. Broadening the Scope of Research on Mathematical Problem Solving will prove to be a valuable resource for researchers and teachers interested in mathematical problem solving, as well as researchers and teachers interested in technology, creativity, and affect.

How many patients will require admission to my hospital in two days? How widespread will influenza be in my community in two weeks? What will the changing demographics of our community do to affect demand for medical services in our region in two years? These and similar questions are the province of Modelling in Healthcare. This new volume, presented by the Complex Systems Modelling Group at Simon Fraser University in Canada, uses plain language, sophisticated mathematics and vivid examples to guide and instruct. Sage advice on the benefits and limitations of the modeling process and model predictions is generously distributed so that the reader comes away with an understanding not only of the process but also on the practical uses (and misuses!) of models. Perhaps the most important aspect of this book is that the content and the logic are readily understandable by modelers, administrators and clinicians alike. This volume will surely serve as their common and thus preferred reference for modeling in healthcare for many years. --Timothy G. Buchman, Ph.D., M.D., FACS, FCCM Modelling in Healthcare adds much-needed breadth to the curriculum, giving readers the introduction to simulation methods, network analysis, game theory, and other essential modeling techniques that are rarely touched upon by traditional statistics texts. --Ben Klemens, Ph.D. Mathematical and statistical modeling has tremendous potential for helping improve the quality and efficiency of health care delivery and as a tool for decision making by health care professionals. This book provides many relevant and successful applications of modeling in health care and can serve as an important resource and guide for those working in this exciting new field. --Reinhard Laubenbacher, Ph.D.

Ecological Risk Assessment, Second Edition

A Focus on Technology, Creativity and Affect

From the Viewpoint of Backward Error Analysis

Proceedings of the 5th International Conference on Industrial Engineering (ICIE 2019)

ICTMA 13

Calculus for Biology and Medicine

This book highlights recent findings in industrial, manufacturing and mechanical engineering, and provides an overview of the state of the art in these fields, mainly in Russia and Eastern Europe. A broad range of topics and issues in modern engineering are discussed, including the dynamics of machines and working processes, friction, wear and lubrication in machines, surface transport and technological machines, manufacturing engineering of industrial facilities, materials engineering, metallurgy, control systems and their industrial applications, industrial mechatronics, automation and robotics. The book gathers selected papers presented at the 5th International Conference on Industrial Engineering (ICIE), held in Sochi, Russia in March 2019. The authors are experts in various fields of engineering, and all papers have been carefully reviewed. Given its scope, the book will be of interest to a wide readership, including mechanical and production engineers, lecturers in engineering disciplines, and engineering graduates.

This revised and updated second edition maintains the content and spirit of the first edition and includes a new chapter, "Recent Experiences", that provides examples of experimental mathematics that have come to light since the publication of the first edition in 2003. For more examples and insights, see: Experimentation in Mathematics; Computational P

A solid introduction, enabling the reader to successfully formulate, construct, simplify, evaluate and use mathematical models in chemical engineering.

The whole picture of Mathematical Modeling is systematically and thoroughly explained in this text for undergraduate and graduate students of mathematics, engineering, economics, finance, biology, chemistry, and physics. This textbook gives an overview of the spectrum of modeling techniques, deterministic and stochastic methods, and first-principle and empirical solutions. Complete range: The text continuously covers the complete range of basic modeling techniques; it provides a consistent transition from simple algebraic analysis methods to simulation methods used for research. Such an overview of the spectrum of modeling techniques is very helpful for the understanding of how a research problem considered can be appropriately addressed. Complete methods: Real-world processes always involve uncertainty, and the consideration of randomness is often relevant. Many students know deterministic methods, but they do hardly have access to stochastic methods, which are described in advanced textbooks on probability theory. The book develops consistently both deterministic and stochastic methods. In particular, it shows how deterministic methods are generalized by stochastic methods. Complete solutions: A variety of empirical approximations is often available for the modeling of processes. The question of which assumption is valid under certain conditions is clearly relevant. The book provides a bridge between empirical modeling and first-principle methods: it explains how the principles of modeling can be used to explain the validity of empirical assumptions. The basic features of micro-scale and macro-scale modeling are discussed -- which is an important problem of current research.

Trends in Teaching and Learning of Mathematical Modelling

Principles of Mathematical Modeling

Modal Tests and Dynamic Mathematical Model Verification of Space Flyer Unit (SFU)

Mathematical Modelling

Mathematical Methods in Chemical and Biological Engineering

A Mathematical Model for River Ice Processes

Science and engineering students depend heavily on concepts of mathematical modeling. In an age where almost everything is done on a computer, author Clive Dym believes that students need to understand and "own" the underlying mathematics that computers are doing on their behalf. His goal for Principles of Mathematical Modeling, Second Edition, is to engage the student reader in developing a foundational understanding of the subject that will serve them well into their careers. The first half of the book begins with a clearly defined set of modeling principles, and then introduces a set of foundational tools including dimensional analysis, scaling techniques, and approximation and validation techniques. The second half demonstrates the latest applications for these tools to a broad variety of subjects, including exponential growth and decay in fields ranging from biology to economics, traffic flow, free and forced vibration of mechanical and other systems, and optimization problems in biology, structures, and social decision making. Prospective students should have already completed courses in elementary algebra, trigonometry, and first-year calculus and have some familiarity with differential equations and basic physics. Serves as an introductory text on the development and application of mathematical models Focuses on techniques of particular interest to engineers, scientists, and others who model continuous systems Offers more than 360 problems, providing ample opportunities for practice Covers a wide range of interdisciplinary topics--from engineering to economics to the sciences Uses straightforward language and explanations that make modeling easy to understand and apply New to this Edition: A more systematic approach to mathematical modeling, outlining ten specific principles Expanded and reorganized chapters that flow in an increasing level of complexity Several new problems and updated applications Expanded figure captions that provide more information Improved accessibility and flexibility for teaching

As the computer industry seeks to leverage massively parallel graphics processing units (GPUs), this book is designed to meet the needs of working software developers who need to understand GPU programming with CUDA and increase efficiency in their projects. CUDA Application Design and Development starts with an introduction to parallel computing concepts for readers with no previous parallel experience, and focuses on issues of immediate importance to working software developers: achieving high performance, maintaining competitiveness, analyzing CUDA benefits versus costs, and determining application lifespan. The book then details the thought behind CUDA and teaches how to create, analyze, and debug CUDA applications. Throughout, the focus is on software engineering issues: how to use CUDA in the context of existing application code, with existing compilers, languages, software tools, and industry-standard API libraries. Using an approach refined in a series of well-received articles at Dr Dobb’s Journal, author Rob Farber takes the reader step-by-step from fundamentals to implementation, moving from language theory to practical coding. Includes multiple examples building from simple to more complex applications in four key areas: machine learning, visualization, vision recognition, and mobile computing Addresses the foundational issues for CUDA development: multi-threaded programming and the different memory hierarchy Includes teaching chapters designed to give a full understanding of CUDA tools, techniques and structure.

Presents CUDA techniques in the context of the hardware they are implemented on as well as other styles of programming that will help readers bridge into the new material

This book constitutes the refereed proceedings of the 18th International Conference on DNA Computing and Molecular Programming, DNA 18, held in Aarhus, Denmark, in August 2012. The 11 full papers presented were carefully selected from 37 submissions. The papers are organized in topical sections on advancing the engineering and science of biology and chemistry from the point of view of computer science, physics, and mathematics.

A leading scholar of the history and philosophy of economic thought, Philip Mirowski argues that there has been a top-to-bottom transformation in how scientific research is organized and funded in Western countries over the past two decades and that these changes necessitate a reexamination of the ways that science and economics interact. Mirowski insists on the need to bring together the insights of economics, science studies, and the philosophy of science in order to understand how and why particular research programs get stabilized through interdisciplinary appropriation, controlled distributions of error, and funding restrictions. Mirowski contends that neoclassical economists have persistently presumed and advanced an "effortless economy of science," a misleading model of a self-sufficient and conceptually self-referential social structure that transcends market operations in pursuit of absolute truth. In the stunning essays collected here, he presents a radical critique of the ways that neoclassical economics is used to support, explain, and legitimate the current social practices underlying the funding and selection of "successful" science projects. He questions a host of theories, including the portraits of science put forth by Karl Popper, Michael Polanyi, and Thomas Kuhn. Among the many topics he examines are the social stabilization of quantitative measurement, the repressed history of econometrics, and the social construction of the laws of supply and demand and their putative opposite, the gift economy. In The Effortless Economy of Science? Mirowski

Information and Communication Technologies, Modeling, Visualization and Experimentation

Humans-with-Media and the Reorganization of Mathematical Thinking

Handbook of Mathematical Functions

International Conference, MMCP 2011, Stará Lesná, Slovakia, July 4-8, 2011, Revised Selected Papers

Mathematical Cultures

Volume I

This book includes the thoroughly refereed post-conference proceedings of the 13th RoboCup International Symposium, held in Graz, Austria, in June/July, 2009. They cover scientific contributions to a variety of research areas related to all RoboCup divisions.

Mathematical Modelling Techniques

Workshop Summary and Papers

Using Computer Simulations and Geographic Information Systems

Coming Home To Math