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KEY=SCIENCE - EATON BROOKLYN

PYTHON SCRIPTING FOR COMPUTATIONAL SCIENCE

Springer Science & Business Media With a primary focus on examples and applications of relevance to computational scientists, this brilliantly useful book shows computational scientists how to develop tailored, flexible, and human-efficient working environments built from small scripts written in the easy-to-learn, high-level Python language. All the tools and examples in this book are open source codes. This third edition features lots of new material. It is also released after a comprehensive reorganization of the text. The author has inserted improved examples and tools and updated information, as well as correcting any errors that crept in to the first imprint.

ELEMENTS OF SCIENTIFIC COMPUTING

Springer Science & Business Media Science used to be experiments and theory, now it is experiments, theory and computations. The computational approach to understanding nature and technology is currently flowering in many fields such as physics, geophysics, astrophysics, chemistry, biology, and most engineering disciplines. This book is a gentle introduction to such computational methods where the techniques are explained through examples. It is our goal to teach principles and ideas that carry over from field to field. You will learn basic methods and how to implement them. In order to gain the most from this text, you will need prior knowledge of calculus, basic linear algebra and elementary programming.

VERIFICATION AND VALIDATION IN SCIENTIFIC COMPUTING

Cambridge University Press Advances in scientific computing have made modelling and simulation an important part of the decision-making process in engineering, science, and public policy. This book provides a comprehensive and systematic development of the basic concepts, principles, and procedures for verification and validation of models and simulations. The emphasis is placed on models that are described by partial differential and integral equations and the simulations that result from their numerical solution. The methods described can be applied to a wide range of technical fields, from the physical sciences, engineering and technology and industry, through to environmental regulations and safety, product and plant safety, financial investing, and governmental regulations. This book will be genuinely welcomed by researchers, practitioners, and decision makers in a broad range of fields, who seek to improve the credibility and reliability of simulation results. It will also be appropriate either for university courses or for independent study.

FINITE DIFFERENCE COMPUTING WITH PDES

A MODERN SOFTWARE APPROACH

Springer This book is open access under a CC BY 4.0 license. This easy-to-read book introduces the basics of solving partial differential equations by means of finite difference methods. Unlike many of the traditional academic works on the topic, this book was written for practitioners. Accordingly, it especially addresses: the construction of finite difference schemes, formulation and implementation of algorithms, verification of implementations, analyses of physical behavior as implied by the numerical solutions, and how to apply the methods and software to solve problems in the fields of physics and biology.

THE POTENTIAL IMPACT OF HIGH-END CAPABILITY COMPUTING ON FOUR ILLUSTRATIVE FIELDS OF SCIENCE AND ENGINEERING

National Academies Press Many federal funding requests for more advanced computer resources assume implicitly that greater computing power creates opportunities for advancement in science and engineering. This has often been a good assumption. Given stringent pressures on the federal budget, the White House Office of Management and Budget (OMB) and Office of Science and Technology Policy (OSTP) are seeking an improved approach to the formulation and review of requests from the agencies for new computing funds. This book examines, for four illustrative fields of

science and engineering, how one can start with an understanding of their major challenges and discern how progress against those challenges depends on high-end capability computing (HECC). The four fields covered are: atmospheric science astrophysics chemical separations evolutionary biology This book finds that all four of these fields are critically dependent on HECC, but in different ways. The book characterizes the components that combine to enable new advances in computational science and engineering and identifies aspects that apply to multiple fields.

INTEGRATED COMPUTATIONAL MATERIALS ENGINEERING (ICME) FOR METALS

USING MULTISCALE MODELING TO INVIGORATE ENGINEERING DESIGN WITH SCIENCE

John Wiley & Sons State-of-the-technology tools for designing, optimizing, and manufacturing new materials Integrated computational materials engineering (ICME) uses computational materials science tools within a holistic system in order to accelerate materials development, improve design optimization, and unify design and manufacturing. Increasingly, ICME is the preferred paradigm for design, development, and manufacturing of structural products. Written by one of the world's leading ICME experts, this text delivers a comprehensive, practical introduction to the field, guiding readers through multiscale materials processing modeling and simulation with easy-to-follow explanations and examples. Following an introductory chapter exploring the core concepts and the various disciplines that have contributed to the development of ICME, the text covers the following important topics with their associated length scale bridging methodologies: Macroscale continuum internal state variable plasticity and damage theory and multistage fatigue Mesoscale analysis: continuum theory methods with discrete features and methods Discrete dislocation dynamics simulations Atomistic modeling methods Electronics structures calculations Next, the author provides three chapters dedicated to detailed case studies, including "From Atoms to Autos: A Redesign of a Cadillac Control Arm," that show how the principles and methods of ICME work in practice. The final chapter examines the future of ICME, forecasting the development of new materials and engineering structures with the help of a cyberinfrastructure that has been recently established. Integrated Computational Materials Engineering (ICME) for Metals is recommended for both students and professionals in engineering and materials science, providing them with new state-of-the-technology tools for selecting, designing, optimizing, and manufacturing new materials. Instructors who adopt this text for coursework can take advantage of PowerPoint lecture notes, a questions and solutions manual, and tutorials to guide students through the models and codes discussed in the text.

INNOVATIONS AND ADVANCES IN COMPUTING, INFORMATICS, SYSTEMS SCIENCES, NETWORKING AND ENGINEERING

Springer Innovations and Advances in Computing, Informatics, Systems Sciences, Networking and Engineering This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computer Science, Informatics, and Systems Sciences, and Engineering. It includes selected papers from the conference proceedings of the Eighth and some selected papers of the Ninth International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE 2012 & CISSE 2013). Coverage includes topics in: Industrial Electronics, Technology & Automation, Telecommunications and Networking, Systems, Computing Sciences and Software Engineering, Engineering Education, Instructional Technology, Assessment, and E-learning. · Provides the latest in a series of books growing out of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering; · Includes chapters in the most advanced areas of Computing, Informatics, Systems Sciences, and Engineering; · Accessible to a wide range of readership, including professors, researchers, practitioners and students.

ADVANCES AND INNOVATIONS IN SYSTEMS, COMPUTING SCIENCES AND SOFTWARE ENGINEERING

Springer Science & Business Media This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computing Sciences, Software Engineering and Systems. The book presents selected papers from the conference proceedings of the International Conference on Systems, Computing Sciences and Software Engineering (SCSS 2006). All aspects of the conference were managed on-line.

COMPUTATIONAL SOLUTIONS FOR KNOWLEDGE, ART, AND ENTERTAINMENT: INFORMATION EXCHANGE BEYOND TEXT

INFORMATION EXCHANGE BEYOND TEXT

IGI Global As interactive application software such as apps, installations, and multimedia presentations have become pervasive in everyday life, more and more computer scientists, engineers, and technology experts acknowledge the influence that exists beyond visual explanations. Computational Solutions for Knowledge, Art, and Entertainment: Information Exchange Beyond Text focuses on the methods of depicting knowledge-based concepts in order to assert power beyond a visual explanation of scientific and computational notions. This book combines formal descriptions with graphical presentations and encourages readers to interact by creating visual solutions for science-related concepts and presenting data. This reference is essential for researchers, computer scientists, and academics focusing on the integration of science, technology, computing, art, and mathematics for visual problem solving.

COMPUTING PROFESSIONALS

CHANGING NEEDS FOR THE 1990S

National Academies Press Surprisingly little is known about the people responsible for advancing the science, technology, and application of computing systems, despite their critical roles in the U.S. economy. As a group, they can be referred to as "computing professionals." But that label masks an unusually wide range of occupations. To add to the confusion, the nature of these occupations is changing rapidly in response to dramatic advances in technology. Building from discussions at a workshop, this book explores the number, composition, demand, and supply of computing professionals in the United States. It identifies key issues and sources of data and illuminates options for improving our understanding of these important occupational groups.

COMPUTING THE FUTURE

A BROADER AGENDA FOR COMPUTER SCIENCE AND ENGINEERING

National Academies Press Computers are increasingly the enabling devices of the information revolution, and computing is becoming ubiquitous in every corner of society, from manufacturing to telecommunications to pharmaceuticals to entertainment. Even more importantly, the face of computing is changing rapidly, as even traditional rivals such as IBM and Apple Computer begin to cooperate and new modes of computing are developed. Computing the Future presents a timely assessment of academic computer science and engineering (CS&E), examining what should be done to ensure continuing progress in making discoveries that will carry computing into the twenty-first century. Most importantly, it advocates a broader research and educational agenda that builds on the field's impressive accomplishments. The volume outlines a framework of priorities for CS&E, along with detailed recommendations for education, funding, and leadership. A core research agenda is outlined for these areas: processors and multiple-processor systems, data communications and networking, software engineering, information storage and retrieval, reliability, and user interfaces. This highly readable volume examines Computer science and engineering as a discipline--how computer scientists and engineers are pushing back the frontiers of their field. How CS&E must change to meet the challenges of the future. The influence of strategic investment by federal agencies in CS&E research. Recent structural changes that affect the interaction of academic CS&E and the business environment. Specific examples of interdisciplinary and applications research in four areas: earth sciences and the environment, computational biology, commercial computing, and the long-term goal of a national electronic library. The volume provides a detailed look at undergraduate CS&E education, highlighting the limitations of four-year programs, and discusses the emerging importance of a master's degree in CS&E and the prospects for broadening the scope of the Ph.D. It also includes a brief look at continuing education.

MATHEMATICAL AND COMPUTATIONAL MODELING

WITH APPLICATIONS IN NATURAL AND SOCIAL SCIENCES, ENGINEERING, AND THE ARTS

John Wiley & Sons Illustrates the application of mathematical and computational modeling in a variety of disciplines With an emphasis on the interdisciplinary nature of mathematical and computational modeling, Mathematical and Computational Modeling: With Applications in the Natural and Social Sciences, Engineering, and the Arts features chapters written by well-known, international experts in these fields and presents readers with a host of state-of-the-art achievements in the development of mathematical modeling and computational experiment methodology. The book is a valuable guide to the methods, ideas, and tools of applied and computational mathematics as they apply to other disciplines such as the natural and social sciences, engineering, and technology. Mathematical and Computational Modeling: With Applications in the Natural and Social Sciences, Engineering, and the Arts also features: Rigorous mathematical procedures and applications as the driving force behind mathematical innovation and discovery Numerous examples from a wide range of disciplines to emphasize the multidisciplinary application and universality of applied mathematics and mathematical modeling Original results on both fundamental theoretical and applied developments in diverse areas of human knowledge Discussions that promote interdisciplinary interactions between mathematicians, scientists, and engineers Mathematical and Computational Modeling: With Applications in the Natural and Social Sciences, Engineering, and the Arts is an ideal resource for professionals in various areas of mathematical and statistical sciences, modeling and simulation, physics, computer science, engineering, biology and chemistry, industrial, and computational engineering. The book also serves as an excellent textbook for graduate courses in mathematical modeling, applied mathematics, numerical methods, operations research, and optimization.

DATA-DRIVEN SCIENCE AND ENGINEERING

MACHINE LEARNING, DYNAMICAL SYSTEMS, AND CONTROL

Cambridge University Press Data-driven discovery is revolutionizing the modeling, prediction, and control of complex systems. This textbook brings together machine learning, engineering mathematics, and mathematical physics to integrate modeling and control of dynamical systems with modern methods in data science. It highlights many of the recent advances in scientific computing that enable data-driven methods to be applied to a diverse range of complex systems, such as turbulence, the brain, climate, epidemiology, finance, robotics, and autonomy. Aimed at advanced undergraduate and beginning graduate students in the engineering and physical sciences, the text presents a range of

topics and methods from introductory to state of the art.

HANDBOOK OF RESEARCH ON COMPUTATIONAL SCIENCE AND ENGINEERING: THEORY AND PRACTICE

THEORY AND PRACTICE

IGI Global By using computer simulations in research and development, computational science and engineering (CSE) allows empirical inquiry where traditional experimentation and methods of inquiry are difficult, inefficient, or prohibitively expensive. The Handbook of Research on Computational Science and Engineering: Theory and Practice is a reference for interested researchers and decision-makers who want a timely introduction to the possibilities in CSE to advance their ongoing research and applications or to discover new resources and cutting edge developments. Rather than reporting results obtained using CSE models, this comprehensive survey captures the architecture of the cross-disciplinary field, explores the long term implications of technology choices, alerts readers to the hurdles facing CSE, and identifies trends in future development.

COMPUTING AND COMMUNICATIONS IN THE EXTREME

RESEARCH FOR CRISIS MANAGEMENT AND OTHER APPLICATIONS

National Academies Press This book synthesizes the findings of three workshops on research issues in high-performance computing and communications (HPCC). It focuses on the role that computing and communications can play in supporting federal, state, and local emergency management officials who deal with natural and man-made hazards (e.g., toxic spills, terrorist bombings). The volume also identifies specific research challenges for HPCC in meeting unmet technology needs in crisis management and other nationally important application areas, such as manufacturing, health care, digital libraries, and electronic commerce and banking.

CATALYZING INQUIRY AT THE INTERFACE OF COMPUTING AND BIOLOGY

National Academies Press Advances in computer science and technology and in biology over the last several years have opened up the possibility for computing to help answer fundamental questions in biology and for biology to help with new approaches to computing. Making the most of the research opportunities at the interface of computing and biology requires the active participation of people from both fields. While past attempts have been made in this direction, circumstances today appear to be much more favorable for progress. To help take advantage of these opportunities, this study was requested of the NRC by the National Science Foundation, the Department of Defense, the National Institutes of Health, and the Department of Energy. The report provides the basis for establishing cross-disciplinary collaboration between biology and computing including an analysis of potential impediments and strategies for overcoming them. The report also presents a wealth of examples that should encourage students in the biological sciences to look for ways to enable them to be more effective users of computing in their studies.

THE FUTURE OF COMPUTING PERFORMANCE

GAME OVER OR NEXT LEVEL?

National Academies Press The end of dramatic exponential growth in single-processor performance marks the end of the dominance of the single microprocessor in computing. The era of sequential computing must give way to a new era in which parallelism is at the forefront. Although important scientific and engineering challenges lie ahead, this is an opportune time for innovation in programming systems and computing architectures. We have already begun to see diversity in computer designs to optimize for such considerations as power and throughput. The next generation of discoveries is likely to require advances at both the hardware and software levels of computing systems. There is no guarantee that we can make parallel computing as common and easy to use as yesterday's sequential single-processor computer systems, but unless we aggressively pursue efforts suggested by the recommendations in this book, it will be "game over" for growth in computing performance. If parallel programming and related software efforts fail to become widespread, the development of exciting new applications that drive the computer industry will stall; if such innovation stalls, many other parts of the economy will follow suit. The Future of Computing Performance describes the factors that have led to the future limitations on growth for single processors that are based on complementary metal oxide semiconductor (CMOS) technology. It explores challenges inherent in parallel computing and architecture, including ever-increasing power consumption and the escalated requirements for heat dissipation. The book delineates a research, practice, and education agenda to help overcome these challenges. The Future of Computing Performance will guide researchers, manufacturers, and information technology professionals in the right direction for sustainable growth in computer performance, so that we may all enjoy the next level of benefits to society.

COMPUTER SCIENCE

PediaPress

QUANTUM COMPUTATION AND QUANTUM INFORMATION

Cambridge University Press First-ever comprehensive introduction to the major new subject of quantum computing and quantum information.

LECTURE NOTES IN COMPUTATIONAL INTELLIGENCE AND DECISION MAKING

PROCEEDINGS OF THE XV INTERNATIONAL SCIENTIFIC CONFERENCE "INTELLECTUAL SYSTEMS OF DECISION MAKING AND PROBLEMS OF COMPUTATIONAL INTELLIGENCE" (ISDMCI'2019), UKRAINE, MAY 21–25, 2019

Springer Information and computer technologies for data analysis and processing in various fields of data mining and machine learning generates the conditions for increasing the effectiveness of information processing by making it faster and more accurate. The book includes 49 scientific papers presenting the latest research in the fields of data mining, machine learning and decision-making. Divided into three sections: "Analysis and Modeling of Complex Systems and Processes"; "Theoretical and Applied Aspects of Decision-Making Systems"; and "Computational Intelligence and Inductive Modeling", the book is of interest to scientists and developers in the field.

PROGRAMMING FOR COMPUTATIONS - MATLAB/OCTAVE

A GENTLE INTRODUCTION TO NUMERICAL SIMULATIONS WITH MATLAB/OCTAVE

Springer This book presents computer programming as a key method for solving mathematical problems. There are two versions of the book, one for MATLAB and one for Python. The book was inspired by the Springer book TCSE 6: A Primer on Scientific Programming with Python (by Langtangen), but the style is more accessible and concise, in keeping with the needs of engineering students. The book outlines the shortest possible path from no previous experience with programming to a set of skills that allows the students to write simple programs for solving common mathematical problems with numerical methods in engineering and science courses. The emphasis is on generic algorithms, clean design of programs, use of functions, and automatic tests for verification.

UNCERTAINTY QUANTIFICATION AND PREDICTIVE COMPUTATIONAL SCIENCE

A FOUNDATION FOR PHYSICAL SCIENTISTS AND ENGINEERS

Springer This textbook teaches the essential background and skills for understanding and quantifying uncertainties in a computational simulation, and for predicting the behavior of a system under those uncertainties. It addresses a critical knowledge gap in the widespread adoption of simulation in high-consequence decision-making throughout the engineering and physical sciences. Constructing sophisticated techniques for prediction from basic building blocks, the book first reviews the fundamentals that underpin later topics of the book including probability, sampling, and Bayesian statistics. Part II focuses on applying Local Sensitivity Analysis to apportion uncertainty in the model outputs to sources of uncertainty in its inputs. Part III demonstrates techniques for quantifying the impact of parametric uncertainties on a problem, specifically how input uncertainties affect outputs. The final section covers techniques for applying uncertainty quantification to make predictions under uncertainty, including treatment of epistemic uncertainties. It presents the theory and practice of predicting the behavior of a system based on the aggregation of data from simulation, theory, and experiment. The text focuses on simulations based on the solution of systems of partial differential equations and includes in-depth coverage of Monte Carlo methods, basic design of computer experiments, as well as regularized statistical techniques. Code references, in python, appear throughout the text and online as executable code, enabling readers to perform the analysis under discussion. Worked examples from realistic, model problems help readers understand the mechanics of applying the methods. Each chapter ends with several assignable problems. Uncertainty Quantification and Predictive Computational Science fills the growing need for a classroom text for senior undergraduate and early-career graduate students in the engineering and physical sciences and supports independent study by researchers and professionals who must include uncertainty quantification and predictive science in the simulations they develop and/or perform.

THE MATHEMATICAL-FUNCTION COMPUTATION HANDBOOK

PROGRAMMING USING THE MATHCW PORTABLE SOFTWARE LIBRARY

Springer This highly comprehensive handbook provides a substantial advance in the computation of elementary and special functions of mathematics, extending the function coverage of major programming languages well beyond their international standards, including full support for decimal floating-point arithmetic. Written with clarity and focusing on the C language, the work pays extensive attention to little-understood aspects of floating-point and integer arithmetic, and to software portability, as well as to important historical architectures. It extends support to a future 256-bit, floating-point format offering 70 decimal digits of precision. Select Topics and Features: references an exceptionally useful, author-maintained MathCW website, containing source code for the book's software, compiled libraries for numerous systems, pre-built C compilers, and other related materials; offers a unique approach to covering mathematical-function computation using decimal arithmetic; provides extremely versatile appendices for interfaces to numerous other languages: Ada, C#, C++, Fortran, Java, and Pascal; presupposes only basic familiarity with computer programming in a common language, as well as early level algebra; supplies a library that readily adapts for existing scripting languages, with minimal effort; supports both binary and decimal arithmetic, in up to 10 different floating-point formats; covers a significant portion (with highly accurate implementations) of the U.S National Institute of Standards and Technology's 10-year project to codify mathematical functions. This highly practical text/reference is an invaluable tool for advanced undergraduates, recording many lessons of the intermingled history of computer hardw are and software, numerical algorithms, and mathematics. In addition, professional numerical

analysts and others will find the handbook of real interest and utility because it builds on research by the mathematical software community over the last four decades.

SOFTWARE ENGINEERING AND COMPUTER SYSTEMS, PART III

SECOND INTERNATIONAL CONFERENCE, ICSECS 2011, KUANTAN, PAHANG, MALAYSIA, JUNE 27-29, 2011, PROCEEDINGS

Springer Science & Business Media This Three-Volume-Set constitutes the refereed proceedings of the Second International Conference on Software Engineering and Computer Systems, ICSECS 2011, held in Kuantan, Malaysia, in June 2011. The 190 revised full papers presented together with invited papers in the three volumes were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on software engineering; network; bioinformatics and e-health; biometrics technologies; Web engineering; neural network; parallel and distributed; e-learning; ontology; image processing; information and data management; engineering; software security; graphics and multimedia; databases; algorithms; signal processing; software design/testing; e- technology; ad hoc networks; social networks; software process modeling; miscellaneous topics in software engineering and computer systems.

INTRODUCTION TO PYTHON FOR ENGINEERS AND SCIENTISTS

OPEN SOURCE SOLUTIONS FOR NUMERICAL COMPUTATION

Apress Familiarize yourself with the basics of Python for engineering and scientific computations using this concise, practical tutorial that is focused on writing code to learn concepts. Introduction to Python is useful for industry engineers, researchers, and students who are looking for open-source solutions for numerical computation. In this book you will learn by doing, avoiding technical jargon, which makes the concepts easy to learn. First you'll see how to run basic calculations, absorbing technical complexities incrementally as you progress toward advanced topics. Throughout, the language is kept simple to ensure that readers at all levels can grasp the concepts. What You'll Learn Understand the fundamentals of the Python programming language Apply Python to numerical computational programming projects in engineering and science Discover the Pythonic way of life Apply data types, operators, and arrays Carry out plotting for visualization Work with functions and loops Who This Book Is For Engineers, scientists, researchers, and students who are new to Python. Some prior programming experience would be helpful but not required.

TEXT SEGMENTATION AND RECOGNITION FOR ENHANCED IMAGE SPAM DETECTION

AN INTEGRATED APPROACH

Springer Nature This book discusses email spam detection and its challenges such as text classification and categorization. The book proposes an efficient spam detection technique that is a combination of Character Segmentation and Recognition and Classification (CSRC). The author describes how this can detect whether an email (text and image based) is a spam mail or not. The book presents four solutions: first, to extract the text character from the image by segmentation process which includes a combination of Discrete Wavelet Transform (DWT) and skew detection. Second, text characters are via text recognition and visual feature extraction approach which relies on contour analysis with improved Local Binary Pattern (LBP). Third, extracted text features are classified using improvised K-Nearest Neighbor search (KNN) and Support Vector Machine (SVM). Fourth, the performance of the proposed method is validated by the measure of metric named as sensitivity, specificity, precision, recall, F-measure, accuracy, error rate and correct rate. Presents solutions to email spam detection and discusses its challenges such as text classification and categorization; Analyzes the proposed techniques' performance using precision, F-measure, recall and accuracy; Evaluates the limitations of the proposed research thereby recommending future research.

COMPUTATIONAL LINGUISTICS AND INTELLIGENT TEXT PROCESSING

16TH INTERNATIONAL CONFERENCE, CICLING 2015, CAIRO, EGYPT, APRIL 14-20, 2015, PROCEEDINGS, PART II

Springer The two volumes LNCS 9041 and 9042 constitute the proceedings of the 16th International Conference on Computational Linguistics and Intelligent Text Processing, CICLing 2015, held in Cairo, Egypt, in April 2015. The total of 95 full papers presented was carefully reviewed and selected from 329 submissions. They were organized in topical sections on grammar formalisms and lexical resources; morphology and chunking; syntax and parsing; anaphora resolution and word sense disambiguation; semantics and dialogue; machine translation and multilingualism; sentiment analysis and emotion detection; opinion mining and social network analysis; natural language generation and text summarization; information retrieval, question answering, and information extraction; text classification; speech processing; and applications.

EVOLVING THE HIGH PERFORMANCE COMPUTING AND COMMUNICATIONS INITIATIVE TO SUPPORT THE NATION'S INFORMATION INFRASTRUCTURE

National Academies Press Maintaining the United States' strong lead in information technology will require continued federal support of research in this area, most of which is currently funded under the High Performance Computing and Communications Initiative (HPCCI). The Initiative has already accomplished a great deal and should be continued. This

book provides 13 major recommendations for refining both HPCCI and support of information technology research in general. It also provides a good overview of the development of HPCC technologies.

ENTERPRISE MANAGEMENT STRATEGIES IN THE ERA OF CLOUD COMPUTING

IGI Global Recent advances in internet architecture have led to the advent and subsequent explosion of cloud computing technologies, providing businesses with a powerful toolbox of collaborative digital resources. These technologies have fostered a more flexible, decentralized approach to IT infrastructure, enabling businesses to operate in a more agile fashion and on a globalized scale. Enterprise Management Strategies in the Era of Cloud Computing seeks to explore the possibilities of business in the cloud. Targeting an audience of research scholars, students, software developers, and business professionals, this premier reference source provides a cutting-edge look at the exciting and multifaceted relationships between cloud computing, software virtualization, collaborative technology, and business infrastructure in the 21st Century.

PROCEEDINGS OF INTERNATIONAL CONFERENCE ON ADVANCES IN COMPUTING

Springer Science & Business Media This is the first International Conference on Advances in Computing (ICAdC-2012). The scope of the conference includes all the areas of New Theoretical Computer Science, Systems and Software, and Intelligent systems. Conference Proceedings is a culmination of research results, papers and the theory related to all the three major areas of computing mentioned above. Helps budding researchers, graduates in the areas of Computer Science, Information Science, Electronics, Telecommunication, Instrumentation, Networking to take forward their research work based on the reviewed results in the paper by mutual interaction through e-mail contacts in the proceedings.

INTELLIGENT CONTROL AND INNOVATIVE COMPUTING

Springer Science & Business Media A large international conference on Advances in Intelligent Control and Innovative Computing was held in Hong Kong, March March 16-18, 2011, under the auspices of the International MultiConference of Engineers and Computer Scientists (IMECS 2010). The IMECS is organized by the International Association of Engineers (IAENG). Intelligent Control and Computer Engineering contains 25 revised and extended research articles written by prominent researchers participating in the conference. Topics covered include artificial intelligence, control engineering, decision supporting systems, automated planning, automation systems, systems identification, modelling and simulation, communication systems, signal processing, and industrial applications. Intelligent Control and Innovative Computing offers the state of the art of tremendous advances in intelligent control and computer engineering and also serves as an excellent reference text for researchers and graduate students, working on intelligent control and computer engineering.

NATURAL LANGUAGE PROCESSING FOR HISTORICAL TEXTS

Springer Nature More and more historical texts are becoming available in digital form. Digitization of paper documents is motivated by the aim of preserving cultural heritage and making it more accessible, both to laypeople and scholars. As digital images cannot be searched for text, digitization projects increasingly strive to create digital text, which can be searched and otherwise automatically processed, in addition to facsimiles. Indeed, the emerging field of digital humanities heavily relies on the availability of digital text for its studies. Together with the increasing availability of historical texts in digital form, there is a growing interest in applying natural language processing (NLP) methods and tools to historical texts. However, the specific linguistic properties of historical texts -- the lack of standardized orthography, in particular -- pose special challenges for NLP. This book aims to give an introduction to NLP for historical texts and an overview of the state of the art in this field. The book starts with an overview of methods for the acquisition of historical texts (scanning and OCR), discusses text encoding and annotation schemes, and presents examples of corpora of historical texts in a variety of languages. The book then discusses specific methods, such as creating part-of-speech taggers for historical languages or handling spelling variation. A final chapter analyzes the relationship between NLP and the digital humanities. Certain recently emerging textual genres, such as SMS, social media, and chat messages, or newsgroup and forum postings share a number of properties with historical texts, for example, nonstandard orthography and grammar, and profuse use of abbreviations. The methods and techniques required for the effective processing of historical texts are thus also of interest for research in other domains. Table of Contents: Introduction / NLP and Digital Humanities / Spelling in Historical Texts / Acquiring Historical Texts / Text Encoding and Annotation Schemes / Handling Spelling Variation / NLP Tools for Historical Languages / Historical Corpora / Conclusion / Bibliography

FINITE ELEMENTS

COMPUTATIONAL ENGINEERING SCIENCES

John Wiley & Sons Approaches computational engineering sciences from theperspective of engineering applications Uniting theory with hands-on computer practice, this book givesreaders a firm appreciation of the error mechanisms and controlthat underlie discrete approximation implementations in theengineering sciences. Key features: Illustrative examples include heat conduction, structuralmechanics, mechanical vibrations, heat transfer with convection andradiation, fluid mechanics and heat and mass transport Takes a cross-discipline continuum mechanics viewpoint Includes Matlab toolbox and .m data files on a companionwebsite, immediately enabling hands-on computing in all

coered disciplines Website also features eight topical lectures from the author's own academic courses It provides a holistic view of the topic from covering the different engineering problems that can be solved using finite element to how each particular method can be implemented on a computer. Computational aspects of the method are provided on a companion website facilitating engineering implementation in an easy way.

INTRODUCTION TO NUMERICAL METHODS FOR VARIATIONAL PROBLEMS

Springer Nature This textbook teaches finite element methods from a computational point of view. It focuses on how to develop flexible computer programs with Python, a programming language in which a combination of symbolic and numerical tools is used to achieve an explicit and practical derivation of finite element algorithms. The finite element library FEniCS is used throughout the book, but the content is provided in sufficient detail to ensure that students with less mathematical background or mixed programming-language experience will equally benefit. All program examples are available on the Internet.

ELEMENTS OF SCIENTIFIC COMPUTING

Springer Science & Business Media Science used to be experiments and theory, now it is experiments, theory and computations. The computational approach to understanding nature and technology is currently flowering in many fields such as physics, geophysics, astrophysics, chemistry, biology, and most engineering disciplines. This book is a gentle introduction to such computational methods where the techniques are explained through examples. It is our goal to teach principles and ideas that carry over from field to field. You will learn basic methods and how to implement them. In order to gain the most from this text, you will need prior knowledge of calculus, basic linear algebra and elementary programming.

DOING COMPUTATIONAL SOCIAL SCIENCE

A PRACTICAL INTRODUCTION

SAGE Computational approaches offer exciting opportunities for us to do social science differently. This beginner's guide discusses a range of computational methods and how to use them to study the problems and questions you want to research. It assumes no knowledge of programming, offering step-by-step guidance for coding in Python and drawing on examples of real data analysis to demonstrate how you can apply each approach in any discipline. The book also: Considers important principles of social scientific computing, including transparency, accountability and reproducibility. Understands the realities of completing research projects and offers advice for dealing with issues such as messy or incomplete data and systematic biases. Empowers you to learn at your own pace, with online resources including screencast tutorials and datasets that enable you to practice your skills and get up to speed. For anyone who wants to use computational methods to conduct a social science research project, this book equips you with the skills, good habits and best working practices to do rigorous, high quality work.

SCIENTIFIC COMPUTING WITH MATLAB AND OCTAVE

Springer Science & Business Media This textbook is an introduction to Scientific Computing, in which several numerical methods for the computer-based solution of certain classes of mathematical problems are illustrated. The authors show how to compute the zeros, the extrema, and the integrals of continuous functions, solve linear systems, approximate functions using polynomials and construct accurate approximations for the solution of ordinary and partial differential equations. To make the format concrete and appealing, the programming environments Matlab and Octave are adopted as faithful companions. The book contains the solutions to several problems posed in exercises and examples, often originating from important applications. At the end of each chapter, a specific section is devoted to subjects which were not addressed in the book and contains bibliographical references for a more comprehensive treatment of the material. From the review: ".... This carefully written textbook, the third English edition, contains substantial new developments on the numerical solution of differential equations. It is typeset in a two-color design and is written in a style suited for readers who have mathematics, natural sciences, computer sciences or economics as a background and who are interested in a well-organized introduction to the subject." Roberto Plato (Siegen), Zentralblatt MATH 1205.65002.

NUMERICAL ANALYSIS FOR APPLIED SCIENCE

John Wiley & Sons Written for graduate students in applied mathematics, engineering and science courses, the purpose of this book is to present topics in "Numerical Analysis" and "Numerical Methods." It will combine the material of both these areas as well as special topics in modern applications. Included at the end of each chapter are a variety of theoretical and computational exercises.

XIV MEDITERRANEAN CONFERENCE ON MEDICAL AND BIOLOGICAL ENGINEERING AND COMPUTING 2016

MEDICON 2016, MARCH 31ST-APRIL 2ND 2016, PAPHOS, CYPRUS

Springer This volume presents the proceedings of Medicon 2016, held in Paphos, Cyprus. Medicon 2016 is the XIV in the series of regional meetings of the International Federation of Medical and Biological Engineering (IFMBE) in the Mediterranean. The goal of Medicon 2016 is to provide updated information on the state of the art on Medical and Biological Engineering and Computing under the main theme "Systems Medicine for the Delivery of Better Healthcare

Services". Medical and Biological Engineering and Computing cover complementary disciplines that hold great promise for the advancement of research and development in complex medical and biological systems. Research and development in these areas are impacting the science and technology by advancing fundamental concepts in translational medicine, by helping us understand human physiology and function at multiple levels, by improving tools and techniques for the detection, prevention and treatment of disease. Medicon 2016 provides a common platform for the cross fertilization of ideas, and to help shape knowledge and scientific achievements by bridging complementary disciplines into an interactive and attractive forum under the special theme of the conference that is Systems Medicine for the Delivery of Better Healthcare Services. The programme consists of some 290 invited and submitted papers on new developments around the Conference theme, presented in 3 plenary sessions, 29 parallel scientific sessions and 12 special sessions.

SCIENTIFIC COMPUTING - AN INTRODUCTION USING MAPLE AND MATLAB

Springer Science & Business Scientific computing is the study of how to use computers effectively to solve problems that arise from the mathematical modeling of phenomena in science and engineering. It is based on mathematics, numerical and symbolic/algebraic computations and visualization. This book serves as an introduction to both the theory and practice of scientific computing, with each chapter presenting the basic algorithms that serve as the workhorses of many scientific codes; we explain both the theory behind these algorithms and how they must be implemented in order to work reliably in finite-precision arithmetic. The book includes many programs written in Matlab and Maple – Maple is often used to derive numerical algorithms, whereas Matlab is used to implement them. The theory is developed in such a way that students can learn by themselves as they work through the text. Each chapter contains numerous examples and problems to help readers understand the material "hands-on".