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KEY=PARADIGMS - LLOYD GUERRA

Paradigms in Computing

Making, Machines, and Models for Design Agency in Architecture

eVolo Press Paradigms in Computing: Making, Machines, and Models for Design Agency in Architecture brings together critical, theoretical, and practical research and design that illustrates the plurality of computing approaches within the broad spectrum of design and mediated practices. It is an interrogation of our primary field of architecture through the lens of computing, and yet one that realizes a productive expanding of our métier's definition and boundaries. It is a compilation that purposefully promotes architecture's disciplinary reach and incorporations beyond the design and construction of buildings and cities. The book offers a glimpse into the wide range of positions and experiences that are shaping practice and discourse today. The work included in Paradigms in Computing is evidence that models for enquiry are many and proliferating. As digitalization and computation continue to infuse our processes with new tools and new design environments, some of the trends collected in this book will continue to be central to the production and speculation of architecture, and others will, in retrospect, be recognized as the seeds of new, or perhaps multiple, paradigms. Included are essays and projects, from; Alisa Andrasek, Rachel Armstrong, Philip Beesley, Tom Bessai, Shajay Bhooshan, Brad

Cantrel, Matias Del Campo, Pablo Eiroa, Marc Fornes, David Jason Gerber, Maria Paz Gutierrez, Alvin Huang, Jason Kelly Johnson, Simon Kim, Neil Leach, Greg Lynn, Elena and Anna Maria Manferdini, Alex McDowell, Phillippe Morel, Nick Puckett, Casey Reas, Alex Robinson, Jenny Sabin, Jose Sanchez, Patrik Schumacher, Kyle Steinfeld, Satoru Sugihara, Orkan Telhan, Kathy Velikov and Geoffrey Thun, Tom Verebes, Leire Asensio Villoria and David Mah, Jenny Wu, Eric Howeler and Meejin Yoon, and Zaha Hadid Architects.

The Routledge Companion to Biology in Art and Architecture

Taylor & Francis The Routledge Companion to Biology in Art and Architecture collects thirty essays from a transdisciplinary array of experts on biology in art and architecture. The book presents a diversity of hybrid art-and-science thinking, revealing how science and culture are interwoven. The book situates bioart and bioarchitecture within an expanded field of biology in art, architecture, and design. It proposes an emergent field of biocreativity and outlines its historical and theoretical foundations from the perspective of artists, architects, designers, scientists, historians, and theoreticians. Includes over 150 black and white images.

Responsive Architecture

MDPI This book is a collection of articles that have been published in the Special Issue "Responsive Architecture" of the MDPI journal Buildings. The eleven articles within cover various areas of sensitive architecture, including the design of packaging structures reacting to supporting components; structural efficiency of bent columns in indigenous houses; roof forms responsive to buildings depending on their resiliently transformed steel shell parts; creative design of building free shapes covered with transformed shells; artistic structural concepts of the architect and civil engineer; digitally designed airport terminal using wind analysis; rationalized shaping of sensitive curvilinear steel construction; interactive stories of responsive architecture; transformed shell roof constructions as the main determinant in the creative shaping of buildings without shapes that are sensitive to man-made and natural environments; thermally sensitive performances of a special shielding envelope on balconies; quantification of generality and adaptability of building layout using the SAGA method; and influence of initial conditions on the simulation of the transient temperature field inside a wall.

Computer-Aided Architectural Design: The Next City – New

Technologies and the Future of the Built Environment

16th International Conference, CAAD Futures 2015, São Paulo, Brazil, July 8-10, 2015. Selected Papers

Springer This book constitutes the refereed proceedings of the 16th International Conference on Computer-Aided Architectural Design Futures, CAAD Futures 2015, held in São Paulo, Brazil, in July 2015. The 33 revised full papers presented were carefully reviewed and selected from 200 submissions. The papers are organized in topical sections on modeling, analyzing and simulating the city; sustainability and performance of the built space; automated and parametric design; building information modelling (BIM); fabrication and materiality; shape studies.

Construction Site for Possible Worlds

MIT Press Perspectives from philosophy, aesthetics, and art on how to envisage the construction site of possible worlds. Given the highly coercive and heavily surveilled dynamics of the present moment, when the tremendous pressures exerted by capital on contemporary life produces an aggressively normative "official reality," the question of the construction of other possible worlds is crucial and perhaps more urgent than ever. This collection brings together different perspectives from the fields of philosophy, aesthetics, and art to discuss the mechanisms through which possible worlds are thought, constructed, and instantiated, forcefully seeking to overcome the contemporary moment's deficit of conceptualizing alternate realities—its apparent fear of imagining possible new and compelling futures—to begin the arduous task of producing the political dynamics necessary for actual construction. Implicit in this dynamic between the imaginary and the possible is the question of how thinking intertwines with both rationality and the inherited contingencies and structures of the world. With no ascertainable ground on which to build, with no confidence in any given that could guarantee our labors, how do we even envisage the construction site(s) of possible worlds, and with what kind of diagrams, tools, and languages can we bring them into being?

Robotic Fabrication in Architecture, Art and Design 2016

Springer The book presents the proceedings of Rob/Arch 2016, the third international conference on robotic fabrication in architecture, art, and design. The work contains a wide range of contemporary topics, from methodologies for incorporating dynamic material feedback into existing fabrication processes, to novel interfaces for robotic programming, to new processes for large-scale automated construction. The latent argument behind this research is that the term 'file-to-factory' must not be a reductive celebration of expediency but instead a perpetual challenge to increase the quality of feedback between design, matter, and making.

Responsive Landscapes

Strategies for Responsive Technologies in Landscape Architecture

Routledge The sensing, processing, and visualizing that are currently in development within the environment boldly change the ways design and maintenance of landscapes are perceived and conceptualised. This is the first book to rationalize interactive architecture and responsive technologies through the lens of contemporary landscape architectural theory. Responsive Landscapes frames a comprehensive view of design projects using responsive technologies and their relationship to landscape and environmental space. Divided into six insightful sections, the book frames the projects through the terms; elucidate, compress, displace, connect, ambient, and modify to present and construct a pragmatic framework in which to approach the integration of responsive technologies into landscape architecture. Complete with international case studies, the book explores the various approaches taken to utilise responsive technologies in current professional practice. This will serve as a reference for professionals, and academics looking to push the boundaries of landscape projects and seek inspiration for their design proposals.

Emerging Computing Paradigms

Principles, Advances and Applications

John Wiley & Sons EMERGING COMPUTING PARADIGMS A holistic overview of major new computing paradigms of the 21st Century In Emerging Computing Paradigms: Principles, Advances and Applications, international scholars offer a compendium of essential knowledge on new promising computing paradigms. The book examines the characteristics and features of emerging computing technologies and provides insight into recent technological developments and their potential real-world applications that promise to shape the future. This book is a useful resource for all those who wish to quickly grasp new concepts of, and insights on, emerging computer paradigms and pursue further research or innovate new novel applications harnessing these concepts. Key Features Presents a comprehensive coverage of new technologies that have the potential to shape the future of our world—quantum computing, computational intelligence, advanced wireless networks and blockchain technology Revisits mainstream ideas now being widely adopted, such as cloud computing, the Internet of Things (IoT) and cybersecurity Offers recommendations and practical insights to assist the readers in the application of these technologies Aimed at IT professionals, educators, researchers, and students, Emerging Computing Paradigms: Principles, Advances and Applications is a comprehensive resource to get ahead of the curve in examining and exploiting emerging new concepts and technologies. Business executives will also find the book valuable and gain an advantage over competitors in harnessing the concepts examined therein.

3D-Printed Body Architecture

John Wiley & Sons Some architects dream of 3D-printing houses. Some even fantasise about 3D-printing entire cities. But what is the real potential of 3D printing for architects? This issue focuses on another strand of 3D-printing practice emerging among architects operating at a much smaller scale that is potentially more significant. Several architects have been working with the fashion industry to produce some exquisitely designed 3D-printed wearables. Other architects have been 3D-printing food, jewellery and other items at the scale of the human body. But what is the significance of this work? And how do these 3D-printed body-scale items relate to the discipline of architecture? Are they merely a distraction from the real business of the architect? Or do they point towards a new form of proto-architecture – like furniture, espresso makers and pavilions before them – that tests out architectural ideas and explores tectonic properties at a smaller scale? Or does this work constitute an entirely new arena of design? In other words, is 3D printing at the human scale to be seen as a new genre of 'body architecture'? This issue contains some of the most exciting work in this field today, and seeks to chart and analyse its significance. Contributors include: Paola Antonelli/MoMA, Francis Bitonti, Niccolo Casas, Behnaz Farahi, Madeline Gannon, Eric Goldemberg/MONAD Studio, Kyle von Hasseln/3D Systems Culinary Lab, Rem D Koolhaas, Julia Körner, Neil Leach, Steven

Ma/Xuberance, Neri Oxman/MIT Media Lab, Ronald Rael and Virginia San Fratello, Gilles Retsin, Jessica Rosenkrantz/Nervous System, and Patrik Schumacher/Zaha Hadid Architects.

Fabricate

Rethinking Design and Construction

UCL Press Bringing together pioneers in design and making within architecture, construction, engineering, manufacturing, materials technology and computation, Fabricate is a triennial international conference, now in its third year (ICD, University of Stuttgart, April 2017). The 2017 edition features 32 illustrated articles on built projects and works in progress from academia and practice, including contributions from leading practices such as Foster + Partners, Zaha Hadid Architects, Arup, and Ron Arad, and from world-renowned institutions including ICD Stuttgart, Harvard, Yale, MIT, Princeton University, The Bartlett School of Architecture (UCL) and the Architectural Association.Each year it produces a supporting publication, to date the only one of its kind specialising in Digital Fabrication.

Abstract Machine Models for Parallel and Distributed Computing

IOS Press Abstract Machine Models have played a profound though frequently unacknowledged role in the development of modern computing systems. They provide a precise definition of vital concepts, allow system complexity to be managed by providing appropriate views of the activity under consideration, enable reasoning about the correctness and quantitative performance of proposed problem solutions, and encourage communication through a common medium of expression. Abstract Models in Parallel and Distributed computing have a particularly important role in the development of contemporary systems, encapsulating and controlling an inherently high degree of complexity. The Parallel and Distributed computing communities have traditionally considered themselves to be separate. However, there is a significant contemporary interest in both of these communities in a common hardware model; a set of workstation-class machines connected by a high-performance network. The traditional Parallel/Distributed distinction therefore appears under threat.

Machine Learning

Algorithms, Models and

Applications

BoD – Books on Demand Recent times are witnessing rapid development in machine learning algorithm systems, especially in reinforcement learning, natural language processing, computer and robot vision, image processing, speech, and emotional processing and understanding. In tune with the increasing importance and relevance of machine learning models, algorithms, and their applications, and with the emergence of more innovative uses–cases of deep learning and artificial intelligence, the current volume presents a few innovative research works and their applications in real-world, such as stock trading, medical and healthcare systems, and software automation. The chapters in the book illustrate how machine learning and deep learning algorithms and models are designed, optimized, and deployed. The volume will be useful for advanced graduate and doctoral students, researchers, faculty members of universities, practicing data scientists and data engineers, professionals, and consultants working on the broad areas of machine learning, deep learning, and artificial intelligence. Springer Nature

Computing and Combinatorics

8th Annual International Conference, COCOON 2002, Singapore, August 15-17, 2002 Proceedings

Springer This book constitutes the refereed proceedings of the 8th Annual International Computing and Combinatorics Conference, COCOON 2002, held in Singapore in August 2002. The 60 revised full papers presented together with three invited contributions were carefully reviewed and selected from 106 submissions. The papers are organized in topical sections on complexity theory, discrete algorithms, computational biology and learning theory, radio networks, automata and formal languages, Internet networks, computational geometry, combinatorial optimization, and quantum computing.

Foundations of Dependable Computing

Paradigms for Dependable Applications

Springer Science & Business Media Foundations of Dependable Computing: Paradigms for Dependable Applications, presents a variety of specific approaches to achieving dependability at the application level. Driven by the higher level fault models of Models and Frameworks for Dependable Systems, and built on the lower level abstractions implemented in a third companion book subtitled System Implementation, these approaches demonstrate how dependability may be tuned to the requirements of an application, the fault environment, and the characteristics of the target platform. Three classes of paradigms are considered: protocol-based paradigms for distributed applications, algorithm-based paradigms for parallel applications, and approaches to exploiting application semantics in embedded real-time control systems. The companion volume subtitled Models and Frameworks for Dependable Systems presents two comprehensive frameworks for reasoning about system dependability, thereby establishing a context for understanding the roles played by specific approaches presented in this book's two companion volumes. It then explores the range of models and analysis methods necessary to design, validate and analyze dependable systems. Another companion book (published by Kluwer) subtitled System Implementation, explores the system infrastructure needed to support the various paradigms of Paradigms for Dependable Applications. Approaches to implementing support mechanisms and to incorporating additional appropriate levels of fault detection and fault tolerance at the processor, network, and operating system level are presented. A primary concern at these levels is balancing cost and performance against coverage and overall dependability. As these chapters demonstrate, low overhead, practical solutions are attainable and not necessarily incompatible with performance considerations. The section on innovative compiler support, in particular, demonstrates how the benefits of application specificity may be obtained while reducing hardware cost and run-time overhead.

Modelling Behaviour

Design Modelling Symposium 2015

Springer This book reflects and expands on the current trend in the building industry to understand, simulate and ultimately design buildings by taking into consideration the interlinked elements and forces that act on them. This approach overcomes the traditional, exclusive focus on building tasks, while posing new challenges in all areas of the industry from material and structural to the urban scale. Contributions from invited experts, papers and case studies provide the reader with a comprehensive overview of the field, as well as perspectives from related disciplines, such as computer science. The chapter authors were invited speakers at the 5th Symposium "Modelling Behaviour", which took place at the CITA in Copenhagen in

September 2015.

Emerging Paradigms in Machine Learning

Springer Science & Business Media This book presents fundamental topics and algorithms that form the core of machine learning (ML) research, as well as emerging paradigms in intelligent system design. The multidisciplinary nature of machine learning makes it a very fascinating and popular area for research. The book is aiming at students, practitioners and researchers and captures the diversity and richness of the field of machine learning and intelligent systems. Several chapters are devoted to computational learning models such as granular computing, rough sets and fuzzy sets An account of applications of well-known learning methods in biometrics, computational stylistics, multi-agent systems, spam classification including an extremely well-written survey on Bayesian networks shed light on the strengths and weaknesses of the methods. Practical studies yielding insight into challenging problems such as learning from incomplete and imbalanced data, pattern recognition of stochastic episodic events and on-line mining of non-stationary data streams are a key part of this book.

Implementation of Machine Learning Algorithms Using Control-Flow and Dataflow Paradigms

IGI Global Based on current literature and cutting-edge advances in the machine learning field, there are four algorithms whose usage in new application domains must be explored: neural networks, rule induction algorithms, tree-based algorithms, and density-based algorithms. A number of machine learning related algorithms have been derived from these four algorithms. Consequently, they represent excellent underlying methods for extracting hidden knowledge from unstructured data, as essential data mining tasks. Implementation of Machine Learning Algorithms Using Control-Flow and Dataflow Paradigms presents widely used data-mining algorithms and explains their advantages and disadvantages, their mathematical treatment, applications, energy efficient implementations, and more. It presents research of energy efficient accelerators for machine learning algorithms. Covering topics such as control-flow implementation, approximate computing, and decision tree algorithms, this book is an essential resource for computer scientists, engineers, students and educators of higher education, researchers, and academicians.

Cloud Computing for Machine Learning and Cognitive Applications

MIT Press The first textbook to teach students how to build data analytic solutions on large data sets using cloud-based technologies. This is the first textbook to teach students how to build data analytic solutions on large data sets (specifically in Internet of Things applications) using cloud-based technologies for data storage, transmission and mashup, and AI techniques to analyze this data. This textbook is designed to train college students to master modern cloud computing systems in operating principles, architecture design, machine learning algorithms, programming models and software tools for big data mining, analytics, and cognitive applications. The book will be suitable for use in one-semester computer science or electrical engineering courses on cloud computing, machine learning, cloud programming, cognitive computing, or big data science. The book will also be very useful as a reference for professionals who want to work in cloud computing and data science. Cloud and Cognitive Computing begins with two introductory chapters on fundamentals of cloud computing, data science, and adaptive computing that lay the foundation for the rest of the book. Subsequent chapters cover topics including cloud architecture, mashup services, virtual machines, Docker containers, mobile clouds, IoT and AI, inter-cloud mashups, and cloud performance and benchmarks, with a focus on Google's Brain Project, DeepMind, and X-Lab programs, IBKai HwangM SyNapse, Bluemix programs, cognitive initiatives, and neurocomputers. The book then covers machine learning algorithms and cloud programming software tools and application development, applying the tools in machine learning, social media, deep learning, and cognitive applications. All cloud systems are illustrated with big data and cognitive application examples.

Parallel Computing Numerics, Applications, and Trends

Springer Science & Business Media The use of parallel programming and architectures is essential for simulating and solving problems in modern computational practice. There has been rapid progress in microprocessor architecture, interconnection technology and software devel- ment, which are in?uencing directly the rapid growth of parallel and distributed computing. However, in order to make these bene?ts usable in practice, this dev- opment must be accompanied by progress in the design, analysis and application aspects of parallel algorithms. In particular, new approaches from parallel num- ics are important for solving complex computational problems on parallel and/or distributed systems. The contributions to this book are focused on topics most concerned in the trends of today's parallel computing. These range from parallel algorithmics, progr- ming, tools, network computing to future parallel computing. Particular attention is paid to

parallel numerics: linear algebra, differential equations, numerical integ- tion, number theory and their applications in computer simulations, which together form the kernel of the monograph. We expect that the book will be of interest to scientists working on parallel computing, doctoral students, teachers, engineers and mathematicians dealing with numerical applications and computer simulations of natural phenomena.

Unconventional Programming Paradigms

International Workshop UPP 2004, Le Mont Saint Michel, France, September 15-17, 2004, Revised Selected and Invited Papers

Springer Science & Business Media Unconventional approaches to programming have long been developed, in various niches and out of curiosity, and they constitute a reservoir of alternative avenues to deal with unknown programming challenges. New paradigms of programming are currently experiencing a renewed period of interest and growth to cope with problems from specific application domains. This book constitutes the thoroughly refereed post-proceedings of the International Workshop on Unconventional Programming Paradigms, UPP 2004, held at Le Mont Saint Michel, France, in September 2004. The 26 revised full papers presented together with an invited paper on quantum computing were carefully reviewed for presentation in the book. The papers are organized in topical sections on chemical computing, amorphous computing, bio-inspired computing, autonomic computing, and generative programming.

Practical Machine Learning with Python

A Problem-Solver's Guide to Building Real-World Intelligent

Systems

Apress Master the essential skills needed to recognize and solve complex problems with machine learning and deep learning. Using real-world examples that leverage the popular Python machine learning ecosystem, this book is your perfect companion for learning the art and science of machine learning to become a successful practitioner. The concepts, techniques, tools, frameworks, and methodologies used in this book will teach you how to think, design, build, and execute machine learning systems and projects successfully. Practical Machine Learning with Python follows a structured and comprehensive three-tiered approach packed with hands-on examples and code. Part 1 focuses on understanding machine learning concepts and tools. This includes machine learning basics with a broad overview of algorithms, techniques, concepts and applications, followed by a tour of the entire Python machine learning ecosystem. Brief guides for useful machine learning tools, libraries and frameworks are also covered. Part 2 details standard machine learning pipelines, with an emphasis on data processing analysis, feature engineering, and modeling. You will learn how to process, wrangle, summarize and visualize data in its various forms. Feature engineering and selection methodologies will be covered in detail with real-world datasets followed by model building, tuning, interpretation and deployment. Part 3 explores multiple real-world case studies spanning diverse domains and industries like retail, transportation, movies, music, marketing, computer vision and finance. For each case study, you will learn the application of various machine learning techniques and methods. The hands-on examples will help you become familiar with state-of-the-art machine learning tools and techniques and understand what algorithms are best suited for any problem. Practical Machine Learning with Python will empower you to start solving your own problems with machine learning today! What You'll Learn Execute end-to-end machine learning projects and systems Implement hands-on examples with industry standard, open source, robust machine learning tools and frameworks Review case studies depicting applications of machine learning and deep learning on diverse domains and industries Apply a wide range of machine learning models including regression, classification, and clustering. Understand and apply the latest models and methodologies from deep learning including CNNs, RNNs, LSTMs and transfer learning. Who This Book Is For IT professionals, analysts, developers, data scientists, engineers, graduate students

Machine Learning Paradigms

Artificial Immune Systems and their Applications in Software

Personalization

Springer The topic of this monograph falls within the, so-called, biologically motivated computing paradigm, in which biology provides the source of models and inspiration towards the development of computational intelligence and machine learning systems. Specifically, artificial immune systems are presented as a valid metaphor towards the creation of abstract and high level representations of biological components or functions that lay the foundations for an alternative machine learning paradigm. Therefore, focus is given on addressing the primary problems of Pattern Recognition by developing Artificial Immune System-based machine learning algorithms for the problems of Clustering, Classification and One-Class Classification. Pattern Classification, in particular, is studied within the context of the Class Imbalance Problem. The main source of inspiration stems from the fact that the Adaptive Immune System constitutes one of the most sophisticated biological systems that is exceptionally evolved in order to continuously address an extremely unbalanced pattern classification problem, namely, the self / non-self discrimination process. The experimental results presented in this monograph involve a wide range of degenerate binary classification problems where the minority class of interest is to be recognized against the vast volume of the majority class of negative patterns. In this context, Artificial Immune Systems are utilized for the development of personalized software as the core mechanism behind the implementation of Recommender Systems. The book will be useful to researchers, practitioners and graduate students dealing with Pattern Recognition and Machine Learning and their applications in Personalized Software and Recommender Systems. It is intended for both the expert/researcher in these fields, as well as for the general reader in the field of Computational Intelligence and, more generally, Computer Science who wishes to learn more about the field of Intelligent Computing Systems and its applications. An extensive list of bibliographic references at the end of each chapter guides the reader to probe further into application area of interest to him/her.

New Paradigms in Computational Modeling and Its Applications

Academic Press In general, every problem of science and engineering is governed by mathematical models. There is often a need to model, solve and interpret the problems one encounters in the world of practical problems. Models of practical application problems usually need to be handled by efficient computational models. New Paradigms in Computational Modeling and Its Applications deals with recent developments in mathematical methods, including theoretical models as well as applied science and engineering. The book focuses on subjects that can benefit from mathematical methods with concepts of simulation, waves, dynamics, uncertainty, machine intelligence, and applied mathematics. The authors bring together leading-edge research on mathematics combining various fields of science and engineering.

This perspective acknowledges the inherent characteristic of current research on mathematics operating in parallel over different subject fields. New Paradigms in Computational Modeling and Its Applications meets the present and future needs for the interaction between various science and technology/engineering areas on the one hand and different branches of mathematics on the other. As such, the book contains 13 chapters covering various aspects of computational modeling from theoretical to application problems. The first six chapters address various problems of structural and fluid dynamics. The next four chapters include solving problems where the governing parameters are uncertain regarding fuzzy, interval, and affine. The final three chapters will be devoted to the use of machine intelligence in artificial neural networks. Presents a self-contained and up to date review of modelling real life scientific and engineering application problems Introduces new concepts of various computing techniques to handle different engineering and science problems Demonstrates the efficiency and power of the various algorithms and models in a simple and easy to follow style, including numerous examples to illustrate concepts and algorithms

Machine Learning Paradigms

Applications of Learning and Analytics in Intelligent Systems

Springer This book is the inaugural volume in the new Springer series on Learning and Analytics in Intelligent Systems. The series aims at providing, in hard-copy and soft-copy form, books on all aspects of learning, analytics, advanced intelligent systems and related technologies. These disciplines are strongly related and mutually complementary; accordingly, the new series encourages an integrated approach to themes and topics in these disciplines, which will result in significant cross-fertilization, research advances and new knowledge creation. To maximize the dissemination of research findings, the series will publish edited books, monographs, handbooks, textbooks and conference proceedings. This book is intended for professors, researchers, scientists, engineers and students. An extensive list of references at the end of each chapter allows readers to probe further into those application areas that interest them most.

Molecular Computation Models

Unconventional Approaches

IGI Global With the increasing complexity of software systems and their widespread growth into many aspects of our lives, the need to search for new models, paradigms, and ultimately, technologies, to manage this problem is evident. The way nature solves various problems through processes evolving during billions of years

was always an inspiration to many computational paradigms; on the other hand, the complexity of the problems posed by the investigation of biological systems challenged the research of new tractable models. Molecular Computational Models: Unconventional Approaches is looking into new computational paradigms from both a theoretical perspective which offers a solid foundation of the models developed, as well as from a modeling angle, in order to reveal their effectiveness in modeling and simulating, especially biological systems. Tools and programming concepts and implementation issues are also discussed in the context of some experiments and comparative studies.

Paradigm Shift

Seven Keys of Highly Successful Linux and Open Source Adoptions

Lulu.com

Utilizing Big Data Paradigms for Business Intelligence

IGI Global Because efficient compilation of information allows managers and business leaders to make the best decisions for the financial solvency of their organizations, data analysis is an important part of modern business administration. Understanding the use of analytics, reporting, and data mining in everyday business environments is imperative to the success of modern businesses. Utilizing Big Data Paradigms for Business Intelligence is a pivotal reference source that provides vital research on how to address the challenges of data extraction in business intelligence using the five "Vs" of big data: velocity, volume, value, variety, and veracity. This book is ideally designed for business analysts, investors, corporate managers, entrepreneurs, and researchers in the fields of computer science, data science, and business intelligence.

Understanding and Bridging the Gap between Neuromorphic Computing and Machine Learning

Frontiers Media SA

Fault-Tolerant Parallel Computation

Springer Science & Business Media Fault-Tolerant Parallel Computation presents recent advances in algorithmic ways of introducing fault-tolerance in multiprocessors under the constraint of preserving efficiency. The difficulty associated with combining fault-tolerance and efficiency is that the two have conflicting means: fault-tolerance is achieved by introducing redundancy, while efficiency is achieved by removing redundancy. This monograph demonstrates how in certain models of parallel computation it is possible to combine efficiency and fault-tolerance and shows how it is possible to develop efficient algorithms without concern for fault-tolerance, and then correctly and efficiently execute these algorithms on parallel machines whose processors are subject to arbitrary dynamic fail-stop errors. The efficient algorithmic approaches to multiprocessor fault-tolerance presented in this monograph make a contribution towards bridging the gap between the abstract models of parallel computation and realizable parallel architectures. Fault-Tolerant Parallel Computation presents the state of the art in algorithmic approaches to fault-tolerance in efficient parallel algorithms. The monograph synthesizes work that was presented in recent symposia and published in refereed journals by the authors and other leading researchers. This is the first text that takes the reader on the grand tour of this new field summarizing major results and identifying hard open problems. This monograph will be of interest to academic and industrial researchers and graduate students working in the areas of fault-tolerance, algorithms and parallel computation and may also be used as a text in a graduate course on parallel algorithmic techniques and fault-tolerance.

Human and Machine Vision

Analogies and Divergencies

Springer Science & Business Media The following are the proceedings of the Third International Workshop on Perception held in Pavia, Italy, on September 27-30, 1993, under the auspices of four institutions: the Group of Cybernetic and Biophysics (GNCB)s of the National Research Council (CNR), the Italian Association for Artificial Intelligence (AI * IA), the Italian Association of Psychology (AIP), and the Italian Chapter of the International Association for Pattern Recognition (IAPR). The theme of this third workshop was: "Human and Machine Vision: Analogies and Divergencies." A wide spectrum of topics was covered, ranging from neurophysiology, to computer architecture, to psychology, to image understanding, etc. For this reason the structure of this workshop was quite different from those of the first two held in Parma (1991), and Trieste (1992). This time the workshop was composed of just eight modules, each one consisting of two invited lectures (dealing with vision in nature and machines, respectively) and a common panel discussion (including the two lecturers and three invited panellists).

Model-Based Reasoning in Science and Technology

Abduction, Logic, and Computational Discovery

Springer Science & Business Media Systematically presented to enhance the feasibility of fuzzy models, this book introduces the novel concept of a fuzzy network whose nodes are rule bases and their interconnections are interactions between rule bases in the form of outputs fed as inputs.

Neurobiological circuit function and computation of the serotonergic and related systems

Frontiers Media SA Serotonin is one of the oldest neurotransmitters in evolutionary terms, and the serotonergic system is complex and multifaceted. Serotonin-producing neurons in the raphe nuclei provide serotonin innervations throughout various parts of the brain, modulating cellular excitability and network properties of targeted brain areas, and regulating mood, cognition and behavior. Dysfunctions of the serotonergic system are implicated in neuropsychiatric disorders including depression, schizophrenia, and drug abuse. Although the system has been studied for many years, an integrative account of its functions and computational principles remains elusive. This is partly attributed to the high variability and heterogeneity in terms of neuronal properties and receptor types, and its extensive connections with other brain regions. This Frontiers Research Topic e-book is a collection of recent experimental and computational work and approaches at multiple scales that provide the latest information regarding the integrated functions of the serotonergic system. The contributed papers include a variety of experimental and computational work, and human clinical studies.

Molecular Computational Models

Unconventional Approaches

IGI Global "Molecular Computation Models: Unconventional Approaches is looking into new computational paradigms from both a theoretical perspective which offers a solid foundation of the models developed, as well as from a modeling angle, in order

to reveal their effectiveness in modeling and simulating, especially biological systems. Tools and programming concepts and implementation issues are also discussed in the context of some experiments and comparative studies"--Provided by publisher.

Machine Learning and Big Data Analytics Paradigms: Analysis, Applications and Challenges

Springer Nature This book is intended to present the state of the art in research on machine learning and big data analytics. The accepted chapters covered many themes including artificial intelligence and data mining applications, machine learning and applications, deep learning technology for big data analytics, and modeling, simulation, and security with big data. It is a valuable resource for researchers in the area of big data analytics and its applications.

Challenges in Machine Generation of Analytic Products from Multi-Source Data

Proceedings of a Workshop

National Academies Press The Intelligence Community Studies Board of the National Academies of Sciences, Engineering, and Medicine convened a workshop on August 9-10, 2017 to examine challenges in machine generation of analytic products from multi-source data. Workshop speakers and participants discussed research challenges related to machine-based methods for generating analytic products and for automating the evaluation of these products, with special attention to learning from small data, using multi-source data, adversarial learning, and understanding the human-machine relationship. This publication summarizes the presentations and discussions from the workshop.

IoT-based Intelligent Modelling for Environmental and Ecological

Engineering

IoT Next Generation EcoAgro Systems

Springer Nature This book brings to readers thirteen chapters with contributions to the benefits of using IoT and Cloud Computing to agro-ecosystems from a multi-disciplinary perspective. IoT and Cloud systems have prompted the development of a Cloud digital ecosystem referred to as Cloud-to-thing continuum computing. The key success of IoT computing and the Cloud digital ecosystem is that IoT can be integrated seamlessly with the physical environment and therefore has the potential to leverage innovative services in agro-ecosystems. Areas such as ecological monitoring, agriculture, and biodiversity constitute a large area of potential application of IoT and Cloud technologies. In contrast to traditional agriculture systems that have employed aggressive policies to increase productivity, new agro-ecosystems aim to increase productivity but also achieve efficiency and competitiveness in modern sustainable agriculture and contribute, more broadly, to the green economy and sustainable food-chain industry. Fundamental research as well as concrete applications from various real-life scenarios, such as smart farming, precision agriculture, green agriculture, sustainable livestock and sow farming, climate threat, and societal and environmental impacts, is presented. Research issues and challenges are also discussed towards envisioning efficient and scalable solutions to agro-ecosystems based on IoT and Cloud technologies. Our fundamental belief is that we can collectively trigger a new revolution that will transition agriculture into an equable system that not only feeds the world, but also contributes to mitigating the climate change and biodiversity crises that our historical actions have triggered.

Applied Computational Physics

Oxford University Press A textbook that addresses a wide variety of problems in classical and quantum physics. Modern programming techniques are stressed throughout, along with the important topics of encapsulation, polymorphism, and object-oriented design. Scientific problems are physically motivated, solution strategies are developed, and explicit code is presented.

Programming Languages: Principles and Paradigms

Springer Science & Business Media This excellent addition to the UTiCS series of undergraduate textbooks provides a detailed and up to date description of the main principles behind the design and implementation of modern programming

languages. Rather than focusing on a specific language, the book identifies the most important principles shared by large classes of languages. To complete this general approach, detailed descriptions of the main programming paradigms, namely imperative, object-oriented, functional and logic are given, analysed in depth and compared. This provides the basis for a critical understanding of most of the programming languages. An historical viewpoint is also included, discussing the evolution of programming languages, and to provide a context for most of the constructs in use today. The book concludes with two chapters which introduce basic notions of syntax, semantics and computability, to provide a completely rounded picture of what constitutes a programming language. /div

2017-2018 Assessment of the Army Research Laboratory

National Academies Press The Army Research Laboratory (ARL) is the corporate laboratory for the U.S. army, which bridges scientific and military communities. The ARL is critical in maintaining the United States' dominant military power through its advanced research and analysis capabilities. The National Academies of Sciences, Engineering, and Medicine's Army Research Laboratory Technical Assessment Board (ARLTAB) conducts biennial assessments of the scientific and technical quality of the facilities. These assessments are necessary to ensure that the ARL's resources and quality of programs are maximized. 2017-2018 Assessment of the Army Research Laboratory includes findings and recommendations regarding the quality of the ARL's research, development, and analysis programs. The report of the assessment is subdivided by the ARL's Science and Technology campaigns, including Materials Research, Sciences for Lethality and Protection, Information Sciences, Computational Sciences, Sciences for Maneuver, Human Sciences, and Analysis and Assessment. This biennial report summarizes the findings for the 2017-2018 period.