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*Stepping in the Same River Twice* - Ayelet Shavit 2017-01-01

List of Contributors -- Index -- A -- B -- C -- D -- E -- F -- G -- H -- I -- J -- K -- L -- M -- N -- O -- P -- Q -- R -- S -- T -- U -- V -- W

*Achieving Federated and Self-Manageable Cloud Infrastructures: Theory and Practice* - Villari, Massimo 2012-05-31

Cloud computing presents a promising approach for implementing scalable information and communications technology systems for private and public, individual, community, and business use. Achieving Federated and Self-Manageable Cloud Infrastructures: Theory and Practice overviews current developments in cloud computing concepts, architectures, infrastructures and methods, focusing on the needs of small to medium enterprises. The topic of cloud computing is addressed on two levels: the fundamentals of cloud computing and its impact on the IT world; and an analysis of the main issues regarding the cloud federation, autonomic resource management, and efficient market mechanisms, while supplying an overview of the existing solutions able to solve them. This publication is aimed at both enterprise business managers and research and academic audiences alike.

*Programming Languages and Systems* - Peter Müller 2020-04-17

This open access book constitutes the proceedings of the 29th European Symposium on Programming, ESOP 2020, which was planned to take place in Dublin, Ireland, in April 2020, as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2020. The actual ETAPS 2020 meeting was postponed due to the Corona pandemic. The papers deal with fundamental issues in the specification, design, analysis, and implementation of programming languages and systems. *Proceedings of the Third International Conference on Contemporary Issues in Computer and Information Sciences (CICIS 2012)* -

**Computational Science and Its Applications - ICCSA 2006** - Osvaldo Gervasi 2006-05-11

The five-volume set LNCS 3980-3984 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2006. The volumes present a total of 664 papers organized according to the five major conference themes: computational methods, algorithms and applications high performance technical computing and networks advanced and emerging applications geometric modelling, graphics and visualization information systems and information technologies. This is Part IV.

*Foundations of Software Science and Computation Structures* - Walukiewicz 2004-03-04

ETAPS 2004 was the seventh instance of the European Joint Conferences on Theory and Practice of Software. ETAPS is an annual federated conference that was established in 1998 by combining a number of existing and new conferences. This year it comprised 7 conferences (FOSSACS, FASE, ESOP, CC, TACAS), 23 satellite workshops, 1 tutorial, and 7 invited lectures (not including those that are specific to the satellite events). The events that comprise ETAPS address various aspects of the system development process, including specification, design, implementation, analysis and improvement. The languages, methodologies and tools that support these activities are all well within its scope. Different blends of theory and practice are represented, with an inclination towards theory with a practical motivation on the one hand and soundly based practice on the other. Many of the issues involved in software design apply to systems in general, including hardware systems, and the emphasis on software is not intended to be exclusive.

**Replication** - Bernadette Charron-Bost 2010-03-02

Consistency models for replicated data /Alan D. Fekete and Krithi Ramamritham --Replication techniques for availability /Robbert van Renesse and Rachid Guerraoui --Modular approach to replication for

availability /Fernando Pedone and André Schiper --Stumbling over consensus research: misunderstandings and issues /Marcos K. Aguilera --Replicating for performance: case studies /Maarten van Steen and Corina Cosentino --A history of the virtual synchrony replication model /Ken Birman --From viewstamped replication to byzantine fault tolerance /Barbara Liskov --Implementing trustworthy services using replicated state machines /Fred B. Schneider and Lidong Zhou --State machine replication with Byzantine faults /Christian Cachin --Selected results from the latest decade of quorum systems research /Michael G. Merideth and Michael K. Reiter --From object replication to database replication /Fernando Pedone and André Schiper --Database replication: a tutorial /Dettina Kemme, Ricardo Jiménez-Peris, Marta Patiño-Martínez, and Gustavo Alonso --Practical database replication /Alfrânio Correia Jr. ... [et al.].

*Theory and Practice of Cryptography Solutions for Secure Information Systems* - Elçi, Atilla 2013-05-31

Information Systems (IS) are a nearly omnipresent aspect of the modern world, playing crucial roles in the fields of science and engineering, business and law, art and culture, politics and government, and many others. As such, identity theft and unauthorized access to these systems are serious concerns. Theory and Practice of Cryptography Solutions for Secure Information Systems explores current trends in IS security technologies, techniques, and concerns, primarily through the use of cryptographic tools to safeguard valuable information resources. This reference book serves the needs of professionals, academics, and students requiring dedicated information systems free from outside interference, as well as developers of secure IS applications. This book is part of the Advances in Information Security, Privacy, and Ethics series collection.

**Lecture Notes on Empirical Software Engineering** - Natalia Juristo 2003

Empirical verification of knowledge is one of the foundations for developing any discipline. As far as software construction is concerned, the empirically verified knowledge is not only sparse but also not very widely disseminated among developers and researchers. This book aims to spread the idea of the importance of empirical knowledge in software development from a highly practical viewpoint. It has two goals: (1) Define the body of empirically validated knowledge in software development so as to advise practitioners on what methods or techniques have been empirically analysed and what the results were; (2) as empirical tests have traditionally been carried out by universities or research centres, propose techniques applicable by industry to check on the software development technologies they use.

**Introduction to Reliable and Secure Distributed Programming** - Christian Cachin 2011-02-11

In modern computing a program is usually distributed among several processes. The fundamental challenge when developing reliable and secure distributed programs is to support the cooperation of processes required to execute a common task, even when some of these processes fail. Failures may range from crashes to adversarial attacks by malicious processes. Cachin, Guerraoui, and Rodrigues present an introductory description of fundamental distributed programming abstractions together with algorithms to implement them in distributed systems, where processes are subject to crashes and malicious attacks. The authors follow an incremental approach by first introducing basic abstractions in simple distributed environments, before moving to more sophisticated abstractions and more challenging environments. Each core chapter is devoted to one topic, covering reliable broadcast, shared memory, consensus, and extensions of consensus. For every topic, many exercises and their solutions enhance the understanding This book

represents the second edition of "Introduction to Reliable Distributed Programming". Its scope has been extended to include security against malicious actions by non-cooperating processes. This important domain has become widely known under the name "Byzantine fault-tolerance".

**DI STRIBUTED OPERATING SYSTEMS** - PRADEEP K. SINHA 1998-01-01

The highly praised book in communications networking from IEEE Press, now available in the Eastern Economy Edition. This is a non-mathematical introduction to Distributed Operating Systems explaining the fundamental concepts and design principles of this emerging technology. As a textbook for students and as a self-study text for systems managers and software engineers, this book provides a concise and an informal introduction to the subject.

**SOFSEM 2019: Theory and Practice of Computer Science** Barbara Catania 2019-01-10

This book constitutes the refereed proceedings of the 45th International Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2019, held in Nový Smokovec, Slovakia, in January 2019. The 34 full papers presented together with 6 invited talks were carefully reviewed and selected from 92 submissions. They presented new research results in the theory and practice of computer science in the each sub-area of SOFSEM 2019: Foundations of theoretical Computer Science, foundations of data science and engineering, and foundations of software engineering.

**Reliable Software Technologies -- Ada-Europe-2006** Miguel Pinho 2006-05-30

This book constitutes the refereed proceedings of the 11th International Conference on Reliable Software Technologies, Ada-Europe 2006, held in Porto, Portugal, in June 2006. The 19 revised full papers presented were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on real-time systems, static analysis, verification, applications, reliability, compilers, and distributed systems.

**Proceedings** - International Conference on Distributed Computing Systems 2001

**Replication** - Bernadette Charron-Bost 2010-02-01

Replication is a topic of interest in the distributed computing, distributed systems, and database communities. Although these communities have traditionally looked at replication from different viewpoints and with different goals (e.g., performance versus fault tolerance), recent developments have led to a convergence of these different goals. The objective of this state-of-the-art survey is not to speculate about the future of replication, but rather to understand the present, to make an assessment of approximately 30 years of research on replication, and to present a comprehensive view of the achievements made during this period of time. This book is the outcome of the seminar entitled A 30-Year Perspective on Replication, which was held at Monte Verità, Ascona, Switzerland, in November 2007. The book is organized in 13 self-contained chapters written by most of the people who have contributed to developing state-of-the-art replication techniques. It presents a comprehensive view of existing solutions, from a theoretical as well as from a practical point of view. It covers replication of processes/objects and of databases; replication for fault tolerance and replication for performance - benign faults and malicious (Byzantine) faults - thus forming a basis for both professionals and students of distributed computing, distributed systems, and databases.

**Fast and Scalable Cloud Data Management** - Felix Gessert 2020-05-15

The unprecedented scale at which data is both produced and consumed today has generated a large demand for scalable data management solutions facilitating fast access from all over the world. As one consequence, a plethora of non-relational, distributed NoSQL database systems have risen in recent years and today's data management system landscape has thus become somewhat hard to overlook. As another consequence, complex polyglot designs and elaborate schemes for data distribution and delivery have become the norm for building applications that connect users and organizations across the globe - but choosing the right combination of systems for a given use case has become increasingly difficult as well. To help practitioners stay on top of that challenge, this book presents a comprehensive overview and classification of the current system landscape in cloud data management as well as a survey of the state-of-the-art approaches for efficient data distribution and delivery to end-user devices. The topics covered thus range from NoSQL storage systems and polyglot architectures (backend) over distributed transactions and Web caching (network) to data access and rendering performance in the client (end-user). By distinguishing

popular data management systems by data model, consistency guarantees, and other dimensions of interest, this book provides an abstract framework for reasoning about the overall design space and the individual positions claimed by each of the systems therein. Building on this classification, this book further presents an application-driven decision guidance tool that breaks the process of choosing a set of viable system candidates for a given application scenario down into a straightforward decision tree.

**Foundations of Software Science and Computation Structures** - Stefan Kiefer 2021-03-22

This open access book constitutes the proceedings of the 24th International Conference on Foundations of Software Science and Computational Structures, FOSSACS 2021, which was held during March 27 until April 1, 2021, as part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2021. The conference was planned to take place in Luxembourg and changed to an online format due to the COVID-19 pandemic. The 28 regular papers presented in this volume were carefully reviewed and selected from 88 submissions. They deal with research on theories and methods to support the analysis, integration, synthesis, transformation, and verification of programs and software systems.

**Advanced Transaction Models and Architectures** - Sushil Jajodia 1997-08-31

Motivation Modern enterprises rely on database management systems (DBMS) to collect, store and manage corporate data, which is considered a strategic corporate resource. Recently, with the proliferation of personal computers and departmental computing, the trend has been towards the decentralization and distribution of the computing infrastructure, with autonomy and responsibility for data now residing at the departmental and workgroup level of the organization. Users want their data delivered to their desktops, allowing them to incorporate data into their personal databases, spreadsheets, word processing documents, and most importantly, into their daily tasks and activities. They want to be able to share their information while retaining control over its access and distribution. There are also pressures from corporate leaders who wish to use information technology as a strategic resource in offering specialized value-added services to customers. Database technology is being used to manage the data associated with corporate processes and activities. Increasingly, the data being managed are not simply formatted tables in relational databases, but all types of objects, including unstructured text, images, audio, and video. Thus, the database management providers are being asked to extend the capabilities of DBMS to include object-relational models as well as full object-oriented database management systems.

**Reliable Distributed Systems** - Kenneth Birman 2006-07-02

Explains fault tolerance in clear terms, with concrete examples drawn from real-world settings Highly practical focus aimed at building "mission-critical" networked applications that remain secure

**Guide to Reliable Distributed Systems** - Kenneth P Birman 2012-01-14

This book describes the key concepts, principles and implementation options for creating high-assurance cloud computing solutions. The guide starts with a broad technical overview and basic introduction to cloud computing, looking at the overall architecture of the cloud, client systems, the modern Internet and cloud computing data centers. It then delves into the core challenges of showing how reliability and fault-tolerance can be abstracted, how the resulting questions can be solved, and how the solutions can be leveraged to create a wide range of practical cloud applications. The author's style is practical, and the guide should be readily understandable without any special background. Concrete examples are often drawn from real-world settings to illustrate key insights. Appendices show how the most important reliability models can be formalized, describe the API of the Isis2 platform, and offer more than 80 problems at varying levels of difficulty.

**Uncertainties in Environmental Modelling and Consequences for Policy Making** - Philippe Baveye 2009-05-14

Mathematical modelling has become in recent years an essential tool for the prediction of environmental change and for the development of sustainable policies. Yet, many of the uncertainties associated with modelling efforts appear poorly understood by many, especially by policy makers. This book attempts for the first time to cover the full range of issues related to model uncertainties, from the subjectivity of setting up a conceptual model of a given system, all the way to communicating the nature of model uncertainties to non-scientists and accounting for model uncertainties in policy decisions. Theoretical chapters, providing

background information on specific steps in the modelling process and in the adoption of models by end-users, are complemented by illustrative case studies dealing with soils and global climate change. All the chapters are authored by recognized experts in their respective disciplines, and provide a timely and uniquely comprehensive coverage of an important field.

**CONCUR '96: Concurrency Theory** - Ugo Montanari 1996-08-07

This book constitutes the refereed proceedings of the 8th International Conference on Concurrency Theory, CONCUR'97, held in Warsaw, Poland, in July 1997. The 24 revised full papers presented were selected by the program committee for inclusion in the volume from a total of 41 high-quality submissions. The volume covers all current topics in the science of concurrency theory and its applications, such as reactive systems, hybrid systems, model checking, partial orders, state charts, program logic calculi, infinite state systems, verification, and others.

**Stochastic Volatility Modeling** - Lorenzo Bergomi 2015-12-16

Packed with insights, Lorenzo Bergomi's Stochastic Volatility Modeling explains how stochastic volatility is used to address issues arising in the modeling of derivatives, including: Which trading issues do we tackle with stochastic volatility? How do we design models and assess their relevance? How do we tell which models are usable and when does c

**Essays in Good Practice: Lecture notes in contemporary General Practice** - Chris Heath FRCP MRCP

Good Practice: What it means to put the patient first, not politics, posturing, pretentiousness, protocols or process. This is a text book for all doctors but especially GPs, Appraisers and Registrars. It is written by a 40 year plus front line NHS doctor who for most of his career worked twice to three times the current doctors' Working Time Directive limited week. Chris Heath has been a Paediatric Lecturer in a teaching hospital, an Anaesthetist, various junior specialists and a GP for over 30 years in 3 different practices. He has been a GP Trainer and Appraiser and has seen politics and political correctness harm patients' interests constantly over the last half of his career. From the way the NHS selects young doctors to the way they are educated and assessed, the best interests of the patient are largely ignored. This is a text book but it also contains home truths, advice, insights and original, honest guidance on being a safe, effective doctor. As well as giving an assessment of what has gone wrong with the NHS over the last 20 years, the author explains why today's politicians, medical schools, Royal Colleges and many doctors will resist the changes essential to put the patients' needs first again. 1 Politics, Who we are, The CQC etc 2 Administration, Training, The Consultation and Teaching 3 Basic Biology 4 Acute Medicine in General Practice 5 Alcohol 6 Allergy 7 Analgesics 8 Anticoagulants, Clotting 9 The Breast 10 Cancer and Terminal Care 11 Cardiology 12 Useful Clinical Signs, Eponymous diseases 13 Dermatology 14 Diabetes, Metabolism 15 Diet, Vitamins and Nutrition 16 Driving 17 Odd drugs 18 Ear, Nose and Throat 19 Gastroenterology 20 Geriatrics 21 Haematology 22 Hormones 23 Immunisation and Vaccines 24 Infections, Antibiotics, Microbiota 25 Legal Issues 26 Liver 27 Miscellaneous 28 Musculoskeletal, Orthopaedics, Sports, NSAIDs 29 Neurology 30 Ophthalmology 31 Paediatrics 32 Pathology 33 Pregnancy, Obstetrics and Gynaecology, Contraception 34 Psychiatry and Controlled Drugs 35 Respiratory 36 Sex and STDs 37 Sleep 38 Travel 39 Urology 40 Work References

**Private Sector Perspectives on Department of Defense**

**Information Technology and Cybersecurity Activities** - United States. Congress. House. Committee on Armed Services. Subcommittee on Terrorism, Unconventional Threats, and Capabilities 2010

**Distributed Algorithms** - Marios Mavronicolas 1997-09-10

This book constitutes the refereed proceedings of the 11th International Workshop on Distributed Algorithms, WDAG '97, held in Saarbrücken, Germany, in September 1997. The volume presents 20 revised full papers selected from 59 submissions. Also included are three invited papers by leading researchers. The papers address a variety of current issues in the area of distributed algorithms and, more generally, distributed systems such as various particular algorithms, randomized computing, routing, networking, load balancing, scheduling, message-passing, shared-memory systems, communication, graph algorithms, etc.

**On The Move to Meaningful Internet Systems 2003: OTM 2003**

**Workshops** - Zahir Tari 2003-10-25

missions in fact also treat an envisaged mutual impact among them. As for the 2002 edition in Irvine, the organizers wanted to stimulate this cross-pollination with a program of shared famous keynote speakers (this year we got Sycara, - ble, Soley and Mylopoulos!), and encouraged

multiple attendance by providing authors with free access to another conference or workshop of their choice. We received an even larger number of submissions than last year for the three conferences (360 in total) and the workshops (170 in total). Not only can we therefore again claim a measurable success in attracting a representative volume of scientific papers, but such a harvest allowed the program committees of course to compose a high-quality cross-section of worldwide research in the areas covered. In spite of the increased number of submissions, the Program Chairs of the three main conferences decided to accept only approximately the same number of papers for presentation and publication as in 2002 (i. e. , around 1 paper out of every 4-5 submitted). For the workshops, the acceptance rate was about 1 in 2. Also for this reason, we decided to separate the proceedings into two volumes with their own titles, and we are grateful to Springer-Verlag for their collaboration in producing these two books. The reviewing process by the respective program committees was very professional and each paper in the main conferences was reviewed by at least three referees.

**Changing Order** - Harry Collins 1992-06-15

This fascinating study in the sociology of science explores the way scientists conduct, and draw conclusions from, their experiments. The book is organized around three case studies: replication of the TEA-laser, detecting gravitational rotation, and some experiments in the paranormal. "In his superb book, Collins shows why the quest for certainty is disappointed. He shows that standards of replication are, of course, social, and that there is consequently no outside standard, no Archimedean point beyond society from which we can lever the intellects of our fellows."—Donald M. McCloskey, Journal of Economic Psychology "Collins is one of the genuine innovators of the sociology of scientific knowledge. . . . Changing Order is a rich and entertaining book."—Isis "The book gives a vivid sense of the contingent nature of research and is generally a good read."—Augustine Brannigan, Nature "This provocative book is a review of [Collins's] work, and an attempt to explain how scientists fit experimental results into pictures of the world. . . . A promising start for new explorations of our image of science, too often presented as infallibly authoritative."—Jon Turney, New Scientist

**TAPSOFT'97: Theory and Practice of Software Development** - M. Bidoit 1997-04-02

This book constitutes the refereed proceedings of the 7th International Joint Conference CAAP/FASE on Theory and Practice of Software Development (TAPSOFT'97), held in Lille, France, in April 1997. The volume is organized in three parts: The first presents invited contributions, the second is devoted to trees in algebra in programming (CAAP) and the third to formal approaches in software engineering (FASE). The 30 revised full papers presented in the CAAP section were selected from 77 submissions; the 23 revised full papers presented in the FASE section were selected from 79 submissions.

**SOFSEM '98: Theory and Practice of Informatics** - Branislav Rován 2003-06-29

This book constitutes the proceedings of the 25th Seminar on Current Trends in Theory and Practice of Informatics, SOFSEM'98, held in Jasna, Slovakia, in November 1998. The volume presents 19 invited survey articles by internationally well-known authorities together with 18 revised full research papers carefully reviewed and selected for inclusion in the book. The areas covered include history of models of computation, algorithms, formal methods, practical aspects of software engineering, database systems, parallel and distributed systems, electronic commerce, and electronic documents and digital libraries.

**Fundamental Approaches to Software Engineering** - Esther Guerra 2021-04-20

This open access book constitutes the proceedings of the 24th International Conference on Fundamental Approaches to Software Engineering, FASE 2021, which took place during March 27–April 1, 2021, and was held as part of the Joint Conferences on Theory and Practice of Software, ETAPS 2021. The conference was planned to take place in Luxembourg but changed to an online format due to the COVID-19 pandemic. The 16 full papers presented in this volume were carefully reviewed and selected from 52 submissions. The book also contains 4 Test-Comp contributions.

**SOFSEM 2007: Theory and Practice of Computer Science** - Jan van Leeuwen 2007-07-13

This book constitutes the refereed proceedings of the 33rd Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2007, held in Harrachov, Czech Republic in January 2007. The 69 revised full papers, presented together with 11 invited contributions were carefully reviewed and selected from 283 submissions. The papers were

organized in four topical tracks.

**Enterprise Software Architecture and Design** - Dominic Duggan  
2012-02-28

This book fills a gap between high-level overview texts that are often too general and low-level detail oriented technical handbooks that lose sight of the "big picture". This book discusses SOA from the low-level perspective of middleware, various XML-based technologies, and basic service design. It also examines broader implications of SOA, particularly where it intersects with business process management and process modeling. Concrete overviews will be provided of the methodologies in those fields, so that students will have a hands-on grasp of how they may be used in the context of SOA.

**Communication-Based Systems** - Günter Hommel 2013-03-14  
Proceedings of the 3rd International Workshop held at the TU Berlin, Germany, 31 March-1 April 2000

**Database Replication** - Bettina Kemme 2010

Database replication is widely used for fault-tolerance, scalability and performance. The failure of one database replica does not stop the system from working as available replicas can take over the tasks of the failed replica. Scalability can be achieved by distributing the load across all replicas, and adding new replicas should the load increase. Finally, database replication can provide fast local access, even if clients are geographically distributed clients, if data copies are located close to clients. Despite its advantages, replication is not a straightforward technique to apply, and there are many hurdles to overcome. At the forefront is replica control: assuring that data copies remain consistent when updates occur. There exist many alternatives in regard to where updates can occur and when changes are propagated to data copies, how changes are applied, where the replication tool is located, etc. A particular challenge is to combine replica control with transaction management as it requires several operations to be treated as a single logical unit, and it provides atomicity, consistency, isolation and durability across the replicated system. The book provides a categorization of replica control mechanisms, presents several replica and concurrency control mechanisms in detail, and discusses many of the issues that arise when such solutions need to be implemented within or on top of relational database systems. Table of Contents: Overview / 1-Copy-Equivalence and Consistency / Basic Protocols / Replication Architecture / The Scalability of Replication / Eager Replication and 1-Copy-Serializability / 1-Copy-Snapshot Isolation / Lazy Replication / Self-Configuration and Elasticity / Other Aspects of Replication  
Convergence of Blockchain, AI, and IoT - R. Indrakumari 2021-12-23  
Convergence of Blockchain, AI, and IoT: Concepts and Challenges discusses the convergence of three powerful technologies that play into the digital revolution and blur the lines between biological, digital, and physical objects. This book covers novel algorithms, solutions for addressing issues in applications, security, authentication, and privacy. The book provides an overview of the clinical scientific research enabling smart diagnosis equipment through AI. It presents the role these technologies play in augmented reality and blockchain, covers digital currency managed with bitcoin, and discusses deep learning and how it can enhance human thoughts and behaviors. Targeted audiences range from those interested in the technical revolution of blockchain, big data and the Internet of Things, to research scholars and the professional market.

**DSN 2001** - 2001

"The conference scope spans virtually all aspects of dependability in computing systems -- classical and networked, and covering topical areas in the IT discipline as well. A special focus for this years DSN is on safety and security issues in embedded, multimedia and Internet applications ..."--Page xiii.

*On The Move to Meaningful Internet Systems 2003: OTM 2003 Workshops* - Italy Hci-swva (2003 Catania 2003-10-30

This book constitutes the joint refereed proceedings of six international workshops held as part of OTM 2003 in Catania, Sicily, Italy, in November 2003. The 80 revised full workshop papers presented together with various abstracts and summaries were carefully reviewed and selected from a total of 170 submissions. In accordance with the workshops, the papers are organized in topical main sections on industrial issues, human computer interface for the semantic Web and Web applications, Java technologies for real-time and embedded systems, regulatory ontologies and the modelling of complaint regulations, metadata for security, and reliable and secure middleware.

Proceedings of the Third International Scientific Conference "Intelligent Information Technologies for Industry" (IITI'18) - Ajith Abraham  
2018-12-06

This book contains papers presented in the main track of IITI 2018, the Third International Scientific Conference on Intelligent Information Technologies for Industry held in Sochi, Russia on September 17-21. The conference was jointly co-organized by Rostov State Transport University (Russia) and VŠB - Technical University of Ostrava (Czech Republic) with the participation of Russian Association for Artificial Intelligence (RAAI). IITI 2018 was devoted to practical models and industrial applications related to intelligent information systems. It was considered as a meeting point for researchers and practitioners to enable the implementation of advanced information technologies into various industries. Nevertheless, some theoretical talks concerning the state-of-the-art in intelligent systems and soft computing were also included into proceedings.

**Artificial Chemistries** - Wolfgang Banzhaf 2015-07-03

An introduction to the fundamental concepts of the emerging field of Artificial Chemistries, covering both theory and practical applications. The field of Artificial Life (ALife) is now firmly established in the scientific world, but it has yet to achieve one of its original goals: an understanding of the emergence of life on Earth. The new field of Artificial Chemistries draws from chemistry, biology, computer science, mathematics, and other disciplines to work toward that goal. For if, as it has been argued, life emerged from primitive, prebiotic forms of self-organization, then studying models of chemical reaction systems could bring ALife closer to understanding the origins of life. In Artificial Chemistries (ACs), the emphasis is on creating new interactions rather than new materials. The results can be found both in the virtual world, in certain multiagent systems, and in the physical world, in new (artificial) reaction systems. This book offers an introduction to the fundamental concepts of ACs, covering both theory and practical applications. After a general overview of the field and its methodology, the book reviews important aspects of biology, including basic mechanisms of evolution; discusses examples of ACs drawn from the literature; considers fundamental questions of how order can emerge, emphasizing the concept of chemical organization (a closed and self-maintaining set of chemicals); and surveys a range of applications, which include computing, systems modeling in biology, and synthetic life. An appendix provides a Python toolkit for implementing ACs.