

# Handbook Of Research On Software Defined And Cognitive Radio Technologies For Dynamic Spectrum Management Advances In Wireless Technologies And Telecommunication

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*Evolution of Software-Defined Networking Foundations for IoT and 5G Mobile Networks* - Kumar, Sunil 2020-10-23

5G is the upcoming generation of the wireless network that will be the advanced version of 4G LTE+ providing all the features of a 4G LTE network and connectivity for IoT devices with faster speed and lower latency. The 5G network is going to be a service-oriented network, connecting billions of IoT devices and mobile phones through the wireless network, and hence, it needs a special emphasis on security. Security is the necessary enabler for the continuity of the wireless network business, and in 5G, network security for IoT devices is the most important aspect. As IoT is gaining momentum, people can remotely operate or instruct their network devices. Therefore, there is a need for robust security mechanisms to prevent unauthorized access to the devices. Evolution of Software-Defined Networking Foundations for IoT and 5G Mobile Networks is a collection of innovative research on the security challenges and prevention mechanisms in high-speed mobile networks. The book explores the threats to 5G and IoT and how to implement effective security architecture for them. While highlighting topics including artificial intelligence, mobile technology, and ubiquitous computing, this book is ideally designed for cybersecurity experts, network providers, computer scientists, communication technologies experts, academicians, students, and researchers.

*Software-Defined Radio for Engineers* - Alexander M. Wyglinski 2018-04-30

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

*Software Defined Mobile Networks (SDMN)* - Madhusanka Liyanage 2015-06-17

This book describes the concept of a Software Defined Mobile Network (SDMN), which will impact the network architecture of current LTE (3GPP) networks. SDN will also open up new opportunities for traffic, resource and mobility management, as well as impose new challenges on network security. Therefore, the book addresses the main affected areas such as traffic, resource and mobility management, virtualized traffics transportation, network management, network security and techno economic concepts. Moreover, a

complete introduction to SDN and SDMN concepts. Furthermore, the reader will be introduced to cutting-edge knowledge in areas such as network virtualization, as well as SDN concepts relevant to next generation mobile networks. Finally, by the end of the book the reader will be familiar with the feasibility and opportunities of SDMN concepts, and will be able to evaluate the limits of performance and scalability of these new technologies while applying them to mobile broadband networks.

*Handbook of Research on Software-Defined and Cognitive Radio Technologies for Dynamic Spectrum Management* - Kaabouch, Naima 2014-10-31

The inadequate use of wireless spectrum resources has recently motivated researchers and practitioners to look for new ways to improve resource efficiency. As a result, new cognitive radio technologies have been proposed as an effective solution. The Handbook of Research on Software-Defined and Cognitive Radio Technologies for Dynamic Spectrum Management examines the emerging technologies being used to overcome radio spectrum scarcity. Providing timely and comprehensive coverage on topics pertaining to channel estimation, spectrum sensing, communication security, frequency hopping, and smart antennas, this research work is essential for use by educators, industrialists, and graduate students, as well as academicians researching in the field.

*Software-Defined Wide Area Network Architectures and Technologies* - Cheng Sheng 2021-05-05

Starting with problems and challenges faced by enterprise WANs, Software-Defined Wide Area Network Architectures and Technologies provides a detailed description of SD-WAN's background and basic features, as well as the system architecture, operating mechanism, and application scenarios of the SD-WAN solution based on the implementation of Huawei SD-WAN Solution. It also explains key SD-WAN technologies and analyzes real SD-WAN deployment cases, affording readers with design methods and deployment suggestions for the SD-WAN solution. The information presented in this book is easy to understand and very practical. It enables you to become adept in the SD-WAN solution's implementation and design principles. The book is intended for ICT practitioners, such as network technical support engineers, network administrators, and network planning engineers, to use in studying theory.

Furthermore, it serves as reference material for network technology enthusiasts. Authors Cheng Sheng is the Chief Architect of Huawei's SD-WAN Solution. He has nearly 20 years of experience in network product and solution design, as well as extensive expertise in product design and development, network planning and design, and network engineering project implementation. Jie Bai is an Architect of Huawei's SD-WAN Solution. He is well versed in Huawei security products and SD-WAN Solution and has written books such as Huawei Firewall Technology Talk as well as Huawei Anti-DDoS Technology Talk. Qi Sun is a Senior Information Architect of Huawei, and he is knowledgeable in Huawei SD-WAN Solution, CloudVPN Solution, and Cloud Management Solution. He also participated in the information architecture design and delivery of multiple solutions.

*Software-Defined Networking for Future Internet Technology* - Kshira Sagar Sahoo 2021-09-30  
Network infrastructures are growing rapidly to meet the needs of business, but the required repolicing and

reconfiguration provide challenges that need to be addressed. The software-defined network (SDN) is the future generation of Internet technology that can help meet these challenges of network management. This book includes quantitative research, case studies, conceptual papers, model papers, review papers, and theoretical backing on SDN. This book investigates areas where SDN can help other emerging technologies deliver more efficient services, such as IoT, industrial IoT, NFV, big data, blockchain, cloud computing, and edge computing. The book demonstrates the many benefits of SDNs, such as reduced costs, ease of deployment and management, better scalability, availability, flexibility and fine-grained control of traffic, and security. The book demonstrates the many benefits of SDN, such as reduced costs, ease of deployment and management, better scalability, availability, flexibility and fine-grained control of traffic, and security. Chapters in the volume address: Design considerations for security issues and detection methods State-of-the-art approaches for mitigating DDos attacks using SDN Big data using Apache Hadoop for processing and analyzing large amounts of data Different tools used for attack simulation Network policies and policy management approaches that are widely used in the context of SDN Dynamic flow tables, or static flow table management A new four-tiered architecture that includes cloud, SDN-controller, and fog computing Architecture for keeping computing resources available near the industrial IoT network through edge computing The impact of SDN as an innovative approach for smart city development More. The book will be a valuable resource for SDN researchers as well as academicians, research scholars, and students in the related areas.

**Handbook of Research on Computational Science and Engineering: Theory and Practice** - Leng, J. 2011-10-31

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.

**Handbook of Research on Applied Optimization Methodologies in Manufacturing Systems** - Faruk Yılmaz, Ömer 2017-11-30

Today's manufacturing systems are undergoing significant changes in the aspects of planning, production execution, and delivery. It is imperative to stay up-to-date on the latest trends in optimization to efficiently create products for the market. The Handbook of Research on Applied Optimization Methodologies in Manufacturing Systems is a pivotal reference source including the latest scholarly research on heuristic models for solving manufacturing and supply chain related problems. Featuring exhaustive coverage on a broad range of topics such as assembly ratio, car sequencing, and color constraints, this publication is ideally designed for practitioners seeking new comprehensive models for problem solving in manufacturing and supply chain management.

**Handbook of Research on Next Generation Mobile Communication Systems** - Panagopoulos, Athanasios D. 2015-08-26

Anyone who has ever shopped for a new smart phone, laptop, or other tech gadget knows that staying connected is crucial. There is a lot of discussion over which service provider offers the best coverage—enabling devices to work anywhere and at any time—with 4G and LTE becoming a pervasive part of our everyday language. The Handbook of Research on Next Generation Mobile Communication Systems offers solutions for optimal connection of mobile devices. From satellite signals to cloud technologies, this handbook focuses on the ways communication is being revolutionized, providing a crucial reference source for consumers, researchers, and business professionals who want to be on the frontline of the next big development in wireless technologies. This publication features a wide variety of research-based articles that discuss the future of topics such as bandwidth, energy-efficient power, device-to-device communication, network security and privacy, predictions for 5G communication systems, spectrum

sharing and connectivity, and many other relevant issues that will influence our everyday use of technology.

**Handbook of Research on Big Data Storage and Visualization Techniques** - Segall, Richard S. 2018-01-05

The digital age has presented an exponential growth in the amount of data available to individuals looking to draw conclusions based on given or collected information across industries. Challenges associated with the analysis, security, sharing, storage, and visualization of large and complex data sets continue to plague data scientists and analysts alike as traditional data processing applications struggle to adequately manage big data. The Handbook of Research on Big Data Storage and Visualization Techniques is a critical scholarly resource that explores big data analytics and technologies and their role in developing a broad understanding of issues pertaining to the use of big data in multidisciplinary fields. Featuring coverage on a broad range of topics, such as architecture patterns, programming systems, and computational energy, this publication is geared towards professionals, researchers, and students seeking current research and application topics on the subject.

**Handbook of Research on Recent Developments in Intelligent Communication Application** - Bhattacharyya, Siddhartha 2016-12-12

The communication field is evolving rapidly in order to keep up with society's demands. As such, it becomes imperative to research and report recent advancements in computational intelligence as it applies to communication networks. The Handbook of Research on Recent Developments in Intelligent Communication Application is a pivotal reference source for the latest developments on emerging data communication applications. Featuring extensive coverage across a range of relevant perspectives and topics, such as satellite communication, cognitive radio networks, and wireless sensor networks, this book is ideally designed for engineers, professionals, practitioners, upper-level students, and academics seeking current information on emerging communication networking trends.

**Implementing Software Defined Radio** - Eugene Grayver 2012-07-20

Software Defined Radio makes wireless communications easier, more efficient, and more reliable. This book bridges the gap between academic research and practical implementation. When beginning a project, practicing engineers, technical managers, and graduate students can save countless hours by considering the concepts presented in these pages. The author covers the myriad options and trade-offs available when selecting an appropriate hardware architecture. As demonstrated here, the choice between hardware- and software-centric architecture can mean the difference between meeting an aggressive schedule and bogging down in endless design iterations. Because of the author's experience overseeing dozens of failed and successful developments, he is able to present many real-life examples. Some of the key concepts covered are: Choosing the right architecture for the market – laboratory, military, or commercial, Hardware platforms – FPGAs, GPPs, specialized and hybrid devices, Standardization efforts to ensure interoperability and portability State-of-the-art components for radio frequency, mixed-signal, and baseband processing. The text requires only minimal knowledge of wireless communications; whenever possible, qualitative arguments are used instead of equations. An appendix provides a quick overview of wireless communications and introduces most of the concepts the readers will need to take advantage of the material. An essential introduction to SDR, this book is sure to be an invaluable addition to any technical bookshelf.

**Software Defined Networking** - Patricia A. Morreale 2014-12-03

Software Defined Networking: Design and Deployment provides a comprehensive treatment of software defined networking (SDN) suitable for new network managers and experienced network professionals. Presenting SDN in context with more familiar network services and challenges, this accessible text: Explains the importance of virtualization, particularly the impact of virtualization on servers and networks Addresses SDN, with an emphasis on the network control plane Discusses SDN implementation and the impact on service providers, legacy networks, and network vendors Contains a case study on Google's initial implementation of SDN Investigates OpenFlow, the hand-in-glove partner of SDN Looks forward toward more programmable networks and the languages needed to manage these environments Software Defined Networking: Design and Deployment offers a unique perspective of the business case and technology motivations for considering SDN solutions. By identifying the impact of SDN on traffic

management and the potential for network service growth, this book instills the knowledge needed to manage current and future demand and provisioning for SDN.

**Handbook of Research on Redesigning the Future of Internet Architectures** - Boucadair, Mohamed 2015-05-31

As the volume of global Internet traffic increases, the Internet is beginning to suffer from a broad spectrum of performance-degrading infrastructural limitations that threaten to jeopardize the continued growth of new, innovative services. In answer to this challenge, computer scientists seek to maintain the original design principles of the Internet while allowing for a more dynamic approach to the manner in which networks are designed and operated. The Handbook of Research on Redesigning the Future of Internet Architectures covers some of the hottest topics currently being debated by the Internet community at large, including Internet governance, privacy issues, service delivery automation, advanced networking schemes, and new approaches to Internet traffic-forwarding and path-computation mechanics. Targeting students, network-engineers, and technical strategists, this book seeks to provide a broad and comprehensive look at the next wave of revolutionary ideas poised to reshape the very foundation of the Internet as we know it.

Handbook of Research on Cloud Computing and Big Data Applications in IoT - Gupta, B. B. 2019-04-12

Today, cloud computing, big data, and the internet of things (IoT) are becoming indubitable parts of modern information and communication systems. They cover not only information and communication technology but also all types of systems in society including within the realms of business, finance, industry, manufacturing, and management. Therefore, it is critical to remain up-to-date on the latest advancements and applications, as well as current issues and challenges. The Handbook of Research on Cloud Computing and Big Data Applications in IoT is a pivotal reference source that provides relevant theoretical frameworks and the latest empirical research findings on principles, challenges, and applications of cloud computing, big data, and IoT. While highlighting topics such as fog computing, language interaction, and scheduling algorithms, this publication is ideally designed for software developers, computer engineers, scientists, professionals, academicians, researchers, and students.

*Software-Defined Networks* - Larry Peterson 2021-02

Software-Defined Networks (SDN) are transforming the Internet by replacing bundled, proprietary hardware and control software. SDN is being embraced by cloud providers, telcos, and enterprises, as it enables a new era of innovation in networking. This book provides a comprehensive introduction to SDN from the perspective of those who are developing and leveraging the technology. Book Features: Describes a complete SDN stack, illustrated with example open source software. Emphasizes underlying concepts, abstractions, and design rationale. Describes both fixed-function and programmable switching chips. Describes the P4-based toolchain for programming and controlling switches. Describes a range of SDN use cases: enterprises, datacenters, access networks. Includes hands-on programming exercises, downloadable from GitHub.

*Recent Advancements in Airborne Radar Signal Processing: Emerging Research and Opportunities* - Almslmany, Amir 2018-06-01

As computer and information systems technology advances, industries such as aviation stand to benefit from the overwhelming new advances in hardware, software, and best practices. *Recent Advancements in Airborne Radar Signal Processing: Emerging Research and Opportunities* is a critical scholarly resource exploring an airborne radar system that will help to improve the function of airborne radar and self-deception spoofing jammer sources. Featuring coverage on a broad range of topics, such as doppler straddling loss, spoofing systems, and radar platform modeling, this book is geared towards academicians, researchers, and students seeking current research on radar signal processing in the field of aviation.

*Recent Trends in Computational Intelligence Enabled Research* - Siddhartha Bhattacharyya 2021-07-31

The field of computational intelligence has grown tremendously over that past five years, thanks to evolving soft computing and artificial intelligent methodologies, tools and techniques for envisaging the essence of intelligence embedded in real life observations. Consequently, scientists have been able to explain and understand real life processes and practices which previously often remain unexplored by virtue of their underlying imprecision, uncertainties and redundancies, and the unavailability of appropriate methods for describing the incompleteness and vagueness of information represented. With the advent of the field of

computational intelligence, researchers are now able to explore and unearth the intelligence, otherwise insurmountable, embedded in the systems under consideration. Computational Intelligence is now not limited to only specific computational fields, it has made inroads in signal processing, smart manufacturing, predictive control, robot navigation, smart cities, and sensor design to name a few. *Recent Trends in Computational Intelligence Enabled Research: Theoretical Foundations and Applications* explores the use of this computational paradigm across a wide range of applied domains which handle meaningful information. Chapters investigate a broad spectrum of the applications of computational intelligence across different platforms and disciplines, expanding our knowledge base of various research initiatives in this direction. This volume aims to bring together researchers, engineers, developers and practitioners from academia and industry working in all major areas and interdisciplinary areas of computational intelligence, communication systems, computer networks, and soft computing. Provides insights into the theory, algorithms, implementation, and application of computational intelligence techniques Covers a wide range of applications of deep learning across various domains which are researching the applications of computational intelligence Investigates novel techniques and reviews the state-of-the-art in the areas of machine learning, computer vision, soft computing techniques

Data Center Handbook - Hwaiyu Geng 2014-12-01

Provides the fundamentals, technologies, and best practices in designing, constructing and managing mission critical, energy efficient data centers Organizations in need of high-speed connectivity and nonstop systems operations depend upon data centers for a range of deployment solutions. A data center is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes multiple power sources, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices. With contributions from an international list of experts, *The Data Center Handbook* instructs readers to: Prepare strategic plan that includes location plan, site selection, roadmap and capacity planning Design and build "green" data centers, with mission critical and energy-efficient infrastructure Apply best practices to reduce energy consumption and carbon emissions Apply IT technologies such as cloud and virtualization Manage data centers in order to sustain operations with minimum costs Prepare and practice disaster recovery and business continuity plan The book imparts essential knowledge needed to implement data center design and construction, apply IT technologies, and continually improve data center operations.

**Handbook of Research on Mobile Software Engineering: Design, Implementation, and Emergent Applications** - Alencar, Paulo 2012-05-31

The popularity of an increasing number of mobile devices, such as PDAs, laptops, smart phones, and tablet computers, has made the mobile device the central method of communication in many societies. These devices may be used as electronic wallets, social networking tools, or may serve as a person's main access point to the World Wide Web. *The Handbook of Research on Mobile Software Engineering: Design, Implementation, and Emergent Applications* highlights state-of-the-art research concerning the key issues surrounding current and future challenges associated with the software engineering of mobile systems and related emergent applications. This handbook addresses gaps in the literature within the area of software engineering and the mobile computing world.

*Handbook of Research on Advances in Data Analytics and Complex Communication Networks* - P. Venkata Krishna 2021

"This edited book discusses data analytics and complex communication networks and recommends new methodologies, system architectures, and other solutions to prevail over the current limitations faced by the field"--

*Handbook of Research on Cloud Infrastructures for Big Data Analytics* - Raj, Pethuru 2014-03-31

Clouds are being positioned as the next-generation consolidated, centralized, yet federated IT infrastructure for hosting all kinds of IT platforms and for deploying, maintaining, and managing a wider variety of personal, as well as professional applications and services. *Handbook of Research on Cloud Infrastructures for Big Data Analytics* focuses exclusively on the topic of cloud-sponsored big data analytics for creating flexible and futuristic organizations. This book helps researchers and practitioners, as well as business entrepreneurs, to make informed decisions and consider appropriate action to simplify and

streamline the arduous journey towards smarter enterprises.

Innovations in Software-Defined Networking and Network Functions Virtualization - Dumka, Ankur 2018-02-16

The advancement of technology is a standard of modern daily life, whether it be the release of a new cellphone, computer, or a self-driving car. Due to this constant advancement, the networks on which these technologies operate must advance as well. *Innovations in Software-Defined Networking and Network Functions Virtualization* is a critical scholarly publication that observes the advances made in network infrastructure through achieving cost efficacy while maintaining maximum flexibility for the formation and operation of these networks. Featuring coverage on a broad selection of topics, such as software-defined storage, openflow controller, and storage virtualization, this publication is geared toward professionals, computer engineers, academicians, students, and researchers seeking current and relevant research on the advancements made to network infrastructures.

Software Defined Internet of Everything - Gagangeet Singh Aujla 2022-01-14

This book provides comprehensive discussion on key topics related to the usage and deployment of software defined networks (SDN) in Internet of Everything applications like, healthcare systems, data centers, edge/fog computing, vehicular networks, intelligent transportation systems, smart grids, smart cities and more. The authors provide diverse solutions to overcome challenges of conventional network binding in various Internet of Everything applications where there is need of an adaptive, agile, and flexible network backbone. The book showcases different deployment models, algorithms and implementations related to the usage of SDN in Internet of Everything applications along with the pros and cons of the same. Even more, this book provides deep insights into the architecture of software defined networking specifically about the layered architecture and different network planes, logical interfaces, and programmable operations. The need of network virtualization and the deployment models for network function virtualization is also included with an aim towards the design of interoperable network architectures by researchers in future. Uniquely, the authors find hands on practical implementation, deployment scenarios and use cases for various software defined networking architectures in Internet of Everything applications like healthcare networks, Internet of Things, intelligent transportation systems, smart grid, underwater acoustic networks and many more. In the end, design and research challenges, open issues, and future research directions are provided in this book for a wide range of readers

Software-Defined Networking and Security - Dijiang Huang 2018-12-07

This book provides readers insights into cyber maneuvering or adaptive and intelligent cyber defense. It describes the required models and security supporting functions that enable the analysis of potential threats, detection of attacks, and implementation of countermeasures while expending attacker resources and preserving user experience. This book not only presents significant education-oriented content, but uses advanced content to reveal a blueprint for helping network security professionals design and implement a secure Software-Defined Infrastructure (SDI) for cloud networking environments. These solutions are a less intrusive alternative to security countermeasures taken at the host level and offer centralized control of the distributed network. The concepts, techniques, and strategies discussed in this book are ideal for students, educators, and security practitioners looking for a clear and concise text to avant-garde cyber security installations or simply to use as a reference. Hand-on labs and lecture slides are located at <http://virtualnetworksecurity.thothlab.com/>. Features Discusses virtual network security concepts Considers proactive security using moving target defense Reviews attack representation models based on attack graphs and attack trees Examines service function chaining in virtual networks with security considerations Recognizes machine learning and AI in network security

**Software Defined Radio** - Walter H.W. Tuttlebee 2003-04-11

Software defined radio (SDR) is one of the most important topics of research, and indeed development, in the area of mobile and personal communications. SDR is viewed as an enabler of global roaming and as a unique platform for the rapid introduction of new services into existing live networks. It therefore promises mobile communication networks a major increase in flexibility and capability. SDR brings together two key technologies of the last decade - digital radio and downloadable software. It encompasses not only reconfiguration of the air interface parameters of handset and basestation products but also the whole

mobile network, to facilitate the dynamic introduction of new functionality and mass-customised applications to the user's terminal, post-purchase. This edited book, contributed by internationally respected researchers and industry practitioners, describes the current technological status of radio frequency design, data conversion, reconfigurable signal processing hardware, and software issues at all levels of the protocol stack and network. The book provides a holistic treatment of SDR addressing the full breadth of relevant technologies - radio frequency design, signal processing and software - at all levels. As such it provides a solid grounding for a new generation of wireless engineers for whom radio design in future will assume dynamic flexibility as a given. In particular it explores \* The unique demands of SDR upon the RF subsystem and their implications for front end design methodologies \* The recent concepts of the 'digital front end' and 'parametrization' \* The role and key influence of data conversion technologies and devices within software radio, essential to robust product design \* The evolution of signal processing technologies, describing new architectural approaches \* Requirements and options for software download \* Advances in 'soft' protocols and 'on-the-fly' software reconfiguration \* Management of terminal reconfiguration and its network implications \* The concepts of the waveform description language The book also includes coverage of \* Potential breakthrough technologies, such as superconducting RSFQ technology and the possible future role of MEMS in RF circuitry \* Competing approaches, eg all-software radios implemented on commodity computing vs advanced processing architectures that dynamically optimise their configuration to match the algorithm requirements at a point in time The book opens with an introductory chapter by Stephen Blust, Chair of the ITU-R WP8F Committee and Chair of the SDR Forum presenting a framework for SDR, in terms of definitions, evolutionary perspectives, introductory timescales and regulation. Suitable for today's engineers, technical staff and researchers within the wireless industry, the book will also appeal to marketing and commercial managers who need to understand the basics and potential of the technology for future product development. Its balance of industrial and academic contributors also makes it suitable as a text for graduate and post-graduate courses aiming to prepare the next generation of wireless engineers.

**Handbook of Research on Evolving Designs and Innovation in ICT and Intelligent Systems for Real-World Applications** - Sarma, Kandarpa Kumar 2022-06-24

The relentless advances in all areas of information and communication technology, intelligent systems, and related domains have continued to drive innovative research. Most of these works have attempted to contribute in some form towards improving human life in general and have become indispensable elements of our day-to-day lives. The evolution continues at an accelerated pace while the world faces innumerable challenges and rapid advances in artificial intelligence, wireless communication, sensors, cloud and edge computing, and biomedical sciences. These advances must be documented and studied further in order to ensure society's continual development. The Handbook of Research on Evolving Designs and Innovation in ICT and Intelligent Systems for Real-World Applications disseminates details of works undertaken by various groups of researchers in emerging areas related to information and communication technology, electronics engineering, intelligent systems, and allied disciplines with real-world applications. Covering a wide range of topics such as augmented reality and wireless sensor networks, this major reference work is ideal for industry professionals, researchers, scholars, practitioners, academicians, engineers, instructors, and students.

*A Software-Defined GPS and Galileo Receiver* - Kai Borre 2007-08-03

This book explore the use of new technologies in the area of satellite navigation receivers. In order to construct a reconfigurable receiver with a wide range of applications, the authors discuss receiver architecture based on software-defined radio techniques. The presentation unfolds in a user-friendly style and goes from the basics to cutting-edge research. The book is aimed at applied mathematicians, electrical engineers, geodesists, and graduate students. It may be used as a textbook in various GPS technology and signal processing courses, or as a self-study reference for anyone working with satellite navigation receivers.

**Software-Defined Networking with Openflow - Second Edition** - Oswald Coker 2017-10-25

Master OpenFlow concepts to improve and make your projects efficient with the help of Software-Defined Networking.About This Book\* Master the required platforms and tools to build network applications with

OpenFlow\* Get to grips with the updated OpenFlow and build robust SDN-based solutions\* An end-to-end thorough overview of open-source switches, controllers, and toolsWho This Book Is ForIf you are a network/system administrator or a system engineer and would like to implement OpenFlow concepts and take Software-Defined Networking on your projects to the next level, then this book is for you. If you are aware of broad networking concepts, and are familiar with the day-to-day operation of computer networks, you will find this book very beneficial.What You Will Learn\* Explore Software-Defined Networking and activities around SDN/OpenFlow including OpenFlow messages\* Hardware and software implementations of OpenFlow switches and experiment with Mininet GUI\* Learn about the role of OpenFlow in cloud computing by configuring and setting up the Neutron and Floodlight OpenFlow controller plugins\* Simulate and test utilities, and familiarize yourself with OpenFlow soft switches, controllers, virtualization, and orchestration tools\* Enhance and build environments for Net App development by installing VM's and tools such as Mininet and Wireshark\* Learn about hardware and software switches and get a feel for active open-source projects around SDN and OpenFlowIn DetailOpenFlow paves the way for an open, centrally programmable structure, thereby accelerating the effectiveness of Software-Defined Networking.Software-Defined Networking with OpenFlow, Second Edition takes you through the product cycle and gives you an in-depth description of the components and options that are available at each stage. The aim of this book is to help you implement OpenFlow concepts and improve Software-Defined Networking on your projects. You will begin by learning about building blocks and OpenFlow messages such as controller-to-switch and symmetric and asynchronous messages. Next, this book will take you through OpenFlow controllers and their existing implementations followed by network application development. Key topics include the basic environment setup, the Neutron and Floodlight OpenFlow controller, XORPlus OF13SoftSwitch, enterprise and affordable switches such as the Zodiac FX and HP2920.By the end of this book, you will be able to implement OpenFlow concepts and improve Software-Defined Networking in your projects.Style and approachThis book is an easy-to-follow and pragmatic guide networking. Each topic adopts a logical approach and provides hints to help you build and deliver SDN Solutions efficiently.

**Handbook of Research of Internet of Things and Cyber-Physical Systems** - Amit Kumar Tyagi 2022-06-09

This new volume discusses how integrating IoT devices and cyber-physical systems can help society by providing multiple efficient and affordable services to users. It covers the various applications of IoT-based cyber-physical systems, such as satellite imaging in relation to climate change, industrial control systems, e-healthcare applications, security uses, automotive and traffic monitoring and control, urban smart city planning, and more. The authors also outline the methods, tools, and algorithms for IoT-based cyber-physical systems and explore the integration of machine learning, blockchain, and Internet of Things-based cloud applications. With the continuous emerging new technologies and trends in IoT technology and CPS, this volume will be a helpful resource for scientists, researchers, industry professionals, faculty and students, and others who wish to keep abreast of new developments and new challenges for sustainable development in Industry 4.0.

**Handbook of Research on Digital Transformation, Industry Use Cases, and the Impact of Disruptive Technologies** - Wynn, Martin George 2021-10-15

Companies from various sectors of the economy are confronted with the new phenomenon of digital transformation and are faced with the challenge of formulating and implementing a company-wide strategy to incorporate what are often viewed as "disruptive" technologies. These technologies are sometimes associated with significant and extremely rapid change, in some cases with even the replacement of established business models. Many of these technologies have been deployed in unison by leading-edge companies acting as the catalyst for significant process change and people skills enhancement. The Handbook of Research on Digital Transformation, Industry Use Cases, and the Impact of Disruptive Technologies examines the phenomenon of digital transformation and the impact of disruptive technologies through the lens of industry case studies where different combinations of these new technologies have been deployed and incorporated into enterprise IT and business strategies. Covering topics including chatbot implementation, multinational companies, cloud computing, internet of things, artificial intelligence, big data and analytics, immersive technologies, and social media, this book is essential for senior management,

IT managers, technologists, computer scientists, cybersecurity analysts, academicians, researchers, IT consultancies, professors, and students.

**Handbook of Research on Information and Cyber Security in the Fourth Industrial Revolution** - Fields, Ziska 2018-06-22

The prominence and growing dependency on information communication technologies in nearly every aspect of life has opened the door to threats in cyberspace. Criminal elements inside and outside organizations gain access to information that can cause financial and reputational damage. Criminals also target individuals daily with personal devices like smartphones and home security systems who are often unaware of the dangers and the privacy threats around them. The Handbook of Research on Information and Cyber Security in the Fourth Industrial Revolution is a critical scholarly resource that creates awareness of the severity of cyber information threats on personal, business, governmental, and societal levels. The book explores topics such as social engineering in information security, threats to cloud computing, and cybersecurity resilience during the time of the Fourth Industrial Revolution. As a source that builds on available literature and expertise in the field of information technology and security, this publication proves useful for academicians, educationalists, policy makers, government officials, students, researchers, and business leaders and managers.

*Software Defined Networks* - Paul Goransson 2016-10-25

Software Defined Networks: A Comprehensive Approach, Second Edition provides in-depth coverage of the technologies collectively known as Software Defined Networking (SDN). The book shows how to explain to business decision-makers the benefits and risks in shifting parts of a network to the SDN model, when to integrate SDN technologies in a network, and how to develop or acquire SDN applications. In addition, the book emphasizes the parts of the technology that encourage opening up the network, providing treatment for alternative approaches to SDN that expand the definition of SDN as networking vendors adopt traits of SDN to their existing solutions. Since the first edition was published, the SDN market has matured, and is being gradually integrated and morphed into something more compatible with mainstream networking vendors. This book reflects these changes, with coverage of the OpenDaylight controller and its support for multiple southbound protocols, the Inclusion of NETCONF in discussions on controllers and devices, expanded coverage of NFV, and updated coverage of the latest approved version (1.5.1) of the OpenFlow specification. Contains expanded coverage of controllers Includes a new chapter on NETCONF and SDN Presents expanded coverage of SDN in optical networks Provides support materials for use in computer networking courses

**Handbook of Research on Mobile Software Engineering** - Paulo Alencar 2012

"This book highlights state-of-the-art research concerning the key issues surrounding current and future challenges associated with the software engineering of mobile systems and related emergent applications"--  
[Handbook of Research on Cloud and Fog Computing Infrastructures for Data Science](#) - Raj, Pethuru 2018-05-18

Fog computing is quickly increasing its applications and uses to the next level. As it continues to grow, different types of virtualization technologies can thrust this branch of computing further into mainstream use. The Handbook of Research on Cloud and Fog Computing Infrastructures for Data Science is a key reference volume on the latest research on the role of next-generation systems and devices that are capable of self-learning and how those devices will impact society. Featuring wide-ranging coverage across a variety of relevant views and themes such as cognitive analytics, data mining algorithms, and the internet of things, this publication is ideally designed for programmers, IT professionals, students, researchers, and engineers looking for innovative research on software-defined cloud infrastructures and domain-specific analytics.

**Handbook of Research on Progressive Trends in Wireless Communications and Networking** - Matin, M.A. 2014-02-28

"This book brings together advanced research on diverse topics in wireless communications and networking, including the latest developments in broadband technologies, mobile communications, wireless sensor networks, network security, and cognitive radio networks"--  
*Handbook of Research on Big Data and the IoT* - Kaur, Gurjit 2019-03-29

The increase in connected devices in the internet of things (IoT) is leading to an exponential increase in the data that an organization is required to manage. To successfully utilize IoT in businesses, big data analytics are necessary in order to efficiently sort through the increased data. The combination of big data and IoT can thus enable new monitoring services and powerful processing of sensory data streams. The Handbook of Research on Big Data and the IoT is a pivotal reference source that provides vital research on emerging trends and recent innovative applications of big data and IoT, challenges facing organizations and the implications of these technologies on society, and best practices for their implementation. While highlighting topics such as bootstrapping, data fusion, and graph mining, this publication is ideally designed for IT specialists, managers, policymakers, analysts, software engineers, academicians, and researchers.

[Handbook of Research on Software-Defined and Cognitive Radio Technologies for Dynamic Spectrum Management, Vol 2](#) - Naima Kaabouch 2015-02-02

[Future Intent-Based Networking](#) - Mikhailo Klymash 2021-12-11

So-called Intent-Based Networking (IBN) is founded on well-known SDN (Software-Defined Networking) and represents one of the most important emerging network infrastructure opportunities. The IBN is the beginning of a new era in the history of networking, where the network itself translates business intentions into appropriate network configurations for all devices. This minimizes manual effort, provides an additional layer of network monitoring, and provides the ability to perform network analytics and take full advantage of machine learning. The centralized, software-defined solution provides process automation and

proactive problem solving as well as centralized management of the network infrastructure. With software-based network management, many operations can be performed automatically using intelligent control algorithms (artificial intelligence and machine learning). As a result, network operation costs, application response times and energy consumption are reduced, network reliability and performance are improved, network security and flexibility are enhanced. This will be a benefit for existing networks as well as evolved LTE-based mobile networks, emerging Internet of Things (IoT), Cloud systems, and soon for the future 5G/6G networks. The future networks will reach a whole new level of self-awareness, self-configuration, self-optimization, self-recovery and self-protection. This volume consists of 28 chapters, based on recent research on IBN. The volume is a collection of the most important research for the future intent-based networking deployment provided by different groups of researchers from Ukraine, Germany, Slovak Republic, Switzerland, South Korea, China, Czech Republic, Poland, Brazil, Belarus and Israel. The authors of the chapters from this collection present in depth extended research results in their scientific fields. The presented contents are highly interesting while still being rather practically oriented and straightforward to understand. Herewith we would like to wish all our readers a lot of inspiration by studying of the volume!

**Handbook of Research on Mobility and Computing: Evolving Technologies and Ubiquitous Impacts** - Cruz-Cunha, Maria Manuela 2011-04-30

Discusses the main issues, challenges, opportunities, and trends related to this explosive range of new developments and applications, in constant evolution, and impacting every organization and society as a whole. This two volume handbook supports post-graduate students, teachers, and researchers, as well as IT professionals and managers.