Thesis Topics Telecommunication Engineering

A one-stop resource for the use of algorithms and protocols in wireless sensor networks From an established international researcher in the field, this edited volume provides readers with comprehensive coverage of the fundamental algorithms and protocols for wireless sensor networks. It identifies the research that needs to be conducted on a number of levels to design and assess the deployment of wireless sensor networks, and provides an in-depth analysis of the development of the next generation of heterogeneous wireless sensor networks. Divided into nineteen succinct chapters, the book covers: mobility management and resource allocation algorithms; communication models; energy and power consumption algorithms; performance modeling and simulation; authentication and reputation mechanisms; algorithms for wireless sensor and mesh networks; and algorithm methods for pervasive and ubiquitous computing; among other topics. Complete with a set of challenging exercises, this book is a valuable resource for electrical engineers, computer engineers, network engineers, and computer science specialists. Useful for instructors and students alike, Algorithms and Protocols for Wireless Sensor Networks is an ideal textbook for advanced undergraduate and graduate courses in computer science, electrical engineering,and network engineering.

The Department of Commerce operates two telecommunications research laboratories located at the Department of Commerce's Boulder, Colorado, campus: the National Telecommunications and Information Administration's (NTIA's) Institute for Telecommunications Sciences (ITS) and the National Institute of Standards and Technology's (NIST's) Communications Technology Laboratory (CTL). ITS serves as a principal federal resource for solving the telecommunications concerns of federal agencies, state and local governments, private corporations and associations, standards bodies, and international organizations. ITS could provide an essential service to the nation by being a principal provider of instrumentation and spectrum measurement services; however, the inter-related shortages of funding, staff, and a coherent strategy limits its ability to fully function as a research laboratory. This report examines the institute's performance, resources, and capabilities and the extent to which these meet customer needs. The Boulder telecommunications laboratories currently play an important role in the economic vitality of the country and can play an even greater role given the importance of access to spectrum and spectrum sharing to the wireless networking and mobile cellular industries. Research advances are needed to ensure the continued evolution and enhancement of the connected world the public has come to expect.

This book presents selected papers from the 4th International Conference on Micro-Electronics and Telecommunication Engineering, held at SRM Institute of Science and Technology, Ghaziabad, India, during 26-7 September 2020. It covers a wide variety of topics in micro-electronics and telecommunication engineering, including micro-electronic engineering, computational remote sensing, computer science and intelligent systems, signal and image processing, and information and communication technology.

Vehicle accidents on the roads and highways occur every minute of every day, most often resulting in a loss of life or property damage. With advancing technology, vehicle infrastructure integration can increase road safety and transport efficiency through wireless sensor communications and other systems. These recent developments can bring inestimable economic value and will play a role in the next generation of vehicle products and traffic safety. Global Advancements in Connected and Intelligent Mobility: Emerging Research and Opportunities is an essential reference source that discusses the recent advances, safety, and efficiency in connected vehicles, as well as the next generation of communication network development. Featuring research on topics such as vehicular networks, telematics, and context-aware intelligence, this book is ideally designed for policymakers, traffic safety specialists, traffic control technicians, auto technicians, planning agencies, environmental managers, standardization governors, academicians, students, researchers, and industry practitioners seeking coverage on intelligent transportation systems.

"This book offers widespread knowledge on modern organizations and the complications of the current globalized computing environment"--Provided by publisher.

This is the first book on space-time coding for wireless communications, one of the most promising techniques for ensuring bandwidth efficiency. The text describes theoretical principles as well as engineering applications; discusses key criteria in the design of practical space-time codes; and covers single-carrier and multi-carrier transmission for both single- and multi-user communications.

As population growth accelerates, researchers and professionals face challenges as they attempt to plan for the future. Urban planning is a significant component in addressing the key concerns as the world population moves towards the city and leaves the rural environment behind, yet there are many factors to consider for a well rounded community. The Handbook of Research on Social, Economic, and Environmental Sustainability in the Development of Smart Cities brings together the necessary research and interdisciplinary discussion to address dilemmas created by population growth and the expansion of urban environments. This publication is an essential reference source for researchers, academicians, investors, and practitioners interested in the urban planning and technological advancements necessary for the creation of smart cities.

This book emerged out of research done during the period between 2004 and 2016 on the topic of mobile and wearable computing. It did not solely focus on technical solutions and the search for a general approach but also on the question how people can live with this technology. Thus social and organizational aspects were also part of the research. The findings demonstrate the opportunities of serious games and reveal the need of clinical studies when targeting at solutions that are to become part of any kind of therapy. The result is a comprehensive presentation of research findings covering different important aspects in the domain of wearable and pervasive computing for a better life.

Handbook of Research on Advanced Trends in Microwave and Communication EngineeringIGI Global

As ubiquitous multimedia applications benefit from the rapid development of intelligent multimedia technologies, there is an inherent need to present frameworks, techniques and tools that adopt these technologies to a range of networking applications. Intelligent Multimedia Technologies for Networking Applications: Techniques and Tools promotes the discussion of specific solutions for improving the quality of multimedia experience while investigating issues arising from the deployment of techniques for adaptive video streaming. This reference source provides relevant theoretical frameworks and leading empirical research findings and is suitable for practitioners and researchers in the area of multimedia technology.

The conference on network security and communication engineering is meant to serve as a forum for exchanging new developments and research progresss between scholars, scientists and engineers all over the world and providing a unique opportunity to exchange information, to present the latest results as well as to review the relevant issues on

"This book provide a comprehensive coverage of the latest and most relevant knowledge, developments, solutions, and practical applications, related to e-Health, this new field of knowledge able to transform the way we live and deliver services, both from the technological and social perspectives"--Provided by publisher.

The book is presents the papers presented at the 4th International Conference on Telecommunications and Communication Engineering (ICTCE 2020) held on 4 -6 December, in Singapore. It covers advanced research topics in the field of computer communication and networking organized into the topics of emerging technologies of wireless communication and networks, 5G wireless communication and networks, information and network security, internet of things and fog computing. These advanced research topics are taking the lead and representing the trend of the recent academic research in the field of

computer communication and networking. It is expected that the collection and publication of the research papers with the advanced topics listed in this book will further promote high standard academic research in the field and make a significant contribution to the development of economics and human society.

High Performance Networking is a state-of-the-art book that deals with issues relating to the fast-paced evolution of public, corporate and residential networks. It focuses on the practical and experimental aspects of high performance networks and introduces novel approaches and concepts aimed at improving the performance, usability, interoperability and scalability of such systems. Among others, the topics covered include: Java applets and applications; distributed virtual environments; new internet streaming protocols; web telecollaboration tools; Internet, Intranet; real-time services like multimedia; quality of service; mobility. High Performance Networking comprises the proceedings of the Eighth International Conference on High Performance Networking, sponsored by the International Federation for Information Processing (IFIP), and was held at Vienna Univrsity of Technology, Vienna, Austria, in September 1998. High Performance Networking is suitable as a secondary text for a graduate level course on high performance networking, and as a reference for researchers and practitioners in industry.

"This book provides original, in-depth, and innovative articles on telecommunications policy, management, and business applications"--Provided by publisher.

This book presents spectrum sharing efforts between cellular systems and radars. The book addresses coexistence algorithms for radar and communication systems. Topics include radar and cellular system models; spectrum sharing with small radar systems; spectrum sharing with large radar systems; radar spectrum sharing with coordinated multipoint systems (CoMP); and spectrum sharing with overlapped MIMO radars. The primary audience is the radar and wireless communication community, specifically people in industry, academia, and research whose focus is on spectrum sharing. The topics are of interest for both communication and signal processing technical groups. In addition, students can use MATLAB code to enhance their learning experience.

"This book examines critical issues involved with telematics such as vehicular network infrastructure, vehicular network communication protocols, and vehicular services and applications"--Provided by publisher.

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.

The first comprehensive guide to the design and implementation of security in 5G wireless networks and devices Security models for 3G and 4G networks based on Universal SIM cards worked very well. But they are not fully applicable to the unique security requirements of 5G networks. 5G will face additional challenges due to increased user privacy concerns, new trust and service models and requirements to support IoT and mission-critical applications. While multiple books already exist on 5G, this is the first to focus exclusively on security for the emerging 5G ecosystem. 5G networks are not only expected to be faster, but provide a backbone for many new services, such as IoT and the Industrial Internet. Those services will provide connectivity for everything from autonomous cars and UAVs to remote health monitoring through body-attached sensors, smart logistics through item tracking to remote diagnostics and preventive maintenance of equipment. Most services will be integrated with Cloud computing and novel concepts, such as mobile edge computing, which will require smooth and transparent communications between user devices, data centers and operator networks. Featuring contributions from an international team of experts at the forefront of 5G system design and security, this book: Provides priceless insights into the current and future threats to mobile networks and mechanisms to protect it Covers critical lifecycle functions and stages of 5G security and how to build an effective security architecture for 5G based mobile networks Addresses mobile network security based on network-centricity, device-centricity, information-centricity and people-centricity views Explores security considerations for all relative stakeholders of mobile networks, including mobile network operators, mobile network virtual operators, mobile users, wireless users, Internet-of things, and cybersecurity experts Providing a comprehensive guide to state-of-the-art in 5G security theory and practice, A Comprehensive Guide to 5G Security is an important working resource for researchers, engineers and business professionals working on 5G development and deployment.

"This book brings together academics, policy-makers and practitioners, with the goal of delivering a reference edition for all those interested in approaches and applications of technology enhanced learning for people with disabilities"--Provided by publisher.

Despite the advances that have been made in programming, there is still a lack of sufficient methods for quality control. While code standards try to force programmers to follow a specific set of rules, few tools exist that really deal with automatic refactoring of this code, and evaluation of the coverage of these tests is still a challenge. Code Generation, Analysis Tools, and Testing for Quality is an essential reference source that discusses the generation and writing of computer programming and methods of quality control such as analysis and testing. Featuring research on topics such as programming languages, quality assessment, and automated development, this book is ideally designed for academicians, practitioners, computer science teachers, enterprise developers, and researchers seeking coverage on code auditing strategies and methods.

Visible Light Communications, written by leading researchers, provides a comprehensive overview of theory, stimulation, design, implementation, and applications. The book is divided into two parts – the first devoted to the underlying theoretical concepts of the VLC and the second part covers VLC applications. Visible Light Communications is an emerging topic with multiple functionalities including data communication, indoor localization, 5G wireless communication networks, security, and small cell optimization. This concise book will be of valuable interest from beginners to researchers in the field.

Technological advancements continue to enhance the field of engineering and have led to progress in branches that include electrical and mechanical engineering. These technologies have allowed for more sophisticated circuits and components while also advancing renewable energy initiatives. With increased growth in these fields, there is a need for a collection of research that details the variety of works being studied in our globalized world. The Handbook of Research on Recent Developments in Electrical and Mechanical Engineering is a pivotal reference

source that discusses the latest advancements in these engineering fields. Featuring research on topics such as materials manufacturing, microwave photons, and wireless power transfer, this book is ideally designed for graduate students, researchers, engineers, manufacturing managers, and academicians seeking coverage on the works and experiences achieved in electrical and mechanical engineering.

With the rise of mobile and wireless technologies, more sustainable networks are necessary to support communication. These next-generation networks can now be utilized to extend the growing era of the Internet of Things. Enabling Technologies and Architectures for Next-Generation Networking Capabilities is an essential reference source that explores the latest research and trends in large-scale 5G technologies deployment, software-defined networking, and other emerging network technologies. Featuring research on topics such as data management, heterogeneous networks, and spectrum sensing, this book is ideally designed for computer engineers, technology developers, network administrators and researchers, professionals, and graduate-level students seeking coverage on current and future network technologies.

The modern telecommunications infrastructure—made possible by research performed over the last several decades—is an essential element of the U.S. economy. The U.S. position as a leader in telecommunications technology, however, is at risk because of the recent decline in domestic support of long-term, fundamental telecommunications research. To help understand this challenge, the National Science Foundation asked the NRC to assess the state of telecommunications research in the United States and recommend ways to halt the research decline. This report provides an examination of telecommunications research support levels, focus, and time horizon in industry, an assessment of university telecommunications research, and the implications of these findings on the health of the sector. Finally, it presents recommendations for enhancing U.S. telecommunications' research efforts.

Wireless communications have become invaluable in the modern world. The market is going through a revolutionary transformation as new technologies and standards endeavor to keep up with demand for integrated and low-cost mobile and wireless devices. Due to their ubiquity, there is also a need for a simplification of the design of wireless systems and networks. The Handbook of Research on Advanced Trends in Microwave and Communication Engineering showcases the current trends and approaches in the design and analysis of reconfigurable microwave devices, antennas for wireless applications, and wireless communication technologies. Outlining both theoretical and experimental approaches, this publication brings to light the unique design issues of this emerging research, making it an ideal reference source for engineers, researchers, graduate students, and IT professionals.

"This book highlights new research regarding wireless identification and sensing platform (WISP) tags, security, and applications, serving as a reference on WISP technology and presenting recent advances in this field"--Provided by publisher.

The book contains high quality papers presented in the Fifth International Conference on Innovations in Electronics and Communication Engineering (ICIECE 2016) held at Guru Nanak Institutions, Hyderabad, India during 8 and 9 July 2016. The objective is to provide the latest developments in the field of electronics and communication engineering specially the areas like Image Processing, Wireless Communications, Radar Signal Processing, Embedded Systems and VLSI Design. The book aims to provide an opportunity for researchers, scientists, technocrats, academicians and engineers to exchange their innovative ideas and research findings in the field of Electronics and Communication Engineering.

This book presents breakthroughs in the design of Wireless Energy Harvesting (WEH) networks. It bridges the gap between WEH through radio waves communications and power transfer, which have largely been designed separately. The authors present an overview of the RF-EHNs including system architecture and RF energy harvesting techniques and existing applications. They also cover the idea of WEH in novel discoveries of information, the theoretical bounds in WEH, wireless sensor networks, usage of modern channel coding together with WEH, energy efficient resource allocation mechanisms, distributed self-organized energy efficient designs, delay-energy trade-off, specific protocols for energy efficient communication designs, D2D communication and energy efficiency, cooperative wireless networks, and cognitive networks.

These proceedings represent the work of contributors to the 16th International Conference on Cyber Warfare and Security (ICCWS 2021), hosted by joint collaboration of Tennessee Tech Cybersecurity Education, Research and Outreach Center (CEROC), Computer Science department and the Oak Ridge National Laboratory, Tennessee on 25-26 February 2021. The Conference Co-Chairs are Dr. Juan Lopez Jr, Oak Ridge National Laboratory, Tennessee, and Dr. Ambareen Siraj, Tennessee Tech's Cybersecurity Education, Research and Outreach Center (CEROC), and the Program Chair is Dr. Kalyan Perumalla, from Oak Ridge National Laboratory, Tennessee.

More than ten years have passed since the untimely death of King-Sun Fu, one of the great pioneers in the field of pattern recognition. It was he, more than any other single individual, who nurtured the field during its formative years, and set the tone and tempo for others to follow. This book is dedicated to his memory. This book contains 11 chapters by authors who knew King-Sun Fu and in varying degrees interacted with him. The articles span the field of pattern recognition in its current state, and cover such diverse topics as neural nets, covariance propagation, genetic selection, shape description, characteristic views for 3D modeling, face recognition, speech recognition, and machine translation. In tone they vary from the highly theoretical to the applied. Their presentation here is a testimonial, by his former colleagues and friends, to the pioneer who did so much to bring pattern recognition to its position as a recognized discipline world-wide. Contents:Pattern Category Assignment by Neural Networks and Nearest Neighbors Rule: A Synopsis and a Characterization (A Mitiche & J K Aggarwal)Pattern Recognition: An Approach to Turn Machine Translation Concepts into Creation and Reality (J T Tou)Learning in Navigation: Goal Finding in Graphs (P Cucka et al.)Subset Least Squares Method for Robust Speech and Image Processing (R L Kashyap & J-N Liaw)Shape Recognition by Human-Like Trial and Error Random Processes (M Nagao)3-D Face Modeling and Its Applications (T S Huang & L-A Tang)Dimension Reduction, Feature Extraction and Interpretation of Data with Network Computing (Y-H Pao)Characteristic-View Modeling of Curved-Surface Solids (S Chen & H Freeman)Propagating Covariance in Computer Vision (R M Haralick)Shape Description by a Syntactic Pyramidal Approach (S Levialdi & L Cinque)Genetic Selection and Neural Modeling of Piecewise Linear-Classifiers (J Sklansky & M Vriesenga) Readership: Computer scientists. keywords:

"This book discusses the complete range of contemporary research topics such as computer modeling, geometry, geoprocessing, and geographic information systems"--Provided by publisher.

Telecommunications have underpinned social interaction and economic activity since the 19th century and have been increasingly reliant on optical fibers since their initial commercial deployment by BT in 1983. Today, mobile phone networks, data centers, and broadband services that facilitate our entertainment, commerce, and increasingly health provision are built on hidden optical fiber networks. However, recently it emerged that the fiber network is beginning to fill up, leading to the talk of a capacity crunch where the capacity still grows but struggles to keep up with the increasing demand. This book, featuring contributions by the suppliers of widely deployed simulation software and academic

authors, illustrates the origins of the limited performance of an optical fiber from the engineering, physics, and information theoretic viewpoints. Solutions are then discussed by pioneers in each of the respective fields, with near-term solutions discussed by industrially based authors, and more speculative high-potential solutions discussed by leading academic groups.

Backscattering and RF Sensing for Future Wireless Communication Discover what lies ahead in wireless communication networks with this insightful and forward-thinking book written by experts in the field Backscattering and RF Sensing for Future Wireless Communication delivers a concise and insightful picture of emerging and future trends in increasing the efficiency and performance of wireless communication networks. The book shows how the immense challenge of frequency saturation could be met via the deployment of intelligent planar electromagnetic structures. It provides an in-depth coverage of the fundamental physics behind these structures and assesses the enhancement of the performance of a communication network in challenging environments, like densely populated urban centers. The distinguished editors have included resources from a variety of leading voices in the field who discuss topics such as the engineering of metasurfaces at a large scale, the electromagnetic analysis of planar metasurfaces, and low-cost and reliable backscatter communication. All of the included works focus on the facilitation of the development of intelligent systems designed to enhance communication network performance. Readers will also benefit from the inclusion of: A thorough introduction to the evolution of wireless communication networks over the last thirty years, including the imminent saturation of the frequency spectrum An exploration of state-of-the-art techniques that next-generation wireless networks will likely incorporate, including software-controlled frameworks involving artificial intelligence An examination of the scattering of electromagnetic waves by metasurfaces, including how wave propagation differs from traditional bulk materials A treatment of the evolution of artificial intelligence in wireless communications Perfect for researchers in wireless communications, electromagnetics, and urban planning, Backscattering and RF Sensing for Future Wireless Communication will also earn a place in the libraries of government policy makers, technologists, and telecom industry stakeholders who wish to get a head start on understanding the technologies that will enable tomorrow's wireless communications.

"This book presents scientific, theoretical, and practical insight on the software and technology of social networks and the factors that boost communicability, highlighting different disciplines in the computer and social sciences fields"--Provided by publisher.

This textbook introduces the advanced topics of: (i) wireless communications, (ii) free-space optical (FSO) communications, (iii) indoor optical wireless (IR) communications, and (iv) fiber-optics communications and presents these different types of communication systems in a unified fashion for better practical use. Fundamental concepts, such as propagation principles, modulation formats, channel coding, diversity principles, MIMO signal processing, multicarrier modulation, equalization, adaptive modulation and coding, detection principles, and software defined transmission are first described and then followed up with a detailed look at each particular system. The book is self-contained and structured to provide straightforward guidance to readers looking to capture fundamentals and gain theoretical and practical knowledge about wireless communications, optical communications, and fiber-optics communications, all which can be readily applied in studies, research, and practical applications. The textbook is intended for an upper undergraduate or graduate level course in optical communication. It features problems, an appendix with all background material needed, and homework.

After decades of liberalization of the telecommunications industry around the world and technological convergence that allows for increasing competition, sector-specific regulation of telecommunications has been on the decline. As a result, the telecommunications industry stands in the middle of a debate that calls for either a total deregulation of access to broadband infrastructures or a separation of infrastructure from service delivery. This book proposes new approaches to dealing with the current and future issues of regulation of telecommunication markets on both a regional and a global scale. This volume represents a valuable compendium of ideas regarding global trends in the telecommunications industry that focus on market and regulatory issues and company strategies. With an international cast of contributors, Regulation and the Evolution of the Global Telecommunications Industry also provides insight into topics including: mobile Internet development, structural function and separation, global experiences with next generation networks, technology convergence and the role of regulation, and the regulatory impact on the balance between static and dynamic efficiencies. The empirical evidence and experiences presented here illustrate the diversity of thoughts and research that characterize this important area of academic and business research. Thus, it will be a critical reference for scholars and students of regulatory economics, policy and finance and researchers and administrators of the telecom industry.

For the first time the problems of voice services self-similarity are discussed systematically and in detail with specific examples and illustrations. Self-Similar Processes in Telecommunications considers the self-similar (fractal and multifractal) models of telecommunication traffic and efficiency based on the assumption that its traffic has fractal or multifractal properties (is self-similar). The theoretical aspects of the most well-known traffic models demonstrating self-similar properties are discussed in detail and the comparative analysis of the different models' efficiency for self-similar traffic is presented. This book demonstrates how to use self-similar processes for designing new telecommunications systems and optimizing existing networks so as to achieve maximum efficiency and serviceability. The approach is rooted in theory, describing the algorithms (the logical arithmetical or computational procedures that define how a task is performed) for modeling these self-similar processes. However, the language and ideas are essentially accessible for those who have a general knowledge of the subject area and the advice is highly practical: all models, problems and solutions are illustrated throughout using numerous real-world examples. Adopts a detailed, theoretical, yet broad-based and practical mathematical approach for designing and operating numerous types of telecommunications systems and networks so as to achieve maximum efficiency Places the subject in context, describing the current algorithms that make up the fractal

or self-similar processes while pointing to the future development of the technology Offers a comparative analysis of the different types of self-similar process usage within the context of local area networks, wide area networks and in the modeling of video traffic and mobile communications networks Describes how mathematical models are used as a basis for building numerous types of network, including voice, audio, data, video, multimedia services and IP (Internet Protocol) telephony The book will appeal to the wide range of specialists dealing with the design and exploitation of telecommunication systems. It will be useful for the post-graduate students, lecturers and researchers connected with communication networks disciplines.