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HUNTER YATES

Handbook of Wireless Sensor Networks: Issues and Challenges in Current Scenario's CRC Press

Industry and government are increasingly reliant on an intelligent – or ‘smart’ – and interconnected computer infrastructure, but the reality is that it is extremely difficult to provide full cyber defense and/or intrusion prevention for the smart networks that connect intelligent industrial and logistics modules, since the more intelligent the systems are, the more vulnerable they become. This book presents papers from the NATO Advanced Research Workshop (ARW) on Cyber Defence in Industry 4.0 Systems and Related Logistics and IT Infrastructures, held in Jyvaskyla, Finland, in October 2017. The main focus of the 11 papers included here is the creation and implementation of cyber systems and cyber platforms capable of providing enhanced cyber security and interoperability for smart IT infrastructure. Topics covered include: smart intrusion prevention; adaptive cyber defense; smart recovery of systems; and the smart monitoring, control and management of Industry 4.0 complexes and related logistics systems such as robotic equipment, logistics modules, units and technologic equipment, as well as their IT infrastructure.

Sensor Networks and Signal Processing Springer Nature

The book presents a remarkable collection of chapters covering a wide range of topics in the areas of intelligent systems and artificial intelligence, and their real-world applications. It gathers the proceedings of the Intelligent Systems Conference 2019, which attracted a total of 546 submissions from pioneering researchers, scientists, industrial engineers, and students from all around the world. These submissions underwent a double-blind peer-review process, after which 190 were selected for inclusion in these proceedings. As intelligent systems continue to replace and sometimes outperform human intelligence in decision-making processes, they have made it possible to tackle a host of problems more effectively. This branching out of computational intelligence in several directions and use of intelligent systems in everyday applications have created the need for an international conference as a venue for reporting on the latest innovations and trends. This book collects both theory and application based chapters on virtually all aspects of artificial intelligence; presenting state-of-the-art intelligent methods and techniques for solving real-world problems, along with a vision for future research, it represents a unique and valuable asset.

Is IPv6 a Better Choice to Handle Mobility in Wireless Sensor Networks? Cisco Press

The Internet of Things (IoT) is the next big challenge for the research community. The IPv6 over low power wireless personal area network (6LoWPAN) protocol stack is considered a key part of the IoT. In 6LoWPAN networks, heavy network traffic causes congestion which significantly degrades network performance and impacts on quality of service aspects. This book presents a concrete, solid and logically ordered work on congestion control for 6LoWPAN networks as a step toward successful implementation of the IoT and supporting the IoT application requirements. The book addresses the congestion control issue in 6LoWPAN networks and presents a comprehensive literature review on congestion control for WSNs and 6LoWPAN networks. An extensive congestion analysis and assessment for 6LoWPAN networks is explored through analytical modelling, simulations and real experiments. A number of congestion control mechanisms and algorithms are proposed to mitigate and solve the congestion problem in 6LoWPAN networks by using and utilizing the non-cooperative game theory, multi-attribute decision making and network utility maximization framework. The proposed algorithms are aware of node priorities and application priorities to support the IoT application requirements and improve network performance in terms of throughput, end-to-end delay, energy consumption, number of lost packets and weighted fairness index.

Intelligent Systems and Applications Springer Nature

A comprehensive introduction to M2M Standards and systems architecture, from concept to implementation Focusing on the latest technological developments, M2M Communications: A Systems Approach is an advanced introduction to this important and rapidly evolving topic. It provides a systems perspective on machine-to-machine services and the major telecommunications relevant technologies. It provides a focus on the latest standards currently in progress by ETSI and 3GPP, the leading standards entities in telecommunication networks and solutions. The structure of the book is inspired by ongoing standards developments and uses a systems-based approach for describing the problems which may be encountered when considering M2M, as well as offering proposed solutions from the latest developments in industry and standardization. The authors provide comprehensive technical information on M2M architecture, protocols and applications, especially examining M2M service architecture, access and core network optimizations, and M2M area networks technologies. It also considers dominant M2M application domains such as Smart Metering, Smart Grid, and eHealth. Aimed as an advanced introduction to this complex technical field, the book will provide an essential end-to-end overview of M2M for professionals working in the industry and advanced students. Key features: First technical book emerging from a standards perspective to respond to this highly specific technology/business segment Covers the main challenges facing the M2M industry today, and proposes early roll-out scenarios and potential optimization solutions Examines the system level architecture and clearly defines the methodology and interfaces to be considered Includes important information presented in a logical manner essential for any engineer or business manager involved in the field of M2M and Internet of Things Provides a cross-over between vertical and horizontal M2M concepts and a possible evolution path between the two Written by

experts involved at the cutting edge of M2M developments

Ubiquitous Computing and Ambient Intelligence Springer Science & Business Media

Today, billions of devices are Internet-connected, IoT standards and protocols are stabilizing, and technical professionals must increasingly solve real problems with IoT technologies. Now, five leading Cisco IoT experts present the first comprehensive, practical reference for making IoT work. IoT Fundamentals brings together knowledge previously available only in white papers, standards documents, and other hard-to-find sources—or nowhere at all. The authors begin with a high-level overview of IoT and introduce key concepts needed to successfully design IoT solutions. Next, they walk through each key technology, protocol, and technical building block that combine into complete IoT solutions. Building on these essentials, they present several detailed use cases, including manufacturing, energy, utilities, smart+connected cities, transportation, mining, and public safety. Whatever your role or existing infrastructure, you'll gain deep insight what IoT applications can do, and what it takes to deliver them. Fully covers the principles and components of next-generation wireless networks built with Cisco IOT solutions such as IEEE 802.11 (Wi-Fi), IEEE 802.15.4-2015 (Mesh), and LoRaWAN Brings together real-world tips, insights, and best practices for designing and implementing next-generation wireless networks Presents start-to-finish configuration examples for common deployment scenarios Reflects the extensive first-hand experience of Cisco experts

Intelligent Communication Technologies and Virtual Mobile Networks Springer Nature

With the technological advances in the wireless sensor networks, there is increasing interest to connect them to the Internet to share real-time measurements from WSN nodes to "anyone, anywhere, any time." IETF (Internet Control Message Protocol) has proposed standards that will enable IPv6-based sensor networks. Recent research has studied the performance of routing protocol (and standard) working on IPv6 for WSN (i.e., RPL (Routing Protocol for Low-power and Lossy networks) and 6LowPAN (IPv6 layer over low-power wireless personal area networks (LoWPAN)) in TinyOS for statically distributed WSN and showed its comparative network performance with respect to the de facto routing protocol standard for TinyOS and WSN. This thesis extends such research effort to study the effect of node mobility on the performance of routing protocol (RPL on 6LowPAN). Original RPL implementation in TinyOS has to be modified to accommodate node mobility. Results from the experiments show that mobility does have negative effect on network latency and packet delivery ratio. In summary, we observe the pattern that the higher the speed of the mobile node, the worse the network performance. The conclusion is that the current RPL routing protocol and standard can only be used in a mobile network environment with low speed mobility. Suggestions on how to modify and improve RPL to be used in a mobile environment are listed based on my experience in implementing and evaluating RPL on a mobile sensor network.

Intelligent Systems Design and Applications European Alliance for Innovation

This book constitutes the proceedings of the First International Conference on Emerging Trends in Engineering (ICETE), held at University College of Engineering and organised by the Alumni Association, University College of Engineering, Osmania University, in Hyderabad, India on 22-23 March 2019. The proceedings of the ICETE are published in three volumes, covering seven areas: Biomedical, Civil, Computer Science, Electrical & Electronics, Electronics & Communication, Mechanical, and Mining Engineering. The 215 peer-reviewed papers from around the globe present the latest state-of-the-art research, and are useful to postgraduate students, researchers, academics and industry engineers working in the respective fields. Volume 1 presents papers on the theme “Advances in Decision Sciences, Image Processing, Security and Computer Vision – International Conference on Emerging Trends in Engineering (ICETE)”. It includes state-of-the-art technical contributions in the area of biomedical and computer science engineering, discussing sustainable developments in the field, such as instrumentation and innovation, signal and image processing, Internet of Things, cryptography and network security, data mining and machine learning.

Protocols and Applications for the Industrial Internet of Things Springer Nature

The Internet of Things (IoT) has become a major influence on the development of new technologies and innovations. When utilized properly, these applications can enhance business functions and make them easier to perform. Protocols and Applications for the Industrial Internet of Things discusses and addresses the difficulties, challenges, and applications of IoT in industrial processes and production and work life. Featuring coverage on a broad range of topics such as industrial process control, machine learning, and data mining, this book is geared toward academicians, computer engineers, students, researchers, and professionals seeking current and relevant research on applications of the IoT.

Monitoring and Securing Virtualized Networks and Services Springer

The Internet of Things is the new paradigm arise in the last years, based on the idea that everyday object can connect to the Internet and exchanging information with other objects and people. This is possible thanks to the Smart Objects. which are the base of IoT: they are small wireless devices equipped with a tiny sensor, and generally are battery powered. The Internet Engineering Task Force (IETF) formed a new Working Group named Routing Over Low power and Lossy networks (ROLL) to standardize an IPv6-based routing protocol for IP smart object networks; the result was the IPv6 Routing Protocol for Low power and lossy networks (RPL). To increase lifetime of the devices and then to reduce the energy consumption, radio transceiver must be turned off as long as possible; thus, a duty cycling mechanism has to be used. In this work we use Contiki, an operating system designed for smart objects applications, and the RPL implementation on it, to design a RPL routing metric with nodes with different duty cycle values,

based on the energy consumption of the nodes. The purpose is to study and evaluate it, and comparing it with ETX, the default routing metric implemented in Contiki.

Atlas of Digital Architecture Apress

This book constitutes the refereed proceedings of the 7th International Conference on Advances in Computing and Data Sciences, ICACDS 2023, held in Kolkata, India, during April 27–28, 2023. The 47 full papers included in this book were carefully reviewed and selected from 22 submissions. The papers focus on advances of next generation computing technologies in the areas of advanced computing and data sciences.

Large-scale Energy Reductions Through Sensors, Feedback, and Information Technology Springer Nature

Digital technology and architecture have become inseparable, with new approaches and methodologies not just affecting the workflows and practice of architects but shaping the very character of architecture. This compendious work offers a wide-ranging orientation to the new landscape with its opportunities, its challenges, and its vast potential. Contributing Editors: Ludger Hovestadt, Urs Hirschberg, Oliver Fritz Contributors: Diana Alvarez-Marin, Jakob Beetz, André Borrmann, Petra von Both, Harald Gatermann, Marco Hemmerling, Ursula Kirschner, Reinhard König, Dominik Lengyel, Bob Martens, Frank Petzold, Sven Pfeiffer, Miro Roman, Kay Römer, Hans Sachs, Philipp Schaerer, Sven Schneider, Odilo Schoch, Milena Stavric, Peter Zeile, Nikolaus Zieske Writer: Sebastian Michael atlasofdigitalarchitecture.com

Switching with Adaptive Interval Labels for Wireless Networks IGI Global

This book constitutes the refereed proceedings of the 8th IFIP WG 6.6 International Conference on Monitoring and Securing Virtualized Networks and Services, AIMS 2014, held in Brno, Czech Republic, in June/July 2014. The 9 full papers presented were carefully reviewed and selected from 29 submissions. The volume also includes 13 papers presented at the AIMS Ph.D. workshop. They were reviewed and selected from 27 submissions. The full papers are organized in topical sections on emerging infrastructures for networks and services; experimental studies for security management; and monitoring methods for quality-of-service and security. The workshop papers are organized in topical sections on management of virtualized network resources and functions; security management; SDN and content delivery; monitoring and information sharing.

Advances in Decision Sciences, Image Processing, Security and Computer Vision Springer

This book contains the proceedings of the second edition of the international Conference on Artificial Intelligence and its Applications (AIAP'21). This edition aims to bring together leading academic scientists, international researchers, and practitioners to exchange and share their experiences and research results on all aspects of Artificial Intelligence. It also provides an interdisciplinary platform for researchers, practitioners and students to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Artificial Intelligence. This international conference offers an opportunity to bridge the gap between the Artificial Intelligence research community and people from the industry or working in other research areas including smart cities, big data, cloud computing, social networks, and energy.

Big Data Analytics CRC Press

This book constitutes the refereed conference proceedings of the 11th International Conference on Ubiquitous Computing and Ambient Intelligence, UCAmI 2017, held in Philadelphia, PA, USA in November 2017. The 60 revised full papers and 22 short papers presented were carefully reviewed and selected from 100 submissions. The papers are presented in six tracks and two special sessions. These are Ambient Assisted Living, Human-Computer Interaction, Ambient Intelligence for Health, Internet of Things and Smart Cities, Ad-hoc and Sensor Networks, Sustainability, Socio-Cognitive and Affective Computing, Aml-Systems and Machine Learning.

3rd EAI International Conference on IoT in Urban Space John Wiley & Sons

Co-editors of the volume are: Federico Álvarez, Alessandro Bassi, Michele Bezzi, Laurent Ciavaglia, Frances Cleary, Petros Daras, Hermann De Meer, Panagiotis Demestichas, John Domingue, Theo G. Kanter, Stamatis Karnouskos, Srdjan Krčo, Laurent Lefevre, Jasper Lentjes, Man-Sze Li, Paul Malone, Antonio Manzalini, Volkmar Lotz, Henning Müller, Karsten Oberle, Noel E. O'Connor, Nick Papanikolaou, Dana Petcu, Rahim Rahmani, Danny Raz, Gaël Richards, Elio Salvadori, Susana Sargento, Hans Schaffers, Joan Serrat, Burkhard Stiller, Antonio F. Skarmeta, Kurt Tutschku, Theodore Zahariadis The Internet is the most vital scientific, technical, economic and societal set of infrastructures in existence and in operation today serving 2.5 billion users. Continuing its developments would secure much of the upcoming innovation and prosperity and it would underpin the sustainable growth in economic values and volumes needed in the future. Future Internet infrastructures research is therefore a must. The Future Internet Assembly (FIA) is a successful conference that brings together participants of over 150 research projects from several distinct yet interrelated areas in the European Union Framework Programme 7 (FP7). The research projects are grouped as follows: the network of the future as infrastructure connecting and orchestrating the future Internet of people, computers, devices, content, clouds and things; cloud computing, Internet of Services and advanced software engineering; the public-private partnership projects on Future Internet; Future Internet Research and Experimentation (FIRE). The 26 full papers included in this volume were selected from 45 submissions. They are organized in topical sections named: software driven networks, virtualization, programmability and autonomic management; computing and networking clouds; internet of things; and enabling technologies and economic incentives.

Internet of Things: Novel Advances and Envisioned Applications Birkhäuser

This is a monumental reference for the theory and practice of computer security. Comprehensive in scope, this text covers applied and practical

elements, theory, and the reasons for the design of applications and security techniques. It covers both the management and the engineering issues of computer security. It provides excellent examples of ideas and mechanisms that demonstrate how disparate techniques and principles are combined in widely-used systems. This book is acclaimed for its scope, clear and lucid writing, and its combination of formal and theoretical aspects with real systems, technologies, techniques, and policies.

Distributed Computing for Emerging Smart Networks CRC Press

Explore how to develop and implement wireless server networks (WSN) using Contiki-NG, branded as the operating system for the IoT. The book explains Contiki-NG's advantages in sensing, communication, and energy optimization and enables you to begin solving problems in automation with WSN. Practical Contiki-NG is a guide to getting started with Contiki-NG programming featuring projects that demonstrate a variety of applications. This book takes a practical and content-driven approach to the latest technologies, including Raspberry Pi, IoT and cloud servers. Readers will go through step-by-step guides and sample scenarios such as sensing, actuating, connectivity, building middleware, and utilizing IoT and cloud-based technologies. If you're looking to go from zero to hero in using Contiki-NG to build Wireless Sensor Network (WSN) applications then this is the book for you. What You'll Learn Prepare and set up Contiki-NG development Review the basics of the Contiki-NG platform to build Wireless Sensor Networks (WSN) Develop your own Contiki-NG program Perform sensing and actuating on the Contiki-NG platform Implement a middleware for Contiki-NG motes Build a simple IoT program using the Contiki-NG environment Who This Book Is For Developers, students, researchers and anyone who has an interest in Wireless Sensor Network (WSN).

Implementation and Testing of LOADng Lulu.com

The initial design of the Internet and its protocols did not impose limitations to performance as its purpose intended to use and share expensive computing resources. Modern networks consists of different communication models that expand the capabilities of how resources are exchanged with one another. Wireless sensor networks (WSN) and the Internet of Things (IoT) are examples that have become dominant network platforms for data acquisition, allowing service providers and consumers to collect and exchange data with sensors and devices embedded throughout the physical world. However, these types of networks suffer from the limitations of lossy communication media and low-powered devices. Additional drawbacks that these networks still face are that conventional design methods intended for traditional networks are still being used in protocol design and implementation. An area of such design concern includes routing. RPL has been proposed as a routing-protocol solution for WSN's by catering to the specific needs of low-power and lossy networks. Although RPL is emerging as a standard for routing in WSN's, it still faces many challenges concerning scalability with increases to network size, point-to-point traffic, and underspecification of handling node failures. In this thesis we propose Switching with Adaptive Interval Labels (SAIL), which takes a clean-slate approach from traditional routing. SAIL utilizes compact routing rather than destination-based routing, and caters to the issues RPL faces by replacing destination-based identifiers with interval labels. We implement SAIL using the ns-3 simulator and compare its performance to RPL in a wireless-network deployment. Our results show that SAIL outperforms RPL in energy conservation and forms shorter forwarding paths in small to medium-sized networks. For larger deployments we show that SAIL provides tremendously lower storage overhead where routing table sizes remain constant, while RPL routing tables grow linearly at O(n), where n equals the number of nodes in the network.

The Future Internet IGI Global

This proceedings presents the papers from Urb-IoT 2018 - 3rd EAI International Conference on IoT in Urban Space, which took place in Guimarães, Portugal on 21-22 November 2018. The conference aims to explore the emerging dynamics within the scope of the Internet of Things (IoT) and the new science of cities. The papers discuss fusion of heterogeneous urban sources, understanding urban data using machine learning and mining techniques, urban analytics, urban IoT infrastructures, crowd sourcing techniques, incentification and gamification, urban mobility and intelligent transportation systems, real time urban information systems, and more. The proceedings discuss innovative technologies that navigate industry and connectivity sectors in transportation, utility, public safety, healthcare, and education. The authors also discuss the increasing deployments of IoT technologies and the rise of the so-called 'Sensored Cities', which are opening up new avenues of research opportunities towards that future.

Services in Wireless Sensor Networks Springer

The term IoT, which was first proposed by Kevin Ashton, a British technologist, in 1999 has the potential to impact everything from new product opportunities to shop floor optimization to factory worker efficiency gains, that will power top-line and bottom-line gains. As IoT technology is being put to diversified use, the current technology needs to be improved to enhance privacy and built secure devices by adopting a security-focused approach, reducing the amount of data collected, increasing transparency and providing consumers with a choice to opt out. Therefore, the current volume has been compiled, in an effort to draw the various issues in IoT, challenges faced and existing solutions so far. Key Points: • Provides an overview of basic concepts and technologies of IoT with communication technologies ranging from 4G to 5G and its architecture. • Discusses recent security and privacy studies and social behavior of human beings over IoT. • Covers the issues related to sensors, business model, principles, paradigms, green IoT and solutions to handle relevant challenges. • Presents the readers with practical ideas of using IoT, how it deals with human dynamics, the ecosystem, the social objects and their relation. • Deals with the challenges involved in surpassing diversified architecture, protocol, communications, integrity and security.