5g Le Technology European Parliament

Although Internet governance deals with the core of the digital world, governance cannot be handled with the digital-binary logic of the true or false, or good or bad. Instead, the subject demands many subtleties and shades of meaning and perception, requiring an analogue approach, covering a continuum of options and compromises. The aim of the book An Introduction to Internet Governance, by Dr Jovan Kurbalija, is to provide a comprehensive overview of the main issues and actors in the field through a practical framework for analysis, discussion, and resolution of significant issues. Written in a clear and accessible way, supplemented with figures and illustrations, it focuses on the technical, security, legal, economic, development, sociocultural, and human rights aspects of Internet governance. The text and approaches presented in the book have been used by DiploFoundation and many universities as a basis from training courses and capacity development programmes on Internet governance.

This book constitutes the refereed proceedings of six International Workshops held as parallel events of the 17th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2021, virtually and in Hersonissos, Crete, Greece, in June 2021: the 6th Workshop on 5G-Putting Intelligence to the Network Edge, 5G-PINE 2021; Artificial Intelligence in Biomedical Engineering and Informatics Workshop, AI-

BIO 2021; Workshop on Defense Applications of AI, DAAI 2021; Distributed AI for Resource-Constrained Platforms Workshop, DARE 2021; Energy Efficiency and Artificial Intelligence Workshop, EEAI 2021; and the 10th Mining Humanistic Data Workshop, MHDW 2021. The 24 full papers and 16 short papers presented at these workshops were carefully reviewed and selected from 72 submissions. The papers presented at 5G-PINE focus on the latest AI applications in the telecommunication industry and AI in modern 5G-oriented telecommunications infrastructures. The papers chosen for AI-BIO 2021 present research on the subject of AI, in its broadest sense, in biomedical engineering and health informatics. The DAAI 2021 papers aim at presenting recent evolutions in artificial intelligence applicable to defense and security applications. The papers selected for DARE 2021 address a variety of pertinent and challenging topics within the scope of distributed AI for resource-constrained platforms. The papers presented at EEAI 2021 aim to bring together interdisciplinary approaches that focus on the application of AI-driven solutions for increasing and improving energy efficiency of residential and tertiary buildings and of occupant behavior. The MHDW papers focus on topics such as recommendation systems, sentiment analysis, pattern recognition, data mining, and time series. Healthcare and well-being have captured the attention of established software companies, start-ups, and investors. Software is starting to play a central role for addressing the problems of the aging society and the escalating cost of healthcare services. Enablers of such

digital health are a growing number of sensors for sensing the human body and communication infrastructure for remote meetings, data sharing, and messaging. The challenge that lies in front of us is how to effectively make use of these capabilities, for example to empower patients and to free the scarce resources of medical personnel. Requirements engineering is the process by which the capabilities of a software product are aligned with stakeholder needs and a shared understanding between the stakeholders and development team established. This book provides guide for what to look for and do when inquiring and specifying software that targets healthcare and well-being, helping readers avoid the pitfalls of the highly regulated and sensible healthcare domain are and how they can be overcome. This book brings together the knowledge of 22 researchers, engineers, lawyers, and CEOs that have experience in the development of digital health solutions. It represents a unique line-up of best practices and recommendations of how to engineer requirements for digital health. In particular the book presents: · The area of digital health, e-health, and m-health · Best practice for requirements engineering based on evidence from a large number of projects · Practical step-by-step guidelines, examples, and lessons-learned for working with laws, regulations, ethical issues, interoperability, user experience, security, and privacy · How to put these many concerns together for engineering the requirements of a digital health solution and for scaling a digital health product For anybody who intends to develop software for digital health, this book is an

introduction and reference with a wealth of actionable insights. For students interested in understanding how to apply software to healthcare, the text introduces key topics and guides further studies with references to important literature.

This book aims to provide the latest research developments and results in the domain of AI techniques for smart cyber ecosystems. It presents a holistic insight into AI-enabled theoretic approaches and methodology in IoT networking, security analytics using AI tools, and network automation, which ultimately enable intelligent cyber space. This book will be a valuable resource for students, researchers, engineers, policy makers working in various areas related to cybersecurity and privacy for Smart cities. This book includes chapters titled "An Overview of the Artificial Intelligence Evolution and its Fundamental Concepts, and their relationship with IoT Security", "Smart City: Evolution and fundamental concepts", "Advances in AI-Based Security for Internet of Things in Wireless Virtualization Environment", "A conceptual model for optimal resource sharing of networked microgrids focusing uncertainty – paving path to eco-friendly smart cities", "A Novel Framework for Cyber Secure Smart City", "Contemplate Security Challenges & Threats for Smart Cities", "Self-Monitoring Obfuscated IoT Network", "Introduction to Side Channel Attacks and Investigation of Power Analysis & Fault Injection Attack Techniques", "Collaborative Digital Forensic Investigations Model for Law Enforcement: Oman as a Case Study", "Internet of Things Security and Privacy in Smart Cities: Status and Challenges",

"5G Security and the Internet of Things", "The Problem of Deepfake Videos and How to Counteract Them in Smart Cities", "The Rise of Ransomware aided by Vulnerable IoT devices", and "Security Issues in Self-Driving Cars within Smart Cities", "PhishFree: A Honeybee Inspired System for Smart City Free of Phishing Attacks", "Trust Aware Crowd Associated Network-based Approach for Optimal Waste Management in Smart Cities" This book provides state-of-the-art of research results and discusses current issues, challenges, solutions and recent trends related to security and organization within IoT and Smart Cities. We expect this book to be of significant importance not only to researchers and practitioners in academia, government agencies and industries, but also for policy makers and system managers. We anticipate this book to be a valuable resource for all those working in this new and exciting area, and a "must have" for all university libraries.

This work contains the papers of the thirteenth Conference on "Antitrust between EU Law and national law", held in Treviso on May 24 and 25, 2018 under the patronage of the European Lawyers Union – Union des Avocats Européens (UAE), the Associazione Italiana per la Tutela della Concorrenza - the Italian section of the Ligue Internationale du Droit de la Concurrence (LIDC)-, the Associazione Italiana Giuristi di Impresa (AIGI), the European Company Lawyers Association (ECLA), and the Associazione Antitrust Italiana (AAI). Some of the papers have been extensively reviewed and updated by the authors prior to publication. The contributions

contained in this volume are the result of an in-depth analysis and study of the most salient issues arising from the application of antitrust rules, carried out by experienced and high-ranking professionals, in-house lawyers, academics and EU/national and international institutional representatives who attended the Conference. They deal with extremely topical issues, lying at the heart of current antitrust debate. Some of the most contemporary topics include those related to private antitrust enforcement after the implementation of Directive 2014/104/EU, and to the interplay between antitrust and intellectual property rights. Ample consideration is also given to recent developments in the field of new technologies and the related antitrust issues, as well as to the relations between consumer protection and antitrust. * * * Questo volume contiene gli atti del XIII Convegno sul tema "Antitrust fra Diritto Nazionale e Diritto dell'Unione Europea", tenutosi a Treviso il 24 e 25 maggio 2018 con il patrocinio dell'Unione degli Avvocati Europei (UAE), dell'Associazione Italiana per la Tutela della Concorrenza - sezione italiana della Ligue Internationale du Droit de la Concurrence (LIDC) -, dell'Associazione Italiana dei Giuristi di Impresa (AIGI), della European Company Lawyers Association (AEJE-ECLA) e dell'Associazione Antitrust Italiana (AAI). Alcuni contributi sono stati sostanzialmente rivisti ed aggiornati dagli autori prima della pubblicazione. Gli articoli contenuti nel presente volume sono il frutto del prezioso lavoro di studio e approfondimento delle più interessanti tematiche correlate all'applicazione del diritto antitrust, svolto da qualificati esponenti del mondo

professionale, imprenditoriale, accademico ed
istituzionale, intervenuti al Convegno. I contributi
pubblicati affrontano temi di estrema rilevanza, che rappr
sentano il cuore delle problematiche antitrust oggi
maggiormente dibattute, tra le quali spiccano, per
attualità, quelle connesse al private enforcement ed al
risarcimento dei danni in seguito dell'attuazione della
Direttiva 2014/104/UE, nonché alle interazioni tra diritto
antitrust e diritti di proprietà intellettuale. Ampio spazio è
inoltre dedicato alle tematiche concernenti le nuove
tecnologie e la loro rilevanza dal punto di vista antitrust,
nonché ai rapporti tra tutela del consumatore e diritto
antitrust.
A unique examination of Cellular Vehicle-to-Everything
technologies in automated vehicles, combining expert
perspectives and technical information from industry and
academia Cellular Vehicle-to-Everything (C-V2X)
technologies enable vehicles to communicate both with
the network and with each other using reliable,
responsive, secure, and high-capacity communication
links. Cellular V2X for Connected Automated Driving
provides an up-to-date view of the role of C-V2X
technologies in advanced driving support, improved road
safety, and the future large-scale transition to self-driving
vehicles. This timely book discusses where C-V2X
technology is situated within the increasingly
interconnected ecosystems of the mobile
communications and automotive industries. An expert
contributor team from both industry and academia
explore potential applications, business models,
standardization, spectrum and channel modelling,

network enhancements, security and privacy, and more. Broadly divided into two parts—introductory and advanced material—the text first introduces C-V2X technology and explores a variety of use cases and opportunities, requiring no prerequisite technical knowledge. The second part of the book assumes a basic understanding of the field of telecommunications, presenting technical descriptions of the radio, system aspects, and network design for the previously discussed applications. This up-to-date resource: Provides technical details from the finding of the EC H2020 5G PPP 5GCAR project, a collaborative research initiative between the telecommunications and automotive industries and academic researchers Offers use cases, business models, and a technology roadmap for those seeking to shape a start-up in the area of automated and autonomous driving Addresses the challenges in serving different vehicles at different automation levels Features illustrations of the concept, technical plots and diagrams, and photos of the test and trials performed by the 5GCAR project Includes detailed tables, plots, and equations to clarify concepts, accompanied by online tutorial slides and for use in teaching and seminars Thanks to its mix of introductory content and technical information, Cellular V2X for Connected Automated Driving is a must-have for industry and academic researchers, telecom and automotive industry practitioners, leaders, policymakers, and regulators, and college-level instructors and students.
Smart Sensors and MEMS: Intelligent Devices and Microsystems for Industrial Applications, Second Edition

highlights new, important developments in the field, including the latest on magnetic sensors, temperature sensors and microreaction chambers. The book outlines the industrial applications for smart sensors, covering direct interface circuits for sensors, capacitive sensors for displacement measurement in the sub-nanometer range, integrated inductive displacement sensors for harsh industrial environments, advanced silicon radiation detectors in the vacuum ultraviolet (VUV) and extreme ultraviolet (EUV) spectral range, among other topics. New sections include discussions on magnetic and temperature sensors and the industrial applications of smart micro-electro-mechanical systems (MEMS). The book is an invaluable reference for academics, materials scientists and electrical engineers working in the microelectronics, sensors and micromechanics industry. In addition, engineers looking for industrial sensing, monitoring and automation solutions will find this a comprehensive source of information. Contains new chapters that address key applications, such as magnetic sensors, microreaction chambers and temperature sensors Provides an in-depth information on a wide array of industrial applications for smart sensors and smart MEMS Presents the only book to discuss both smart sensors and MEMS for industrial applications This document brings together a set of latest data points and publicly available information relevant for Technology Industry. We are very excited to share this content and believe that readers will benefit from this periodic publication immensely.
From Smart Grid to Internet of Energy covers novel

and emerging metering and monitoring technologies, communication systems, and technologies in smart grid areas to present a valuable reference for readers from various engineering backgrounds. Considering relevant topics on the essentials of smart grids and emerging wireless communication systems, such as IEEE 802.15.4 based novel technologies, cognitive radio networks and Internet of Energy, this book offers a discussion on the emerging trends and research direction for communication technologies. The book includes research concepts and visualization of smart grids and related communication technologies, making it a useful book for practicing network engineers. Includes global case studies and examples of communications systems integrated with smart grids Presents literature surveys for a wide variety of smart grids, wired and wireless communication technologies, big data, privacy and security Covers all aspects of IoE systems and discusses the differences between IoE and Smart Grids How are the rising mutual concerns of Asian and European countries shaping their approaches to the international order? Contributors to this volume discuss emerging critical issues in International relations, including the Indo-Pacific constructs, China's Belt and Road Initiative (BRI), and the progress of established regional security mechanisms like the Shanghai Cooperation

Organisation. They also compare western and non-western approaches to these issues, with a holistic perspective on the origins and evolutions of these approaches. Both the Indo-Pacific constructs and BRI present a remarkable set of opportunities for Europe as well as Asia. This book presents key implications of the changing politico-security dynamics in the two regions from the perspectives of both Asian and European scholars and theoretical traditions. A must-read for scholars of International Relations with a focus on relations between Asia and Europe.

As we enter the Industrial Revolution 4.0, demands for an increasing degree of trust and privacy protection continue to be voiced. The development of blockchain technology is very important because it can help frictionless and transparent financial transactions and improve the business experience, which in turn has far-reaching effects for economic, psychological, educational and organizational improvements in the way we work, teach, learn and care for ourselves and each other. Blockchain is an eccentric technology, but at the same time, the least understood and most disruptive technology of the day. This book covers the latest technologies of cryptocurrencies and blockchain technology and their applications. This book discusses the blockchain and cryptocurrencies related issues and also explains how to provide the security differently

through an algorithm, framework, approaches, techniques and mechanisms. A comprehensive understanding of what blockchain is and how it works, as well as insights into how it will affect the future of your organization and industry as a whole and how to integrate blockchain technology into your business strategy. In addition, the book explores the blockchain and its with other technologies like Internet of Things, big data and artificial intelligence, etc.

This book intends to provide highlights of the current research topics in the field of 5G and to offer a snapshot of the recent advances and major issues faced today by the researchers in the 5G physical layer perspective. Various aspects of 5G system is deeply discussed (in three parts and ten chapters) with emphasis on its physical layer. Each chapter provides a comprehensive survey of the subject area and ends with a rich list of references to provide an in-depth coverage of the application at hand.

This volume gathers the latest advances, innovations, and applications in the field of structural health monitoring (SHM) and more broadly in the fields of smart materials and intelligent systems. The volume covers highly diverse topics, including signal processing, smart sensors, autonomous systems, remote sensing and support, UAV platforms for SHM, Internet of Things, Industry 4.0, and SHM for civil structures and infrastructures. The contributions,

which are published after a rigorous international peer-review process, highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaboration among different specialists. The contents of this volume reflect the outcomes of the activities of EWSHM (European Workshop on Structural Health Monitoring) in 2020. The mobile market has experienced unprecedented growth over the last few decades. Consumer trends have shifted towards mobile internet services supported by 3G and 4G networks worldwide. Inherent to existing networks are problems such as lack of spectrum, high energy consumption, and inter-cell interference. These limitations have led to the emergence of 5G technology. It is clear that any 5G system will integrate optical communications, which is already a mainstay of wide area networks. Using an optical core to route 5G data raises significant questions of how wireless and optical can coexist in synergy to provide smooth, end-to-end communication pathways. Optical and Wireless Convergence for 5G Networks explores new emerging technologies, concepts, and approaches for seamlessly integrating optical-wireless for 5G and beyond. Considering both fronthaul and backhaul perspectives, this timely book provides insights on managing an ecosystem of mixed and multiple access network communications focused on optical-wireless convergence. Topics include Fiber–Wireless

(FiWi), Hybrid Fiber-Wireless (HFW), Visible Light Communication (VLC), 5G optical sensing technologies, approaches to real-time IoT applications, Tactile Internet, Fog Computing (FC), Network Functions Virtualization (NFV), Software-Defined Networking (SDN), and many others. This book aims to provide an inclusive survey of 5G optical-wireless requirements, architecture developments, and technological solutions. Modern, current, and future communications/processing aspects motivate basic information-theoretic research for a wide variety of systems for which we do not have the ultimate theoretical solutions (for example, a variety of problems in network information theory as the broadcast/interference and relay channels, which mostly remain unsolved in terms of determining capacity regions and the like). Technologies such as 5/6G cellular communications, Internet of Things (IoT), and mobile edge networks, among others, not only require reliable rates of information measured by the relevant capacity and capacity regions, but are also subject to issues such as latency vs. reliability, availability of system state information, priority of information, secrecy demands, energy consumption per mobile equipment, sharing of communications resources (time/frequency/space), etc. This book, composed of a collection of papers that have appeared in the Special Issue of the

Entropy journal dedicated to "Information Theory for Data Communications and Processing", reflects, in its eleven chapters, novel contributions based on the firm basic grounds of information theory. The book chapters address timely theoretical and practical aspects that constitute both interesting and relevant theoretical contributions, as well as direct implications for modern current and future communications systems.

En tant que citoyen, je propose ici des faits, rien que des faits. Cet ouvrage est un recueil d'informations, toutes sourcées, recoupées, dans le but de mettre en perspective des données, notes, communiqués, articles de presse, afin de poser des questions et ainsi, appréhender de manière plus large cette crise inédite du Covid-19. Pendant que les médias de masse ont et continuent d'évoquer comme sujet principal et parfois unique, la crise sanitaire, j'ai voulu me pencher sur ce qui était peu ou pas traité, comme la manière d'aborder cette crise dans le monde, les relations internationales tant commerciales que géopolitiques, notamment l'axe Chine-États-Unis et la guerre numérique (5G, fibre optique, câbles sous-marins), mais également les conséquences pour l'économie mondiale, la possibilité d'un vaccin grâce aux nanosciences, à la nanotechnologie, donc la nano-médecine. Il est intéressant de se pencher sur l'après-crise, sur les conséquences pour les différents gouvernements

dans le monde et enfin, se demander quelles leçons faudra-t-il que nos sociétés tirent pour nos lendemains. Auteur de PALINDROME https://www.librinova.com/librairie/laurent-georges/palindrome-la-face-cachee-d-une-lal-leucemie-aigue-lymphoblastique-1, et de VERSO(S), paru le 09 juillet 2020 http://www.editionsplumesdocris.fr/Pages-auteurs/laurent-lalo-verso-s.html, j'ai choisi d'occuper une partie de mon temps à ce qui s'apparente à un travail d'investigation destiné à remettre en ordre un puzzle complexe.

Le Conseil national du numérique a été saisi, en partenariat avec le Haut Conseil pour le Climat (HCC), afin d'élaborer une feuille de route déclinant des mesures opérationnelles sur le numérique et l'environnement ainsi qu'un avis sur les données environnementales d'intérêt général. Les travaux qui en sont issus ont été réalisés dans une démarche de co-construction avec une quarantaine d'acteurs des transitions numériques et écologiques, dans une perspective européenne. Publiée le 9 juillet 2020, la feuille de route « Environnement et numérique : 50 mesures pour un agenda national et européen sur un numérique responsable, c'est-à-dire sobre, et au service de la transition écologique et solidaire et des Objectifs de développement durable » est répartie en trois chantiers : Chantier 1 : un numérique sobre qui nécessite d'adopter le concept de sobrie?te? nume?rique comme principe d'action pour re?duire l'empreinte environnementale du nume?rique, et d'ici à 2030, atteindre ze?ro e?mission

nette de gaz a? effet de serre sans compensation et 100 % de biens et services nume?riques e?coconçus Chantier 2 : un nume?rique au service de la transition e?cologique et solidaire pour donner un sens au nume?rique pour le mettre au service des objectifs de de?veloppement durable et, d'ici à 2040, re?duire de manie?re substantielle les e?missions de gaz a? effet de serre grâce au nume?rique et re?concilier high-tech et low-tech autour de grands objectifs de la transition e?cologique et solidaire Chantier 3 : les outils et leviers pour un nume?rique responsable qui visent à mettre en œuvre un nume?rique responsable au service des objectifs de de?veloppement durable, et d'ici 2022, cre?er une boi?te a? outils d'actions transversales pour parvenir a? la convergence des transitions e?cologique et nume?rique

A comprehensive overview of the 5G landscape covering technology options, most likely use cases and potential system architectures.

This book, edited by the European Space Policy Institute, is the first international publication, following UNISPACE+50, to analyze how space capacity building can empower the international community towards fully accessing all the economic and societal benefits that space assets and data can offer. New innovation models are increasingly spreading across various sectors and disciplines, including space, which is becoming an integral part of many societal activities (e.g. telecoms, weather, climate change and environmental monitoring, civil protection, infrastructures, transportation and navigation, healthcare and education). The book helps

readers construct their own space capacity building roadmaps, which take into account key stakeholders and also new private actors, NGOs and civil society. Starting from a policy and strategy perspective, it addresses key aspects of capacity building, including innovation and exploration, global health, climate change and resilient societies. It outlines the available options and summarizes the ideal programmatic conditions for their successful implementation. Showcasing reflections from a range of senior space professionals around the world, with their unique perspectives and solutions, it provides a rich mosaic in which various cultural and policy approaches to space are translated into actionable programs and ideas so that space may truly benefit all of humankind.

Three important federal government papers are reproduced in this unique compilation: (a) The 5G Ecosystem: Risks & Opportunities for DoD; (b) National Security Implications of Fifth Generation (5G) Mobile Technologies; (c) Network Reliability and Security Risks to Emerging 5G Wireless Networks.(a) The term "5G" refers to the oncoming fifth generation of wireless networks and technology that will produce a step-change improvement in data speed, volume, and latency (delay in data transfer) over fourth generation (4G and 4G LTE) networks. 5G will enable a host of new technologies that will change the standard of public and private sector operations, from autonomous vehicles to smart cities, virtual reality, and battle networks. Historical shifts between wireless generations suggest that the first-mover country stands to gain billions in revenue

accompanied by substantial job creation and leadership in technology innovation. First movers also set standards and practices that were then adopted by subsequent entrants. Conversely, countries that fell behind in previous wireless generation shifts were obligated to adopt the standards, technologies, and architectures of the leading country and missed out on a generation of wireless capabilities and market potential. The shift from 4G to 5G will drastically impact the future of global communication networks and fundamentally change the environment in which DoD operates. While DoD will feel the impact of 5G, the rollout itself will be driven by the U.S. commercial sector. This study provides insight into the commercial landscape as well as the DoD landscape to give a comprehensive view of the stakeholders and future of 5G.(b) The fifth generation (5G) of mobile technologies will increase the speed of data transfer and improve bandwidth over existing fourth generation (4G) technologies, in turn enabling new military and commercial applications. 5G technologies are expected to support interconnected or autonomous devices, such as smart homes, self-driving vehicles, precision agriculture systems, industrial machinery, and advanced robotics. According to a Defense Innovation Board (DIB) report, in the military realm, 5G will additionally improve intelligence, surveillance, and reconnaissance systems and processing; enable new methods of command and control; and streamline logistics systems for increased efficiency. As 5G technologies are developed and deployed, Congress may consider policies for spectrum management and national security, as well as

implications for U.S. military operations. 5G requires deployment of technologies that work in various segments of the electromagnetic spectrum ("the spectrum"): sub-6, which operates below 6 GHz, and millimeter wave (MMW), which operates between around 24 and 300 GHz.(c) The telecommunications industry is preparing for the evolution of wireless networks to the next generation of technology, known as 5G. This 5th generation of wireless networks represents perhaps the largest change we have seen in wireless networks since cellular was introduced. The migration away from traditional, engineered systems designed to support specific network functions in a point-to-point network architecture is moving to adopt an IT architecture. As telecom networks are move into the data center, the future architecture uses IT technologies that have supported the Internet for many years.

This book reports on the latest advances on the theories, practices, standards and strategies that are related to the modern technology paradigms, the Mobile Cloud computing (MCC) and Big Data, as the pillars and their association with the emerging 5G mobile networks. The book includes 15 rigorously refereed chapters written by leading international researchers, providing the readers with technical and scientific information about various aspects of Big Data and Mobile Cloud Computing, from basic concepts to advanced findings, reporting the state-of-the-art on Big Data management. It demonstrates and discusses methods and practices to improve multi-source Big Data manipulation techniques, as well as the integration of resources availability through the 3As

(Anywhere, Anything, Anytime) paradigm, using the 5G
access technologies.

Inclusive Radio Communications for 5G and
BeyondAcademic Press

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.

This book is a printed edition of the Special Issue
"Sensors and Actuators in Smart Cities" that was
published in JSAN

This book analyzes China's foreign technology
acquisition activity and how this has helped its rapid rise
to superpower status. Since 1949, China has operated a
vast and unique system of foreign technology spotting
and transfer aimed at accelerating civilian and military
development, reducing the cost of basic research, and
shoring up its power domestically and abroad—without
running the political risks borne by liberal societies as a

basis for their creative developments. While discounted in some circles as derivative and consigned to perpetual catch-up mode, China's "hybrid" system of legal, illegal, and extralegal import of foreign technology, combined with its indigenous efforts, is, the authors believe, enormously effective and must be taken seriously. Accordingly, in this volume, 17 international specialists combine their scholarship to portray the system's structure and functioning in heretofore unseen detail, using primary Chinese sources to demonstrate the perniciousness of the problem in a manner not likely to be controverted. The book concludes with a series of recommendations culled from the authors' interactions with experts worldwide. This book will be of much interest to students of Chinese politics, US foreign policy, intelligence studies, science and technology studies, and International Relations in general.

This open access volume identifies the common and specific aspects of social mechanisms that generate inequalities, through comparative analyses of different dimensions in which inequalities are expressed. It includes studies on social inequalities in 5 European and 5 Latin American countries, along 11 thematic axes: inequalities in the labour market and labour trajectories; asymmetries in the relationship between training and employment; inequalities in work and family life; educational inequalities; geographical and social inequalities: ethnicity and language; social inequalities, migration and space; uncertainty, strategies, resources and capabilities; inequality of opportunity: intergenerational social mobility; social policies; gender

inequalities; and research methodology. This volume is the result of a large collaborative project on social inequality funded by the European Commission: the International Network for Comparative Analysis of Social Inequalities. Taking into account diverse perspectives and approximations, the collaborators have created a general analytical framework as a model of analysis of social inequalities. The various contributions in this volume help readers gain a global outlook and help reflect on social inequalities in a comparative perspective. This volume addresses social science graduate and postgraduate students, researchers, social policy makers, as well as a broader academic audience interested in social inequality.

A comprehensive and invaluable guide to 5G technology, implementation and practice in one single volume. For all things 5G, this book is a must-read. Signal processing techniques have played the most important role in wireless communications since the second generation of cellular systems. It is anticipated that new techniques employed in 5G wireless networks will not only improve peak service rates significantly, but also enhance capacity, coverage, reliability , low-latency, efficiency, flexibility, compatibility and convergence to meet the increasing demands imposed by applications such as big data, cloud service, machine-to-machine (M2M) and mission-critical communications. This book is a comprehensive and detailed guide to all signal processing techniques employed in 5G wireless networks. Uniquely organized into four categories, New Modulation and Coding, New Spatial Processing, New

Spectrum Opportunities and New System-level Enabling Technologies, it covers everything from network architecture, physical-layer (down-link and up-link), protocols and air interface, to cell acquisition, scheduling and rate adaption, access procedures and relaying to spectrum allocations. All technology aspects and major roadmaps of global 5G standard development and deployments are included in the book. Key Features: Offers step-by-step guidance on bringing 5G technology into practice, by applying algorithms and design methodology to real-time circuit implementation, taking into account rapidly growing applications that have multi-standards and multi-systems. Addresses spatial signal processing for 5G, in particular massive multiple-input multiple-output (massive-MIMO), FD-MIMO and 3D-MIMO along with orbital angular momentum multiplexing, 3D beamforming and diversity. Provides detailed algorithms and implementations, and compares all multicarrier modulation and multiple access schemes that offer superior data transmission performance including FBMC, GFDM, F-OFDM, UFMC, SEFDM, FTN, MUSA, SCMA and NOMA. Demonstrates the translation of signal processing theories into practical solutions for new spectrum opportunities in terms of millimeter wave, full-duplex transmission and license assisted access. Presents well-designed implementation examples, from individual function block to system level for effective and accurate learning. Covers signal processing aspects of emerging system and network architectures, including ultra-dense networks (UDN), software-defined networks (SDN), device-to-device (D2D) communications and

cloud radio access network (C-RAN).

A Dictionary of European Anglicisms documents the spread of English in Europe. It provides the first exhaustive and up-to-date account of British and American English words that have been imported into the main languages of Europe. English, which imported thousands of words from French and Latin (mainly after 1066), is now by far the world's biggest lexical exporter, and the trade is growing as English continues to dominate various fields ranging from pop music to electronic communication. Several countries have monitored the inflow of anglicisms and some have tried to block it. But language, as lexicographers have always found and as this book demonstrates once more, respects neither boundary nor law. The dictionary not only shows which words have been exported where, but how the process of importation can change a word's form and function, sometimes subtly, at others remarkably as in the transformation of painkiller to Bulgarian 'jack of all trades'. The book provides a systematic description of the lexical input of English into Icelandic, Norwegian, Dutch, German, Russian, Polish, Croatian, Bulgarian, French, Spanish, Italian, Romanian, Finnish, Hungarian, Albanian, and Greek. Each entry has a brief definition of the loan word, followed by information on its history and distribution; variations in its spelling, meaning, and pronunciation; its route of transmission if not direct from English; its degree of acceptance and usage restrictions; and its native equivalents and derivatives. Grids showing distribution patterns across Europe accompany many of the entries. The Dictionary

of European Anglicisms is a scholarly tour de force [French: imported early nineteenth century] and the result of a prodigious research effort across Europe masterminded and directed by Manfred Gorlach. It is a unique resource for comparative analysis and the study of linguistic variation and change. It will fascinate linguists and word-watchers of all persuasions. Mobile wireless communication systems have affected every aspect of life. By providing seamless connectivity, these systems enable almost all the smart devices in the world to communicate with high speed throughput and extremely low latency. The next generation of cellular mobile communications, 5G, aims to support the tremendous growth of interconnected things/devices (i.e., internet of things [IoT]) using the current technologies and extending them to be used in higher frequencies to cope with the huge number of different devices. In addition, 5G will provide massive capacity, high throughput, lower end-to-end delay, green communication, cost reduction, and extended coverage area. Fundamental and Supportive Technologies for 5G Mobile Networks provides detailed research on technologies used in 5G, their benefits, practical designs, and recent challenges and focuses on future applications that could exploit 5G network benefits. The content within this publication examines cellular communication, data transmission, and high-speed communication. It is designed for network analysts, IT specialists, industry professionals, software engineers, researchers, academicians, students, and scientists. This book presents original contributions on the theories

and practices of emerging Internet, data and web technologies and their applicability in businesses, engineering and academia. The Internet has become the most proliferative platform for emerging large-scale computing paradigms. Among them, data and web technologies are two most prominent paradigms, and manifest in a variety of forms such as data centers, cloud computing, mobile cloud, mobile web services and so on. Together, these technologies form a digital ecosystem based on the data cycle, from capturing to processing, analysis and visualization. The investigation of various research and development issues in this digital ecosystem is made all the more important by the ever-increasing needs of real-life applications, which involve storing and processing large amounts of data. As a key feature, the book addresses advances in the life-cycle exploitation of data generated from the digital ecosystem, and data technologies that create value for businesses, moving toward a collective intelligence approach. Given its scope, the book offers a valuable reference guide for researchers, software developers, practitioners and students interested in the field of data and web technologies.

Due to progress in the development of communication systems, it is now possible to develop low-cost wearable communication systems. A wearable antenna is meant to be a part of the clothing or close to the body and used for communication purposes, which include tracking and navigation, mobile computing and public safety. Examples include smartwatches (with integrated Bluetooth antennas), glasses (such as Google Glass

with Wi-Fi and GPS antennas), GoPro action cameras (with Wi-Fi and Bluetooth antennas), etc. They are increasingly common in consumer electronics and for healthcare and medical applications. However, the development of compact, efficient wearable antennas is one of the major challenges in the development of wearable communication and medical systems. Technologies such as printed compact antennas and miniaturization techniques have been developed to create efficient, small wearable antennas which are the main objective of this book. Each chapter covers enough mathematical detail and explanations to enable electrical, electromagnetic and biomedical engineers and students and scientists from all areas to follow and understand the topics presented. New topics and design methods are presented for the first time in the area of wearable antennas, metamaterial antennas and fractal antennas. The book covers wearable antennas, RF measurements techniques and measured results in the vicinity of the human body, setups and design considerations. The wearable antennas and devices presented in this book were analyzed by using HFSS and ADS 3D full-wave electromagnetics software. Explores wearable medical systems and antennas Explains the design and development of wearable communication systems Explores wearable reconfigurable antennas for communication and medical applications Discusses new types of metamaterial antennas and artificial magnetic conductors (AMC) Reviews textile antennas Dr. Albert Sabban holds a PhD in Electrical Engineering from the University of Colorado

at Boulder, USA (1991), and an MBA from the Faculty of Management, Haifa University, Israel (2005). He is currently a Senior Lecturer and researcher at the Department of Electrical and Electronic Engineering at Kinneret and Ort Braude Engineering Colleges. This book is an educational resource of evolving scientific knowledge in the area of bioelectromagnetics that may serve the interests of students and decision-makers, as well as society as a whole. It is distinguished by extensive descriptions of fundamental biophysical concepts and their relevance to human health. Reflecting the transdisciplinary approach from several different intellectual streams including physics, biology, epidemiology, medicine, environment, risk science, and engineering, the book is quite a venture into the battling studies to assess the latest research on health effects and biomedical applications of EM energy. This new edition of the book particularly looks at the potential threats from the emerging 5G wireless networks, which will deploy large numbers of low-powered smartphones, notebooks, tablets, radio access networks, and other transmitters. Features Introduces necessary biophysical principles of EM fields in the context of their interaction with living systems. Strengthens understanding of cutting-edge research on several major areas in the broad area of bioelectromagnetics. Presents safety standards and guidelines for human exposure to EM fields. Discusses techniques that have been developed to ensure adequate EM-thermal dosimetry required for both health effects and biomedical applications. Provides insight into the determinants of EM health risk assessment and

public concerns. Includes extensive reference list at the end of each chapter to enhance further study. Riadh Habash is a special appointment professor and McLaughlin Research Chair in Electromagnetic Fields and Health at the University of Ottawa, Canada. He has been the recipient of many awards, including the National Wighton Fellowship Award, and has authored or co-authored over 90 research articles, six books, and five book chapters. His most recent books are Green Engineering in 2017 and Professional Practice in 2019 (CRC Press), with the remaining previous books targeting the area of bioelectromagnetics.

Inclusive Radio Communication Networks for 5G and Beyond is based on the COST IRACON project that consists of 500 researchers from academia and industry, with 120 institutions from Europe, US and the Far East involved. The book presents state-of-the-art design and analysis methods for 5G (and beyond) radio communication networks, along with key challenges and issues related to the development of 5G networks. Covers the latest research on 5G networks – including propagation, localization, IoT and radio channels Based on the International COST research project, IRACON, with 120 institutions and 500 researchers from Europe, US and the Far East involved Provides coverage of IoT protocols, architectures and applications, along with IoT applications in healthcare Contains a concluding chapter on future trends in mobile communications and networking

This book investigates how Europe should position itself in an era of growing Chinese-American rivalry. The volume explores the contemporary relationship and ongoing dynamics between three of the most powerful players in today's international relations - the USA, China and Europe. It claims that the intensifying antagonism between Washington and Beijing requires a paradigm shift in European strategic thinking, and takes a trilateral perspective in analysing key issue areas, such as trade, technology, investment, climate change, the BRI, sub-national contacts, maritime security and nuclear non-proliferation. Using this analysis, the work seeks to offer original policy recommendations that respond to a number of dilemmas Europe can no longer avoid, including the trade-off between European interests and values in a harsher global environment, the question of whether Europe should align with one of the two superpowers, Europe's military dependence on a US pivoting to the Asia-Pacific, and possible trade-offs between global and regional governance efforts. The key finding is that Europe must follow a much more pragmatic and independent approach to its foreign and security affairs. This book will be of much interest to students of EU policy, foreign policy, Chinese politics, US politics and IR in general.
This book presents comprehensive coverage of current and emerging multiple access, random

access, and waveform design techniques for 5G wireless networks and beyond. A definitive reference for researchers in these fields, the book describes recent research from academia, industry, and standardization bodies. The book is an all-encompassing treatment of these areas addressing orthogonal multiple access and waveform design, non-orthogonal multiple access (NOMA) via power, code, and other domains, and orthogonal, non-orthogonal, and grant-free random access. The book builds its foundations on state of the art research papers, measurements, and experimental results from a variety of sources.

This book constitutes the refereed proceedings of the 23rd International IFIP conference on Optical Network Design and Modeling, ONDM 2019, held in Athens, Greece, in May 2019. The 39 revised full papers were carefully reviewed and selected from 87 submissions. The papers focus on cutting-edge research in established areas of optical networking as well as their adoption in support of a wide variety of new services and applications. This involves the most recent trends in networking including 5G and beyond, big data and network data analytics, cloud/edge computing, autonomic networking, artificial intelligence assisted networks, secure and resilient networks, that drive the need for increased capacity, efficiency, exibility and adaptability in the functions that the network can perform. In this

context new disaggregated optical network architectures were discussed, exploiting and integrating novel multidimensional photonic technology solutions as well as adopting open hardware and software platforms relying on software defined networking (SDN), and network function virtualization (NFV) to allow support of new business models and opportunities.

This book gathers recent research works in emerging Artificial Intelligence (AI) methods for the convergence of communication, caching, control, and computing resources in cloud-based Internet of Vehicles (IoV) infrastructures. In this context, the book's major subjects cover the analysis and the development of AI-powered mechanisms in future IoV applications and architectures. It addresses the major new technological developments in the field and reflects current research trends and industry needs. It comprises a good balance between theoretical and practical issues, covering case studies, experience and evaluation reports, and best practices in utilizing AI applications in IoV networks. It also provides technical/scientific information about various aspects of AI technologies, ranging from basic concepts to research-grade material, including future directions. This book is intended for researchers, practitioners, engineers, and scientists involved in designing and developing protocols and AI applications and services for IoV-related devices.

Learn how radio access network (RAN) slicing allows 5G networks to adapt to a wide range of environments in this masterful resource Radio Access Network Slicing and Virtualization for 5G Vertical Industriesprovides readers with a comprehensive and authoritative examination of crucial topics in the field of radio access network (RAN) slicing. Learn from renowned experts as they detail how this technology supports and applies to various industrial sectors, including manufacturing, entertainment, public safety, public transport, healthcare, financial services, automotive, and energy utilities. Radio Access Network Slicing and Virtualization for 5G Vertical Industries explains how future wireless communication systems must be built to handle high degrees of heterogeneity, including different types of applications, device classes, physical environments, mobility levels, and carrier frequencies. The authors describe how RAN slicing can be utilized to adapt 5G technologies to such wide-ranging circumstances. The book covers a wide range of topics necessary to understand RAN slicing, including: Physical waveforms design Multiple service signals coexistence RAN slicing and virtualization Applications to 5G vertical industries in a variety of environments This book is perfect for telecom engineers and industry actors who wish to identify realistic and cost-effective concepts to support specific 5G verticals. It also belongs on the

bookshelves of researchers, professors, doctoral, and postgraduate students who want to identify open issues and conduct further research.

This book contains the papers from the IMechE's Sustainable Vehicle Technologies 2012 conference. An innovative technical conference organised by the Automobile Division of the IMechE, it follows on from the 2009 Low Carbon Vehicle conference, which established a high standard with presentations primarily focussed on powertrain technology. The conference examines the latest advances in technology with a view towards understanding the consequences of carbon dioxide reduction over the entire vehicle lifecycle. Papers cover all aspects of the finite resources available for vehicle production, operation and recycling. Presents the papers from this leading conference Covers life time emissions and sustainability over the entire product life-cycle Considers all areas of environmental pollution in addition to the goals for delivering low-carbon vehicles

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