Renewing Local Planning to Face Climate Change in the Tropics

Internet-of-Things (IoT) Analytics are an integral element of most IoT applications, as it provides the means to extract knowledge, drive actuation services and optimize decision making. IoT analytics will be a major contributor to IoT business value in the coming years, as it will enable organizations to process and fully leverage large amounts of IoT data, which are nowadays largely underutilized. The Building Blocks of IoT Analytics is devoted to the presentation of advanced IoT analytics systems. It introduces IoT analytics as a special case of Big Data analytics and accordingly presents leading edge technologies that can be deployed in order to successfully confront the main challenges of IoT analytics applications. Special emphasis is paid in the presentation of IoT analytics platforms and applications, the role of cloud computing and Big Data technologies in IoT analytics applications, along with practical tools for implementing, deploying and operating non-trivial IoT applications. The book presents a series of practical applications, which illustrate the use of these technologies in the scope of pragmatic applications. Technical topics discussed in the book include: Cloud Computing and Big Data for IoT analytics, Searching the Internet of Things, Development Tools for IoT Analytics, IoT Analytics-as-a-Service, Semantic Modelling and Reasoning for IoT Analytics, IoT analytics for Smart Buildings, IoT analytics for Smart Cities, Operationalization of IoT analytics, Ethical aspects of IoT analytics.

This book contains both research oriented and applied articles on IoT analytics, including several articles reflecting work undertaken in the scope of recent European Commission funded projects in the scope of the FP7 and H2020 programmes. These articles present results of these projects on IoT analytics platforms and applications. Even though several articles have been contributed by different authors, they are structured in a well thought order that facilitates the reader either to follow the evolution of the book or to focus on specific topics depending on his/her background and interest in IoT and IoT analytics technologies. The compilation of these articles in this edited volume has been largely motivated by the close collaboration of the co-authors in the scope of working groups and IoT events organized by the Internet-of-Things Research Cluster (IERC), which is currently a part of EU’s Alliance for Internet of Things Innovation (AIOTI).

The Manager's Guide to Web Application Security

Urban flooding is an increasing challenge today to the expanding cities and towns of developing countries. This Handbook is a state-of-the art, user-friendly operational guide that shows decision makers and specialists how to effectively manage the risk of floods in rapidly urbanizing settings--and within the context of a changing climate.
This book includes the proceedings of the second International Conference on Advances in Computer Science and Engineering (CES 2012), which was held during January 13-14, 2012 in Sanya, China. The papers in these proceedings of CES 2012 focus on the researchers’ advanced works in their fields of Computer Science and Engineering mainly organized in four topics, (1) Software Engineering, (2) Intelligent Computing, (3) Computer Networks, and (4) Artificial Intelligence Software.

Wireless Sensor and Actuator Networks for Smart Cities

What are smart cities? What are their purposes? What are the impacts resulting from their implementations? With these questions in mind, this book is compiled with the primary concern of answering readers with different profiles; from those interested in acquiring basic knowledge about the various topics surrounding the subject related to smart cities, to those who are more motivated by knowing the technical elements and the technological apparatus involving this theme. This book audience is multidisciplinary, as it will be confirmed by the various chapters addressed here. It explores different knowledge areas, such as electric power systems, signal processing, telecommunications, electronics, systems optimization, computational intelligence, real-time systems, renewable energy systems, and information systems.

Transboundary Flood Risk Management

The most comprehensive reference available on GSM applications and services, this new title is intended to build on the basic technical information in the authors’ original bestseller, An Introduction to GSM (Artech House, 1995). The book provides a close-up look at this hot technology, offers in-depth discussions of the features and services available through GSM, and includes new and more in-depth coverage of applications and implementations of the GSM standard. It also explains how GSM has succeeded in becoming the major digital wireless standard - and addresses both past and future standardization, regulation, and development issues.

Building Blocks for IoT Analytics

Flash floods typically develop in a period a few hours or less and can arise from heavy rainfall and other causes, such as dam or flood defence breaches, and ice jam breaks. The rapid development, often associated with a high debris content, can present a considerable risk to people and property. This book describes recent developments in techniques for monitoring and forecasting the development of flash floods, and providing flood warnings. Topics which are discussed include rainfall and river monitoring, nowcasting, Numerical Weather Prediction, rainfall-runoff modelling, and approaches to the dissemination of flood warnings and provision of an emergency response. The book is potentially useful on civil engineering, water resources, meteorology and hydrology courses (and for post graduate studies) but is primarily intended as a review of the topic for a wider audience.

Humanitarianism in the Network Age

With the widespread use of PDAs, wireless internet, Internet-based GIS, and 3G and 4G telecommunications, the technology supporting mobile GIS is rapidly gaining popularity and effectiveness. Dynamic and Mobile GIS: Investigating Changes in Space and Time addresses Web GIS, mobile GIS, and the modeling, processing, and representation of dynamic events, as well as current demands to update GIS representations. Providing a comprehensive overview of this emerging technology, this book highlights innovations, new ways of modeling both spatial objects and dynamic processes affecting them, and advances in visualization. Featuring contributions from established GIS workers, it begins with an introduction of extant technology and previews future developments. The book examines challenges to security and privacy and presents practical solutions to these problems while focusing on modeling approaches and exploring the need to display an appropriate level of information in a mobile environment. Concluding with a study of mobility, the book also contains practical examples of applications of mobile devices for disaster management and environmental monitoring. Dynamic and Mobile GIS: Investigating Changes in Space and Time offers detailed cases of successful applications and identifies the current cutting-edge aspects of mobile and dynamic GIS. The book also looks to the future, investigating important research directions and potential challenges.

GSM and Personal Communications Handbook

Modern cars are more computerized than ever. Infotainment and navigation systems, Wi-Fi, automatic software updates, and other innovations aim to make driving more convenient. But vehicle technologies haven’t kept pace with today’s more hostile security environment, leaving millions vulnerable to attack. The Car Hacker’s Handbook will give you a deeper understanding of the computer systems and embedded software in modern vehicles. It begins by examining vulnerabilities and providing detailed explanations of communications over the CAN bus and between devices and systems. Then, once you have an understanding of a vehicle’s communication network, you’ll learn how to intercept data and perform specific
hacks to track vehicles, unlock doors, glitch engines, flood communication, and more. With a focus on low-cost, open source hacking tools such as Metasploit, Wireshark, Kayak, can-utils, and ChipWhisperer, The Car Hacker's Handbook will show you how to: –Build an accurate threat model for your vehicle –Reverse engineer the CAN bus to fake engine signals –Exploit vulnerabilities in diagnostic and data-logging systems –Hack the ECU and other firmware and embedded systems –Feed exploits through infotainment and vehicle-to-vehicle communication systems –Override factory settings with performance-tuning techniques –Build physical and virtual test benches to try out exploits safely if you’re curious about automotive security and have the urge to hack a two-ton computer, make The Car Hacker’s Handbook your first stop.

**Internet of Things**

This volume presents the refereed proceedings of the 8th International ICST Conference on Security and Privacy in Communication Networks, SecureComm 2012, held in Padua, Italy, in September 2012. The 21 revised papers included in the volume were carefully reviewed and selected from 73 submissions. Topics covered include crypto and electronic money; wireless security; web security; intrusion detection and monitoring; and anonymity and privacy.

**Climate Change in Asia and the Pacific**

Floods are natural phenomena that are necessary for the survival and health of the eco-system. Floodplains have historically attracted socio-economic development and continue to support high densities of human population. This is particularly important where land resources suitable for human development are scarce. Especially in arid and semi-arid areas, flood waters represent a vital water resource. Floods can, however, also lead to wide-spread damage, health problems and the loss of human life. Transboundary flood risk management enables sharing and redistributing risks and resources. This publication is based on the practical experience from 10 river basins in the UNECE region, and gives analysis of situations, problems, challenges, and possible solutions.

**9th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management**

The book aims to provide a broad overview of various topics of the Internet of Things (IoT) from the research and development priorities to enabling technologies, architecture, security, privacy, interoperability and industrial applications. It is intended to be a stand-alone book in a series that covers the Internet of Things activities of the IERC - Internet of Things European Research Cluster - from technology to international cooperation and the global "state of play." The book builds on the ideas put forward by the European Research Cluster on the Internet of Things Strategic Research and Innovation Agenda and presents views and state of the art results on the challenges facing the research, development and deployment of IoT at the global level. Today we see the integration of Industrial, Business and Consumer Internet which is bringing together the Internet of People, Internet of Things, Internet of Energy, Internet of Vehicles, Internet of Media, Services and Enterprises in forming the backbone of the digital economy, the digital society and the foundation for the future knowledge and innovation based economy. These developments are supporting solutions for the emerging challenges of public health, aging population, environmental protection and climate change, the conservation of energy and scarce materials, enhancements to safety and security and the continuation and growth of economic prosperity. Penetration of smartphones and advances in nanoelectronics, cyber-physical systems, wireless communication, software, and Cloud computing will be the main drivers for IoT development. The IoT contribution is seen in the increased value of information created by the number of interconnections among things and the transformation of the processed information into knowledge shared into the Internet of Everything. The connected devices are part of ecosystems connecting people, processes, data, and things which are communicating in the Cloud using the increased storage and computing power while attempting to standardize communication and metadata. In this context, the next generation of Cloud computing technologies will need to be flexible enough to scale autonomously, adaptive enough to handle constantly changing connections and resilient enough to stand up to the huge flows of data that will occur. In 2025, analysts forecast that there will be six devices per human on the planet, which means around 50 billion more connected devices over the next 12 years. The Internet of Things market is connected to this anticipated device growth from industrial Machine to Machine (M2M) systems, smart meters and wireless sensors. Internet of Things technology will generate new services and new interfaces by creating smart environments and smart spaces with applications ranging from Smart Cities, Smart Transport, Buildings, Energy, Grid, to Smart Health and Life.

**The Car Hacker’s Handbook**

This volume presents chapters highlighting the methodologies and tools developed to improve flood management and flood risk reduction.
Introduction to Remote Sensing, Second Edition

Introduction to Network Simulator NS2 is a primer providing materials for NS2 beginners, whether students, professors, or researchers for understanding the architecture of Network Simulator 2 (NS2) and for incorporating simulation modules into NS2. The authors discuss the simulation architecture and the key components of NS2 including simulation-related objects, network objects, packet-related objects, and helper objects. The NS2 modules included within are nodes, links, SimpleLink objects, packets, agents, and applications. Further, the book covers three helper modules: timers, random number generators, and error models. Also included are chapters on summary of debugging, variable and packet tracing, result compilation, and examples for extending NS2. Two appendices provide the details of scripting language Tcl, OTcl and AWK, as well object oriented programming used extensively in NS2.

Improving Flood Management, Prediction and Monitoring

The natural disasters are the killer agents which can/can't be predicted even though we have modern technology. Every year, in one place or another, disasters striking which is devastating the area and surroundings, leading to ecological disruption besides huge loss of life and property. India is vulnerable to cyclones, landslides/avalanches, earthquakes, floods, droughts, forest fires, epidemics, etc. The 5700-km long coast of India, with its dense population is vulnerable to cyclones/low depressions, tsunamis, etc. The 2400-km long rugged Himalayan terrain is vulnerable to landslides, avalanches and earthquakes. India is not only vulnerable to natural disasters, it is also experiencing industrial accidents. The Bhopal Gas tragedy is one of the major man-made disasters in the world. The state of Andhra Pradesh has 970-km long coastline with two major rivers, etc. The conference is conducted in Visakhapatnam, is famous for industries and tourism. Recently, several industrial accidents took place, besides major natural disasters like Hud-Hud, etc. Disaster management shall be implemented from the grass root level in vulnerable areas to improve the capacity building, so as to minimize the losses. The capacity building coupled with technology results in reduction of loss of life and property.

A Practical Guide to Computer Forensics Investigations

The scope of the conference is to provide a platform for the exchange of ideas amongst scholars in various disciplines, present the state of the art innovations and point out the new trends in current research activities and emerging technologies It also aims to have an assembly of eminent persons in their area of specialization with a fair share of invited talks and workshop materials in all relevant fields, for the benefit of the delegates of the Conference

Security and Privacy in Communication Networks

This book is a printed edition of the Special Issue "Wireless Sensor and Actuator Networks for Smart Cities" that was published in JSAN

Demystifying Internet of Things Security

This book is open access under a CC BY 4.0 license. This book aims to inspire decision makers and practitioners to change their approach to climate planning in the tropics through the application of modern technologies for characterizing local climate and tracking vulnerability and risk, and using decision-making tools. Drawing on 16 case studies conducted mainly in the Caribbean, Central America, Western and Eastern Africa, and South East Asia it is shown how successful integration of traditional and modern knowledge can enhance disaster risk reduction and adaptation to climate change in the tropics. The case studies encompass both rural and urban settings and cover different scales: rural communities, cities, and regions. In addition, the book looks to the future of planning by addressing topics of major importance, including residual risk integration in local development plans, damage insurance and the potential role of climate vulnerability reduction credits. In many regions of the tropics, climate planning is growing but has still very low quality. This book identifies the weaknesses and proposes effective solutions.

Introduction to Network Simulator NS2

Towards location aware mobile ad hoc sensors A Systems Engineering Approach to Wireless Information Networks The Second Edition of this internationally respected textbook brings readers fully up to date with the myriad of developments in wireless communications. When first published in 1995, wireless communications was synonymous with cellular telephones. Now wireless information networks are the most important technology in all branches of telecommunications. Readers can learn about the latest applications in such areas as ad hoc sensor networks, home networking, and wireless positioning. Wireless Information Networks takes a systems engineering approach: technical topics are presented in the context of how they fit into the ongoing development of new systems and services, as well as the recent developments in national and international spectrum allocations and standards. The authors have organized the myriad of
current and emerging wireless technologies into logical categories: * Introduction to Wireless Networks presents an up-to-the-moment discussion of the evolution of the cellular industry from analog cellular technology to 2G, 3G, and 4G, as well as the emergence of WLAN and WPAN as broadband ad hoc networks * Characteristics of Radio Propagation includes new coverage of channel modeling for space-time, MIMO, and UWB communications and wireless geolocation networks * Modem Design offers new descriptions of space-time coding, MIMO antenna systems, UWB communications, and multi-user detection and interference cancellation techniques used in CDMA networks * Network Access and System Aspects incorporates new chapters on UWB systems and RF geolocations, with a thorough revision of wireless access techniques and wireless systems and standards Exercises that focus on real-world problems are provided at the end of each chapter. The mix of assignments, which includes computer projects and questionnaires in addition to traditional problem sets, helps readers focus on key issues and develop the skills they need to solve actual engineering problems. Extensive references are provided for those readers who would like to explore particular topics in greater depth. With its emphasis on knowledge-building to solve problems, this is an excellent graduate-level textbook. Like the previous edition, this latest edition will also be a standard reference for the telecommunications industry.

Sensor Technologies

Wireless localization techniques are an area that has attracted interest from both industry and academia, with self-localization capability providing a highly desirable characteristic of wireless sensor networks. Localization Algorithms and Strategies for Wireless Sensor Networks encompasses the significant and fast growing area of wireless localization techniques. This book provides comprehensive and up-to-date coverage of topics and fundamental theories underpinning measurement techniques and localization algorithms. A useful compilation for academicians, researchers, and practitioners, this Premier Reference Source contains relevant references and the latest studies emerging out of the wireless sensor network field.

Proceedings of the 1st International Conference on Electronics, Biomedical Engineering, and Health Informatics

Break down the misconceptions of the Internet of Things by examining the different security building blocks available in Intel Architecture (IA) based IoT platforms. This open access book reviews the threat pyramid, secure boot, chain of trust, and the SW stack leading up to defense-in-depth. The IoT presents unique challenges in implementing security and Intel has both CPU and Isolated Security Engine capabilities to simplify it. This book explores the challenges to secure these devices to make them immune to different threats originating from within and outside the network. The requirements and robustness rules to protect the assets vary greatly and there is no single blanket solution approach to implement security. Demystifying Internet of Things Security provides clarity to industry professionals and provides and overview of different security solutions What You’ll Learn Secure devices, immunizing them against different threats originating from inside and outside the network Gather an overview of the different security building blocks available in Intel Architecture (IA) based IoT platforms Understand the threat pyramid, secure boot, chain of trust, and the software stack leading up to defense-in-depth Who This Book Is For Strategists, developers, architects, and managers in the embedded and Internet of Things (IoT) space trying to understand and implement the security in the IoT devices/platforms.

Software Technologies for Embedded and Ubiquitous Systems

Providing a full introduction to remote sensing for all environmental scientists, this wide-ranging and authoritative text assumes no prior knowledge of remote sensing yet covers the field in sufficient depth to be suitable also as a research manual.

Industrial Wireless Sensor Networks

Climate change is one of the most significant challenges to global economic development. Left unchecked, continued global warming could cause worldwide social and environmental disruption. The Asia and Pacific region is more vulnerable to climate change risks than other regions due to its dependence on the natural resources and agriculture sectors. Densely populated coastal areas, weak institutions, and the poverty of a considerable proportion of its population add to the susceptibility of this region. Adaptation—making adjustments in natural or human systems in response to actual or expected climate stimuli—becomes a key strategy for sustaining economic growth. This volume examines the framework conditions for integrating climate change adaptation measures into agriculture, water, and natural resources management activities for the Asia and Pacific region. Based on the review of country experiences, the book describes key dimensions, suggests interventions for further exploration, and serves as a basis for planning and mainstreaming climate change adaptation into sectoral planning.
Cardiovascular disease (CVD), once thought to be confined primarily to industrialized nations, has emerged as a major health threat in developing countries. Cardiovascular disease now accounts for nearly 30 percent of deaths in low and middle income countries each year, and is accompanied by significant economic repercussions. Yet most governments, global health institutions, and development agencies have largely overlooked CVD as they have invested in health in developing countries. Recognizing the gap between the compelling evidence of the global CVD burden and the investment needed to prevent and control CVD, the National Heart, Lung, and Blood Institute (NHLBI) turned to the IOM for advice on how to catalyze change. In this report, the IOM recommends that the NHLBI, development agencies, nongovernmental organizations, and governments work toward two essential goals: creating environments that promote heart healthy lifestyle choices and help reduce the risk of chronic diseases, and building public health infrastructure and health systems with the capacity to implement programs that will effectively detect and reduce risk and manage CVD. To meet these goals, the IOM recommends several steps, including improving cooperation and collaboration; implementing effective and feasible strategies; and informing efforts through research and health surveillance. Without better efforts to promote cardiovascular health, global health as a whole will be undermined.

**Wireless Sensor Networks**

LPWAN Technologies for IoT and M2M Applications provides insight into LPWAN technologies, also presenting a wide range of applications and a discussion on security issues and future challenges and research directions. This book is a beneficial and insightful resource for university researchers, graduate students and R&D engineers who are designing networks and implementing IoT applications. To support new requirements for this emerging industry, a new paradigm of Low Power Wide Area Networks (LPWAN) has recently evolved, including LoRa, Sigfox and NB-IoT, hence this book presents the latest updates.

**Hydrometeorology**

"Floods are devastating natural disasters with a significant impact on human life and the surrounding environment. Flood Risk Assessment and Management should serve as an Ideal textbook on analytical flood risk assessment and management, and is intended for"

**Promoting Cardiovascular Health in the Developing World**

This book constitutes the thoroughly refereed post-proceedings of the 5th IFIP WG 10.2 International Workshop on Software Technologies for Future Embedded and Ubiquitous Systems, SEUS 2007, held in conjunction with ISORC 2007, the 10th IEEE International Symposium on Object/component/service-oriented Real-time Distributed Computing. Coverage includes ubiquitous computing frameworks, validation of embedded and ubiquitous systems, and ubiquitous computing applications.

**Information and Communication Technology for Intelligent Systems**

This publication explores how new ways of interacting are bringing people in need closer to people who can help. In rich and poor countries, people are connecting through technology at an accelerating pace. The report imagines how a world of increasingly informed, connected and self-reliant communities will affect the delivery of humanitarian aid. Its conclusions suggest a fundamental shift in power from capitals and headquarters to the people that aid agencies aim to assist. The included World Humanitarian Data and Trends present global and country-level data and analysis on humanitarian needs, response and trends.

**Wireless Information Networks**

**Dynamic and Mobile GIS**

Urban water and wastewater systems have an inherent vulnerability to both manmade and natural threats and disasters including droughts, earthquakes and terrorist attacks. It is well established that natural disasters including major storms, such as hurricanes and flooding, can effect water supply security and integrity. Earthquakes and terrorist attacks have many characteristics in common because they are almost impossible to predict and can cause major devastation and confusion. Terrorism is also a major threat to water security and recent attention has turned to the potential that these attacks have for disrupting urban water supplies. There is a need to introduce the related concept of Integrated Water Resources Management which emphasizes linkages between land-use change and hydrological systems, between ecosystems and human health, and between political and scientific aspects of water management. An expanded water security agenda should include a conceptual focus on vulnerability, risk, and resilience; an emphasis on threats, shocks, and tipping points; and a related emphasis on adaptive management given limited predictability. Internationally, concerns about water have often taken a different focus and there is also a
Monitoring System

Growing awareness, including in the US, that water security should include issues related to quantity, climate change, and biodiversity impacts, in addition to terrorism. This presents contributions from a group of internationally recognized experts that attempt to address the four areas listed above and includes suggestions as to how to deal with related problems. It also addresses the new and potentially growing issue of cyber attacks against water and waste water infrastructure including descriptions of actual attacks, making it of interest to scholars and policy-makers concerned with protecting the water supply.

**Proceedings of International Conference on Remote Sensing for Disaster Management**

Infrastructure for Homeland Security Environments Wireless Sensor Networks helps readers discover the emerging field of low-cost standards-based sensors that promise a high order of spatial and temporal resolution and accuracy in an ever-increasing universe of applications. It shares the latest advances in science and engineering paving the way towards a large plethora of new applications in such areas as infrastructure protection and security, healthcare, energy, food safety, RFID, ZigBee, and processing. Unlike other books on wireless sensor networks that focus on limited topics in the field, this book is a broad introduction that covers all the major technology, standards, and application topics. It contains everything readers need to know to enter this burgeoning field, including current applications and promising research and development; communication and networking protocols; middleware architecture for wireless sensor networks; and security and management. The straightforward and engaging writing style of this book makes even complex concepts and processes easy to follow and understand. In addition, it offers several features that help readers grasp the material and then apply their knowledge in designing their own wireless sensor network systems: * Examples illustrate how concepts are applied to the development and application of * wireless sensor networks * Detailed case studies set forth all the steps of design and implementation needed to solve real-world problems * Chapter conclusions that serve as an excellent review by stressing the chapter's key concepts * References in each chapter guide readers to in-depth discussions of individual topics This book is ideal for networking designers and engineers who want to fully exploit this new technology and for government employees who are concerned about homeland security. With its examples, it is appropriate for use as a coursebook for upper-level undergraduates and graduate students.

**Flash Floods**

This book gathers papers addressing state-of-the-art research in all areas of information and communication technologies and their applications in intelligent computing, cloud storage, data mining and software analysis. It presents the outcomes of the Fourth International Conference on Information and Communication Technology for Intelligent Systems, which was held in Ahmedabad, India. Divided into two volumes, the book discusses the fundamentals of various data analysis techniques and algorithms, making it a valuable resource for researchers and practitioners alike.

**LPWAN Technologies for IoT and M2M Applications**

The collaborative nature of industrial wireless sensor networks (IWSNs) brings several advantages over traditional wired industrial monitoring and control systems, including self-organization, rapid deployment, flexibility, and inherent intelligent processing. In this regard, IWSNs play a vital role in creating more reliable, efficient, and productive industrial systems, thus improving companies' competitiveness in the marketplace. Industrial Wireless Sensor Networks: Applications, Protocols, and Standards examines the current state of the art in industrial wireless sensor networks and outlines future directions for research. What Are the Main Challenges in Developing IWSN Systems? Featuring contributions by researchers around the world, this book explores the software and hardware platforms, protocols, and standards that are needed to address the unique challenges posed by IWSN systems. It offers an in-depth review of emerging and already deployed IWSN applications and technologies, and outlines technical issues and design objectives. In particular, the book covers radio technologies, energy harvesting techniques, and network and resource management. It also discusses issues critical to industrial applications, such as latency, fault tolerance, synchronization, real-time constraints, network security, and cross-layer design. A chapter on standards highlights the need for specific wireless communication standards for industrial applications. A Starting Point for Further Research Delving into wireless sensor networks from an industrial perspective, this comprehensive work provides readers with a better understanding of the potential advantages and research challenges of IWSN applications. A contemporary reference for anyone working at the cutting edge of industrial automation, communication systems, and networks, it will inspire further exploration in this promising research area.

**Building a Home Security System with Raspberry Pi**

This book describes recent developments in hydrometeorological forecasting techniques for a range of timescales, from short term to seasonal and longer terms. It conveniently brings together both meteorological and hydrological aspects in a single volume.
Securing Water and Wastewater Systems

Build your own sophisticated modular home security system using the popular Raspberry Pi board. About This Book This book guides you through building a complete home security system with Raspberry Pi and helps you remotely access it from a mobile device over the Internet. It covers the fundamentals of interfacing sensors and cameras with the Raspberry Pi so that you can connect it to the outside world. It follows a modular approach so that you can choose the modules and features you want for your customized home security system. This book is for anyone who is interested in building a modular home security system from scratch using a Raspberry Pi board, basic electronics, sensors, and simple scripts. This book is ideal for enthusiastic novice programmers, electronics hobbyists, and engineering professionals. It would be great if you have some basic soldering skills in order to build some of the interface modules. What You Will Learn Understand the concepts behind alarm systems and intrusion detection devices. Connect sensors and devices to the on-board digital GPIO ports safely. Monitor and control connected devices easily using Bash shell scripting. Build an I/O port expander using the I2C bus and connect sensors and anti-tamper circuits. Capture and store images using motion detectors and cameras. Access and manage your system remotely from your mobile phone. Receive intrusion alerts and images through your email. Build a sophisticated multi-zone alarm system. In Detail The Raspberry Pi is a powerful low-cost credit-card-sized computer, which lends itself perfectly as the controller for a sophisticated home security system. Using the on-board interfaces available, the Raspberry Pi can be expanded to allow the connection of a virtually infinite number of security sensors and devices. The Raspberry Pi has the processing power and interfaces available to build a sophisticated home security system but at a fraction of the cost of commercially available systems. Building a Home Security System with Raspberry Pi starts off by showing you the Raspberry Pi and how to set up the Linux-based operating system. It then guides you through connecting switch sensors and LEDs to the native GPIO connector safely, and how to access them using simple Bash scripts. As you dive further in, you’ll learn how to build an input/output expansion board using the I2C interface and power supply, allowing the connection of the large number of sensors needed for a typical home security setup. In the later chapters of the book, we’ll look at more sophisticated topics such as adding cameras, remotely accessing the system using your mobile phone, receiving intrusion alerts and images by email, and more. By the end of the book, you will be well-versed with the use of Raspberry Pi to power a home-based security system that sends message alerts whenever it is triggered and will be able to build a truly sophisticated and modular home security system. You will also gain a good understanding of Raspberry Pi’s ecosystem and be able to write the functions required for a security system. Style and approach This easy-to-follow guide comprises a series of projects, where every chapter introduces a new concept and at the end of the book, all these concepts are brought together to create an entire home security system. This book features clear diagrams and code every step of the way.

Flood Risk

The Manager's Guide to Web Application Security is a concise, information-packed guide to application security risks every organization faces, written in plain language, with guidance on how to deal with those issues quickly and effectively. Often, security vulnerabilities are difficult to understand and quantify because they are the result of intricate programming deficiencies and highly technical issues. Author and noted industry expert Ron Lepofsky breaks down the technical barrier and identifies many real-world examples of security vulnerabilities commonly found by IT security auditors, translates them into business risks with identifiable consequences, and provides practical guidance about mitigating them. The Manager's Guide to Web Application Security describes how to fix and prevent these vulnerabilities in easy-to-understand discussions of vulnerability classes and their remediation. For easy reference, the information is also presented schematically in Excel spreadsheets available to readers for free download from the publisher's digital annex. The book is current, concise, and to the point—which is to help managers cut through the technical jargon and make the business decisions required to find, fix, and prevent serious vulnerabilities.

Cities and Flooding

Sensor Technologies: Healthcare, Wellness and Environmental Applications explores the key aspects of sensor technologies, covering wired, wireless, and discrete sensors for the specific application domains of healthcare, wellness and environmental sensing. It discusses the social, regulatory, and design considerations specific to these domains. The book provides an application-based approach using real-world examples to illustrate the application of sensor technologies in a practical and experiential manner. The book guides the reader from the formulation of the research question, through the design and validation process, to the deployment and management phase of sensor applications. The processes and examples used in the book are primarily based on research carried out by Intel or joint academic research programs. "Sensor Technologies: Healthcare, Wellness and Environmental Applications provides an extensive overview of sensing technologies and their applications in healthcare, wellness, and environmental monitoring. From
sensor hardware to system applications and case studies, this book gives readers an in-depth understanding of the technologies and how they can be applied. I would highly recommend it to students or researchers who are interested in wireless sensing technologies and the associated applications." Dr. Benny Lo Lecturer, The Hamlyn Centre, Imperial College of London “This timely addition to the literature on sensors covers the broad complexity of sensing, sensor types, and the vast range of existing and emerging applications in a very clearly written and accessible manner. It is particularly good at capturing the exciting possibilities that will occur as sensor networks merge with cloud-based ‘big data’ analytics to provide a host of new applications that will impact directly on the individual in ways we cannot fully predict at present. It really brings this home through the use of carefully chosen case studies that bring the overwhelming concept of ‘big data’ down to the personal level of individual life and health.” Dermot Diamond Director, National Centre for Sensor Research, Principal Investigator, CLARITY Centre for Sensor Web Technologies, Dublin City University "Sensor Technologies: Healthcare, Wellness and Environmental Applications takes the reader on an end-to-end journey of sensor technologies, covering the fundamentals from an engineering perspective, introducing how the data gleaned can be both processed and visualized, in addition to offering exemplary case studies in a number of application domains. It is a must-read for those studying any undergraduate course that involves sensor technologies. It also provides a thorough foundation for those involved in the research and development of applied sensor systems. I highly recommend it to any engineer who wishes to broaden their knowledge in this area!" Chris Nugent Professor of Biomedical Engineering, University of Ulster

**Localization Algorithms and Strategies for Wireless Sensor Networks: Monitoring and Surveillance Techniques for Target Tracking**

**Smart Cities Technologies**

According to the International Disaster Database (EM-DAT), over the last seventy years, floods have shown the fastest rate of increase relative to any other type of disasters. Devastation due to these events occurs almost daily. Even though our technological capabilities for dealing with floods have advanced rapidly over the same period, and while global economic growth per capita has doubled, flood events have become ever more disastrous. Does this mean that our technological developments have advanced independently from the social and wider ecological needs? Flood Risk: The Holistic Perspective is a direct response to this question and it argues that this paradoxical situation is a result from our narrow and fragmented perception of reality which has been characteristic of our academic disciplines and government agencies. It suggests that the way forward can be found only if we broaden our view and learn how the natural or social phenomena can provoke a response in a society, or a social group, which in turn can trigger the technical developments, and so on, again and again, in what has the potential to become a network of interactions and relationships through positive feedback (or coevolving) cycles. The holistic perspective however may raise the following question: If everything is connected to everything else, how can we ever hope to understand anything? Our response draws from the understandings brought by complexity theory where individual elements coevolve together both in development and application. This recognition opens a new analysis which goes beyond the direct objects or actors of concern (risk forecasting, early warning, land-use planning technology and systems for example), and into the relationships between them. The book suggests that our initial response to this and many other challenges is to change our perception from a disciplinary and defensive one to a progressive (or transcendental) and transdisciplinary, i.e., the one that turns challenges into the possibilities that can re-shape our future. The book is structured in eight chapters. Chapter 1 provides exposure to the complexity of flood-related issues and illustrates diversity of multiple points of view. Chapter 2 elaborates on the history of holistic thinking with connection to the flood resilience process. Chapter 3 discusses the holistic risk governance approach which progresses beyond the integrated urban flood management. Chapter 4 describes the Green Cities Initiative, an initiative which is essentially holistic in its nature as it aims to improve transport, energy efficiency, industrial metabolism including water supply and distribution as well as drainage and sewerage services through the holistic lens of interactions between different sectors. Chapter 5 discusses various risk assessment practices and it concludes that any practice that omits social, ethical and wider ecological points of view will be severely restricted in its scope and its reach. Chapter 6 describes the root causes of floods in the Pasig-Marikina River Basin in Metro Manila, Philippines. Chapter 7 reflects upon the key issues and challenges from 2011 Thailand floods. Finally, Chapter 8 presents some of the key aspects concerning urban stormwater management practice in Beijing, China.

**Flood Risk Assessment and Management**

A Practical Guide to Computer Forensics Investigations introduces the newest technologies along with detailed information on how the evidence contained on these devices should be analyzed. Packed with practical, hands-on activities, students will learn unique subjects from chapters including Mac Forensics, Mobile Forensics, Cyberbullying, and Child Endangerment. This well-developed book will prepare students for the rapidly-growing field of computer forensics for a career with law enforcement, accounting firms,
banks and credit card companies, private investigation companies, or government agencies.

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