

## Smart Surveillance Monitoring System Using Raspberry Pi

The Internet of Things (IoT) is a closed-loop system in which a set of sensors is connected to servers via a network. The data from sensors are stored in a database and then analysed by IoT analytics. The results are usually employed by either humans, machines, or software to make decisions about the operation of the system. This book provides an interface between the main disciplines of engineering/technology and the organizational, administrative, and planning capabilities of managing the IoT.

With near-universal internet access and ever-advancing electronic devices, the ability to facilitate interactions between various hardware and software provides endless possibilities. Though internet of things (IoT) technology is becoming more popular among individual users and companies, more potential applications of this technology are being sought every day. There is a need for studies and reviews that discuss the methodologies, concepts, and possible problems of a technology that requires little or no human interaction between systems. The Handbook of Research on the Internet of Things Applications in Robotics and Automation is a pivotal reference source on the methods and uses of advancing IoT technology. While highlighting topics including traffic information systems, home security, and automatic parking, this book is ideally designed for network analysts, telecommunication system designers, engineers, academicians, technology specialists, practitioners, researchers, students, and software developers seeking current research on the trends and functions of this life-changing technology.

The goal of Intelligent video surveillance systems is to efficiently extract useful information from a considerable number of videos collected by surveillance cameras by automatically detecting, tracking and recognizing objects of interest, and understanding and analyzing their activities. Video surveillance has a huge amount of applications, from public to private places. These applications require monitoring indoor and outdoor scenes. Nowadays, there are a considerable number of digital surveillance cameras collecting a huge amount of data on a daily basis. Researchers are urged to develop intelligent systems to efficiently extract and visualize useful information from this big data source. The exponential effort on the development of new algorithms and systems for video surveillance is confirmed by the amount of effort invested in projects and companies, the creation on new startups worldwide and, not less important, in the quantity and quality of the manuscripts published in a considerable number of journals and conferences worldwide. This book is an outcome of research done by several researchers who have highly contributed to the field of Video Surveillance. The main goal is to present recent advances in this important topic for the Image Processing community.

This book proposes new technologies and discusses future solutions for ICT design infrastructures, as reflected in high-quality papers presented at the 4th International Conference on ICT for Sustainable Development (ICT4SD 2019), held in Goa, India, on 5–6 July 2019. The conference provided a valuable forum for cutting-edge research discussions among pioneering researchers, scientists, industrial engineers, and students from all around the world. Bringing together experts from different countries, the book explores a range of central issues from an international perspective.

The Cognitive Approach in Cloud Computing and Internet of Things Technologies for Surveillance Tracking Systems discusses the recent, rapid development of Internet of things (IoT) and its focus on research in smart cities, especially on surveillance tracking systems in which computing devices are widely distributed and huge amounts of dynamic real-time data are collected and processed. Efficient surveillance tracking systems in the Big Data era require the capability of quickly abstracting useful information from the increasing amounts of data. Real-time information fusion is imperative and part of the challenge to mission critical surveillance tasks for various applications. This book presents all of these concepts, with a goal of creating automated IT systems that are capable of resolving problems without demanding human aid. Examines the current state of surveillance tracking systems, cognitive cloud architecture for resolving critical issues in surveillance tracking systems, and research opportunities in cognitive computing for surveillance tracking systems Discusses topics including cognitive computing architectures and approaches, cognitive computing and neural networks, complex analytics and machine learning, design of a symbiotic agent for recognizing real space in ubiquitous environments, and more Covers supervised regression and classification methods, clustering and dimensionality reduction methods, model development for machine learning applications, intelligent machines and deep learning networks includes coverage of cognitive computing models for scalable environments, privacy and security aspects of surveillance tracking systems, strategies and experiences in cloud architecture and service platform design

This book presents the proceedings of the 6th International Conference on Frontier Computing, held in Kuala Lumpur, Malaysia on July 3–6, 2018, and provides comprehensive coverage of the latest advances and trends in information technology, science and engineering. It addresses a number of broad themes, including communication networks, business intelligence and knowledge management, web intelligence, and related fields that inspire the development of information technology. The contributions cover a wide range of topics: database and data mining, networking and communications, web and internet of things, embedded systems, soft computing, social network analysis, security and privacy, optical communication, and ubiquitous/pervasive computing. Many of the papers outline promising future research directions. The book is a valuable resource for students, researchers and professionals, and also offers a useful reference guide for newcomers to the field.

This book presents the proceedings of the International Conference SDOT which was organized at the University in Žilina, Faculty of Management Sciences and Informatics, Slovak Republic in November 19, 2015. The conference was truly international both in terms of the amount of foreign contributions and in terms of composition of steering and scientific committees. The book and the conference serves as a platform of professional exchange of knowledge and experience for the latest trends in software development and object-oriented technologies (theory and practice). This proceedings present information on the latest developments and mediate the exchange of experience between practitioners and academia.

This book provides a synthesis for using IoT for indoor air quality assessment. It will help upcoming researchers to understand the gaps in the literature while identifying the new challenges and opportunities to develop healthy living spaces. On the other hand, this book provides insights about integrating IoT with artificial intelligence to design smart buildings with enhanced air quality. Consequently, this book aims to present future scope for carrying out potential research activities in this domain. Over the past few years, the Internet of Things (IoT) is proven as the most revolutionizing invention in the field of engineering and design. This technology has wide scope in automation and real-time monitoring. Indoor air quality assessment is one of the most important applications of IoT which helps in the development of smart and healthy living spaces. Numerous methods have been developed for air quality assessment to ensure enhanced public health and well-being. The combination of sensors, microcontrollers, and communication technologies can be used to handle the massive amount of field data to access the condition of building air quality.

Surveillance video has a wide range of applications in many fields, such as national economic construction, public security information construction, and widely adopted countries worldwide. The infrastructure of the video surveillance system has begun to take shape and is still rapid expansion. As thousands of surveillance cameras monitor and record round the clock, the amount of video data has been explosive growth. Finding the required information in a large number of surveillance videos is undoubtedly a needle in a haystack. Motion is a significant feature of video, and much meaningful visual information is contained in the movement. In many application scenarios, like road traffic monitoring, security for major events, guidance for military aircraft, and autonomous vehicle, people tend to pay more attention to the moving object. The analysis shows that the key frame extraction of surveillance video based on motion analysis has important practical significance. Hence, this book puts forward several key frame extraction

methods of surveillance video around capturing the target motion state.

This book presents a selection of revised and extended versions of the best papers from the First International Conference on Social Networking and Computational Intelligence (SCI-2018), held in Bhopal, India, from October 5 to 6, 2018. It discusses recent advances in scientific developments and applications in these areas.

Video monitoring has become a vital aspect within the global society as it helps prevent crime, promote safety, and track daily activities such as traffic. As technology in the area continues to improve, it is necessary to evaluate how video is being processed to improve the quality of images. Applied Video Processing in Surveillance and Monitoring Systems investigates emergent techniques in video and image processing by evaluating such topics as segmentation, noise elimination, encryption, and classification. Featuring real-time applications, empirical research, and vital frameworks within the field, this publication is a critical reference source for researchers, professionals, engineers, academicians, advanced-level students, and technology developers.

This e-book is a compilation of papers presented at the 6th Mechanical Engineering Research Day (MERD'19) - Kampus Teknologi UTeM, Melaka, Malaysia on 31 July 2019.

This book explains IoT technology, its potential applications, the security and privacy aspects, the key necessities like governance, risk management, regulatory compliance needs, the philosophical aspects of this technology that are necessary to support an ethical, safe and secure digitally enhanced environment in which people can live smarter. It describes the inherent technology of IoT, the architectural components and the philosophy behind this emerging technology. Then it shows the various potential applications of the Internet of Things that can bring benefits to the human society. Finally, it discusses various necessities to provide a secured and trustworthy IoT service.

With the recent growth of big data and the internet of things (IoT), individuals can now upload, retrieve, store, and collect massive amounts of information to help drive decisions and optimize processes. Due to this, a new age of predictive computing is taking place, and data can now be harnessed to predict unknown occurrences or probabilities based on data collected in real time. Predictive Intelligence Using Big Data and the Internet of Things highlights state-of-the-art research on predictive intelligence using big data, the IoT, and related areas to ensure quality assurance and compatible IoT systems. Featuring coverage on predictive application scenarios to discuss these breakthroughs in real-world settings and various methods, frameworks, algorithms, and security concerns for predictive intelligence, this book is ideally designed for academicians, researchers, advanced-level students, and technology developers.

**Social Networking and Computational Intelligence Proceedings of SCI-2018 Springer Nature**

This book presents emerging concepts in data mining, big data analysis, communication, and networking technologies, and discusses the state-of-the-art in data engineering practices to tackle massive data distributions in smart networked environments. It also provides insights into potential data distribution challenges in ubiquitous data-driven networks, highlighting research on the theoretical and systematic framework for analyzing, testing and designing intelligent data analysis models for evolving communication frameworks. Further, the book showcases the latest developments in wireless sensor networks, cloud computing, mobile network, autonomous systems, cryptography, automation, and other communication and networking technologies. In addition, it addresses data security, privacy and trust, wireless networks, data classification, data prediction, performance analysis, data validation and verification models, machine learning, sentiment analysis, and various data analysis techniques.

This book presents the proceedings of the International Computer Symposium 2014 (ICS 2014), held at Tunghai University, Taichung, Taiwan in December. ICS is a biennial symposium founded in 1973 and offers a platform for researchers, educators and professionals to exchange their discoveries and practices, to share research experiences and to discuss potential new trends in the ICT industry. Topics covered in the ICS 2014 workshops include: algorithms and computation theory; artificial intelligence and fuzzy systems; computer architecture, embedded systems, SoC and VLSI/EDA; cryptography and information security; databases, data mining, big data and information retrieval; mobile computing, wireless communications and vehicular technologies; software engineering and programming languages; healthcare and bioinformatics, among others. There was also a workshop on information technology innovation, industrial application and the Internet of Things. ICS is one of Taiwan's most prestigious international IT symposiums, and this book will be of interest to all those involved in the world of information technology.

This book focuses on the integration of intelligent communication systems, control systems and devices related to all aspects of engineering and sciences. It includes high-quality research papers from the 4th International Conference on Intelligent Communication, Control and Devices (ICICCD 2020), organized by the Department of Electronics, Instrumentation and Control Engineering at the University of Petroleum and Energy Studies, Dehradun, India during 27–28 November 2020. The topics covered are a range of recent advances in intelligent communication, intelligent control, and intelligent devices.

Like most industries around the world, the energy industry has also made, and continues to make, a long march toward “green” energy. The science has come a long way since the 1970s, and renewable energy and other green technologies are becoming more and more common, replacing fossil fuels. It is, however, still a struggle, both in terms of energy sources keeping up with demand, and the development of useful technologies in this area. To maintain the supply for electrical energy, researchers, engineers and other professionals in industry are continuously exploring new eco-friendly energy technologies and power electronics, such as solar, wind, tidal, wave, bioenergy, and fuel cells. These technologies have changed the concepts of thermal, hydro and nuclear energy resources by the adaption of power electronics advancement and revolutionary development in lower manufacturing cost for semiconductors with long time reliability. The latest developments in renewable resources have proved their potential to boost the economy of any country. Green energy technology has not only proved the concept of clean energy but also reduces the dependencies on fossil fuel for electricity generation through smart power electronics integration. Also, endless resources have more potential to cope with the requirements of smart building and smart city concepts. A valuable reference for engineers, scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library. This book focuses on soft computing and how it can be applied to solve real-world problems arising in various domains, ranging from medicine and healthcare, to supply chain

management, image processing and cryptanalysis. It gathers high-quality papers presented at the International Conference on Soft Computing: Theories and Applications (SoCTA 2019), organized by the National Institute of Technology Patna, India. Offering valuable insights into soft computing for teachers and researchers alike, the book will inspire further research in this dynamic field.

The book aims to integrate the aspects of IoT, Cloud computing and data analytics from diversified perspectives. The book also plans to discuss the recent research trends and advanced topics in the field which will be of interest to academicians and researchers working in this area. Thus, the book intends to help its readers to understand and explore the spectrum of applications of IoT, cloud computing and data analytics. Here, it is also worth mentioning that the book is believed to draw attention on the applications of said technology in various disciplines in order to obtain enhanced understanding of the readers. Also, this book focuses on the researches and challenges in the domain of IoT, Cloud computing and Data analytics from perspectives of various stakeholders.

In 15 similarly structured chapters, *Transitioning to Smart Cities: Mapping Political, Economic, and Social Risks and Threats* serves as a primer on smart cities, providing readers with no prior knowledge on smart cities with an understanding of the current smart cities debates. Gathering cutting-edge research and insights from academics, practitioners and policy-makers around the globe, *Transitioning to Smart Cities* identifies and discusses the nascent threats and challenges contemporary urban areas face, highlighting the drivers and ways of navigating these issues in an effective way. Uniquely providing a blend of conceptual academic analysis with empirical insights, *Transitioning to Smart Cities* produces policy recommendations that boost urban sustainability and resilience. With the multiplicity of qualitatively new issues and developments in these debates, *Transitioning to Smart Cities* offer an invaluable framework on current developments shaping today and tomorrow's urban Combines conceptual academic approaches with empirically-driven insights and best practices Offers new approaches and arguments from inter and multi-disciplinary perspectives Provides foundational knowledge and comparative insight from global case-studies that enable critical reflection and operationalization Generates policy recommendations that pave the way to debate and case-based planning

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This book is a collection of papers from international experts presented at the International Conference on NextGen Electronic Technologies (ICNETS2). ICNETS2 encompassed six symposia covering all aspects of electronics and communications engineering, including relevant nano/micro materials and devices. Highlighting recent research in intelligent embedded systems, the book is a valuable resource for professionals and students working in the core areas of electronics and their applications, especially in signal processing, embedded systems, and networking. The contents of this volume will be of interest to researchers and professionals alike.

As innovators continue to explore and create new developments within the fields of artificial intelligence and computer science, subfields such as machine learning and the internet of things (IoT) have emerged. Now, the internet of everything (IoE), foreseen as a cohesive and intelligent connection of people, processes, data, and things, is theorized to make internet connections more valuable by converting information into wise actions that create unprecedented capabilities, richer experiences, and economic opportunities to all players in the market. *Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities* discusses the theoretical, design, evaluation, implementation, and use of innovative technologies within the fields of IoE, machine learning, and IoT. Featuring research on topics such as low-power electronics, mobile technology, and artificial intelligence, this book is ideally designed for computer engineers, software developers, investigators, advanced-level students, professors, and professionals seeking coverage on the various contemporary theories, technologies, and tools in IoE engineering.

This book constitutes the refereed proceedings of the 19th Iberoamerican Congress on Pattern Recognition, CIARP 2014, held in Puerto Vallarta, Jalisco, Mexico, in November 2014. The 115 papers presented were carefully reviewed and selected from 160 submissions. The papers are organized in topical sections on image coding, processing and analysis; segmentation, analysis of shape and texture; analysis of signal, speech and language; document processing and recognition; feature extraction, clustering and classification; pattern recognition and machine learning; neural networks for pattern recognition; computer vision and robot vision; video segmentation and tracking.

Third International conference on I SMAC (IoT in Social, Mobile, Analytics and Cloud) (I SMAC 2019) is being organized on 12-14, December, 2019 by SCAD Institute of Technology at Palladam, India I SMAC will provide an outstanding international forum for sharing knowledge and results in all future fields of Internet of Things in Social, Mobile, Analytics and Cloud I SMAC provides quality key experts who provide an opportunity in bringing up innovative ideas Recent updates in the in the field of IoT will be a platform for the upcoming researchers The conference will be Complete, Concise, Clear and Cohesive in terms of research related to IoT Both academic world and industries are invited to present their papers dealing with state of art research and future developments

Advances in computing, communications, and control have bridged the physical components of reality and cyberspace leading to the smart internet of things (IoT). The notion of IoT has extraordinary significance for the future of several industrial domains. Hence, it is expected that the complexity in the design of IoT applications will continue to increase due to the integration of several cyber components with physical and industrial systems. As a result, several smart protocols and algorithms are needed to communicate and exchange data between IoT devices. *Smart Devices, Applications, and Protocols for the IoT* is a collection of innovative research that explores new methods and techniques for achieving reliable and efficient communication in recent applications including machine learning, network optimization, adaptive methods, and smart algorithms and protocols. While highlighting topics including artificial intelligence, sensor networks, and mobile network architectures, this book is ideally designed for IT specialists and consultants,

software engineers, technology developers, academicians, researchers, and students seeking current research on up-to-date technologies in smart communications, protocols, and algorithms in IoT.

The book is a collection of high-quality peer-reviewed research papers presented at International Conference on Information System Design and Intelligent Applications (INDIA 2017) held at Duy Tan University, Da Nang, Vietnam during 15-17 June 2017. The book covers a wide range of topics of computer science and information technology discipline ranging from image processing, database application, data mining, grid and cloud computing, bioinformatics and many others. The various intelligent tools like swarm intelligence, artificial intelligence, evolutionary algorithms, bio-inspired algorithms have been well applied in different domains for solving various challenging problems.

The bright future of green IoT will change our tomorrow environment to become healthier and green, with very high quality of service that is socially, environmentally, and economically sustainable. This book covers the most recent advances in IoT, it discusses Smart City implementation, and offers both quantitative and qualitative research. It focuses on greening things such as green communication and networking, green design and implementations, green IoT services and applications, energy saving strategies, integrated RFIDs and sensor networks, mobility and network management, the cooperation of homogeneous and heterogeneous networks, smart objects, and green localization. This book with its wide range of related topics in IoT and Smart City, will be useful for graduate students, researchers, academicians, institutions, and professionals that are interested in exploring the areas of IoT and Smart City.

This book highlights cutting-edge research presented at the third installment of the International Conference on Smart City Applications (SCA2018), held in Tétouan, Morocco on October 10–11, 2018. It presents original research results, new ideas, and practical lessons learned that touch on all aspects of smart city applications. The respective papers share new and highly original results by leading experts on IoT, Big Data, and Cloud technologies, and address a broad range of key challenges in smart cities, including Smart Education and Intelligent Learning Systems, Smart Healthcare, Smart Building and Home Automation, Smart Environment and Smart Agriculture, Smart Economy and Digital Business, and Information Technologies and Computer Science, among others. In addition, various novel proposals regarding smart cities are discussed. Gathering peer-reviewed chapters written by prominent researchers from around the globe, the book offers an invaluable instructional and research tool for courses on computer and urban sciences; students and practitioners in computer science, information science, technology studies and urban management studies will find it particularly useful. Further, the book is an excellent reference guide for professionals and researchers working in mobility, education, governance, energy, the environment and computer sciences.

Advanced Video-Based Surveillance Systems presents second generation surveillance systems that automatically process large sets of signals for performance monitoring tasks. Included is coverage of different architecture designs, customization of surveillance architecture for end-users, advances in the processing of imaging sequences, security systems, sensors, and remote monitoring projects. Examples are provided of surveillance applications in highway traffic control, subway stations, wireless communications, and other areas. This work will be of interest to researchers in image processing, computer vision, digital signal processing, and telecommunications.

The Department of Electronics and Communication Engineering of KIET Group of Institutions, Delhi-NCR organized the 4th International Conference ICCE-2020 during November 28-29, 2020. Information compiled in this book is based on the 114 research papers of excellent quality covering different domains of Electronics and Communication Engineering, Computer Science Engineering, Information Technology, Electrical Engineering, Electronics and Instrumentation Engineering. The subject areas treated in the book are: Satellite, Radar and Microwave Techniques, Secure, Smart, and Reliable Networks, Next Generation Networks, Devices & Circuits, Signal & Image Processing, New Emerging Technologies, having the central focus on Recent Trends in Communication & Electronics (ICCE-2020). In addition, a few themes based on Special Sessions have also been conducted in ICCE-2020. The objective of the book resulting from the 4th International Conference on Recent Trends in Communication & Electronics (ICCE-2020) is to provide a resource for the study and research work for an interested audience comprising of researchers, students, audience, and practitioners in the areas of Communications & Computing Systems.

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