Mq135 Semiconductor Sensor For Air Quality Control

The book includes insights that reflect the advances in the field of Internet of Things from upcoming researchers and leading academicians across the globe. It contains the high-quality peer-reviewed papers of 'International Conference on Internet of Things for Technological Development (IoT4TD 2017)', held at Kadi Sarva Vishvavidyalaya, Gandhinagar, Gujarat, India during April 1-2, 2017. The book covers variety of topics such as Internet of things, Intelligent Image Processing, Networks and Mobile Communications, Big Data and Cloud. The book is helpful for the perspective readers' from computer industry and academia to derive the advances of next generation communication and computational technology and shape them into real life applications. Semiconductor Gas Sensors, Second Edition, summarizes recent research on basic principles, new materials and emerging technologies in this essential field. Chapters cover the foundation of

the underlying principles and sensing mechanisms of gas sensors, include expanded content on gas sensing characteristics, such as response, sensitivity and cross-sensitivity, present an overview of the nanomaterials utilized for gas sensing, and review the latest applications for semiconductor gas sensors, including environmental monitoring, indoor monitoring, medical applications, CMOS integration and chemical warfare agents. This second edition has been completely updated, thus ensuring it reflects current literature and the latest materials systems and applications. Includes an overview of key applications, with new chapters on indoor monitoring and medical applications Reviews developments in gas sensors and sensing methods, including an expanded section on gas sensor theory Discusses the use of nanomaterials in gas sensing, with new chapters on single-layer graphene sensors, graphene oxide sensors, printed sensors, and much more This book is a collection of research papers and articles presented at the

3rd International Conference on Communications and Cyber-Physical Engineering (ICCCE 2O2O), held on 1-2 February 2O2O at CMR Engineering College, Hyderabad, Telangana, India. Discussing the latest developments in voice and data communication engineering, cyber-physical systems, network science, communication software, image and multimedia processing research and applications, as well as communication technologies and other related technologies, it includes contributions from both academia and industry. This book is a valuable resource for scientists, research scholars and PG students working to formulate their research ideas and find the future directions in these areas. Further, it may serve as a reference work to understand the latest engineering and technologies used by practicing engineers in the field of communication engineering.

The six volume set LNCS 1O634, LNCS 1O635, LNCS 1O636, LNCS 1O637, LNCS 1O638, and LNCS 1O639 constitues the proceedings of the 24rd International Conference on Neural Information

Processing, ICONIP 2017, held in Guangzhou, China, in November 2017. The 563 full papers presented were carefully reviewed and selected from 856 submissions. The 6 volumes are organized in topical sections on Machine Learning, Reinforcement Learning, Big Data Analysis, Deep Learning, Brain-Computer Interface, Computational Finance, Computer Vision, Neurodynamics, Sensory Perception and Decision Making, Computational Intelligence, Neural Data Analysis, Biomedical Engineering, Emotion and Bayesian Networks, Data Mining, Time-Series Analysis, Social Networks, Bioinformatics, Information Security and Social Cognition, Robotics and Control, Pattern Recognition, Neuromorphic Hardware and Speech Processing.

This book gathers selected research papers presented at the AICTE-sponsored International Conference on IoT Inclusive Life (ICIIL 2019), which was organized by the Department of Computer Science and Engineering, National Institute of Technical Teachers Training and Research, Chandigarh,

India, on December 19–20, 2019. In contributions by active researchers, the book presents innovative findings and important developments in IoT-related studies, making it a valuable resource for researchers, engineers, and industrial professionals around the globe.
Praise for CMOS: Circuit Design, Layout, and SimulationRevised Second Edition from the Technical Reviewers "A refreshing industrial flavor. Design concepts are presented as they are needed for 'just-in-time' learning. Simulating and designing circuits using SPICE is emphasized with literally hundreds of examples. Very few textbooks contain as much detail as this one. Highly recommended!" --Paul M. Furth, New Mexico State University "This book builds a solid knowledge of CMOS circuit design from the ground up. With coverage of process integration, layout, analog and digital models, noise mechanisms, memory circuits, references, amplifiers, PLLs/DLLs, dynamic circuits, and data converters, the text is an excellent reference for both experienced and novice designers

alike." --Tyler J. Gomm, Design Engineer, Micron Technology, Inc. "The Second Edition builds upon the success of the first with new chapters that cover additional material such as oversampled converters and non-volatile memories. This is becoming the de facto standard textbook to have on every analog and mixed-signal designer's bookshelf." --Joe Walsh, Design Engineer, AMI Semiconductor CMOS circuits from design to implementation CMOS: Circuit Design, Layout, and Simulation, Revised Second Edition covers the practical design of both analog and digital integrated circuits, offering a vital, contemporary view of a wide range of analog/digital circuit blocks, the BSIM model, data converter architectures, and much more. This edition takes a two-path approach to the topics: design techniques are developed for both long- and short-channel CMOS technologies and then compared. The results are multidimensional explanations that allow readers to gain deep insight into the design process. Features include: Updated materials to reflect CMOS

technology's movement into nanometer sizes Discussions on phase- and delay-locked loops, mixed-signal circuits, data converters, and circuit noise More than 1,000 figures, 200 examples, and over 500 end-of-chapter problems In-depth coverage of both analog and digital circuit-level design techniques Real-world process parameters and design rules The book's Web site, CMOSedu.com, provides: solutions to the book's problems; additional homework problems without solutions; SPICE simulation examples using HSPICE, LTspice, and WinSpice; layout tools and examples for actually fabricating a chip; and videos to aid learning This book covers the fundamentals of sensor technologies as well as the recent research for the development of environmental, chemical and medical sensor technologies. Chapters include current research on microflow cytometry, microfluidic devices, colorimetric sensors, and the development of low-cost optical densitometric sensors and paper based analytical devices for environmental and biomedical applications. Special

focus has been given to nanotechnology and nanostructures- their fabrication, uses and utility in different fields of research such as for the design of tools for medical diagnostics, therapeutics, as well as for detection and estimation of pollutant levels in water and air quality monitoring. This book is intended as a resource for researchers working in the field of sensor development across the world. The book proposes new technologies and discusses innovative solutions to various problems in the field of communication, circuits, and systems, as reflected in high-quality papers presented at International Conference on Communication, Circuits, and Systems (IC3S 2O2O) held at KIIT, Bhubaneswar, India from 16-18 October 2O2O. It brings together new works from academicians, scientists, industry professionals, scholars, and students together to exchange research outcomes and open up new horizons in the areas of signal processing, communications, and devices.

Environmental, Chemical and Medical Sensors

This book discusses various machine learning & cognitive science approaches, presenting high-throughput research by experts in this area. Bringing together machine learning, cognitive science and other aspects of artificial intelligence to help provide a roadmap for future research on intelligent systems, the book is a valuable reference resource for students, researchers and industry practitioners wanting to keep abreast of recent developments in this dynamic, exciting and profitable research field. It is intended for postgraduate

students, researchers, scholars and developers who are interested in machine learning and cognitive research, and is also suitable for senior undergraduate courses in related topics. Further, it is useful for practitioners dealing with advanced data processing, applied mathematicians, developers of software for agent-oriented systems and developers of embedded and real-time systems.
An overview of the principles & current technology of the main sensor types used for flammable gas detection, oxygen monitoring in combustion & car-exhaust control. Also includes toxic gas monitoring. A companion volume to Techniques & Mechanisms in Gas Sensing.
The International Conference on Communication and Computing Systems (ICCCS 2018) provides a high-level international forum for researchers and recent advances in the field of electronic devices, computing, big data analytics, cyber security, quantum computing, biocomputing, telecommunication, etc. The aim of the conference was to bridge the gap between the technological advancements in the industry and the academic research.
We are delighted to introduce the proceeding of the first edition of the International Conference on Science and Technology (ICoST) that was held in Claro Hotel, May 2-3, 2019. It was organized by Faculty of Science and Technology, Universitas Islam Negeri Alauddin Makassar in partnership with Forum Dekan Fakultas Sains dan Teknologi PTKIN. The theme of the ICoST is "Roles and Challenges of Science and Technology in Guaranteeing Halal Products in the Industrial Revolution 4.0". The Indonesian government has begun to respond this industrial change by launching the roadmap of 'Making Indonesia 4.0' as a strategy to ease

Indonesia's steps to become one of the new powers in Asia in April 2018. This roadmap provides a clear direction for the movement of the national industry in the future, including a focus on developing priority sectors that will become Indonesia's strength towards Industry 4.0. The proceeding of ICoST contains the scientific research, written by the academicians, researchers, practitioners, and government elements who have the same thoughts about the effort to develop the society's ability to adapt the advancement of science and technology in the global competition to face the industrial revolution 4.0. We are also very grateful to all keynote speakers and committee members, willing to act as referee for their time and efforts to keep our conference going well. In the future, we expect the ICoST will be able to provide another scientific atmosphere and stimulate more participants to join this conference.

Academic Paper from the year 2019 in the subject Electrotechnology, language: English, abstract: This paper examines and measures the concentration of the metal oxide gas sensors in determining the ripeness using the ethylene gas in fruits. The preliminary performance of the electronic nose has been demonstrated at the ripening stage of the avocado fruit and is compared to the separation machine. Confusion matrix was used to show the accuracy of the system in detecting ripening stage. This study used the fuzzy logic algorithm to classify and achieve an accuracy rate of 82,5 percent of classifying unripe, ripe, and overripe of the fruits. Ethylene is a gaseous plant hormone that naturally occurs in fruits and helps speed up the ripening process. Persea Americana, or Avocado, is a climacteric fruit that does not produce large amounts of ethylene while still attached to the

tree. Therefore, it does not ripen until harvested, and thus, its ripeness cannot be determined by the naked eye. Since fruit quality is judged by consumers primarily from their perception of the acceptability of fruits based on characteristics including visual appeal (lack of blemishes, color, size, and texture), relying on such methods is not applicable for Avocado in general. The use of an electronic nose - an intelligent sensing device that can sense aroma more effectively than the human sense of smell - would prove to be useful. It also possesses a non-destructive property, therefore resulting into it being selected to be the ideal digital, electronic device for identifying, characterizing, and grading fruits ripeness. The main objective of this study is to measure ethylene and other metal oxide gases present in determining the ripeness stage of persea americana samples through electronic nose using fuzzy based classification algorithms and to verify the accuracy of results by comparing it to data from human expert graders of fruits. This study categorizes the metal oxide gas present in f

This book provides IT professionals, educators, researchers, and students a compendium of knowledge on smart sensors and devices, types of sensors, data analysis and monitoring with the help of smart sensors, decision making, impact of machine learning algorithms, and artificial intelligence-related methodologies for data analysis and understanding of smart applications in networks. Smart sensor networks play an important role in the establishment of network devices which can easily interact with physical world through plethora of variety of sensors for collecting and monitoring the surrounding context and allowing environment information. Apart from military applications, smart sensor

networks are used in many civilian applications nowadays and there is a need to manage high volume of demands in related applications. This book comprises of 9 chapters and presents a valuable insight on the original research and review articles on the latest achievements that contributes to the field of smart sensor networks and their usage in real-life applications like smart city, smart home, e-healthcare, smart social sensing networks, etc. Chapters illustrate technological advances and trends, examine research opportunities, highlight best practices and standards, and discuss applications and adoption. Some chapters also provide holistic and multiple perspectives while examining the impact of smart sensor networks and the role of data analytics, data sharing, and its control along with future prospects.
This book includes original, peer-reviewed research from the 3rd International Conference on Emerging Trends in Electrical, Communication and Information Technologies (ICECIT 2018), held at Srinivasa Ramanujan Institute of Technology, Ananthapuramu, Andhra Pradesh, India in December 2018. It covers the latest research trends and developments in the areas of Electrical Engineering, Electronic and Communication Engineering, and Computer Science and Information.
Approaches to Managing Disaster - Assessing Hazards, Emergencies and Disaster Impacts demonstrates the array of information that is critical for improving disaster management. The book reflects major management components of the disaster continuum (the nature of risk, hazard, vulnerability, planning, response and adaptation) in the context of threats that derive from both nature and technology. The chapters include a selection of original

research reports by an array of international scholars focused either on specific locations or on specific events. The chapters are ordered according to the phases of emergencies and disasters. The text reflects the disciplinary diversity found within disaster management and the challenges presented by the co-mingling of science and social science in their collective efforts to promote improvements in the techniques, approaches, and decision-making by emergency-response practitioners and the public. This text demonstrates the growing complexity of disasters and their management, as well as the tests societies face every day.

Latest Trends in AI
Solid State Gas Sensors,
Computational Intelligence and Sustainable Systems
Gas Sensors Based on Conducting Metal Oxides
ICCCE 2020
Online Engineering and Society 4.0
Intelligence and Sustainable Computing
IC3S 2020
Basic Understanding, Technology and Applications
Smart Sensor Networks
Beginning Robotics with Raspberry Pi and Arduino
Proceeding of the International Conference on Computer Networks, Big Data and IoT (ICCBI - 2018)
Intelligent Data Communication Technologies and Internet of Things

Using formal descriptions, graphical illustrations, practical examples, and R software tools, Introduction to Multivariate Statistical Analysis in Chemometrics presents simple yet thorough explanations of the most

important multivariate statistical methods for analyzing chemical data. It includes discussions of various statistical methods, such as principal component analysis, regression analysis, classification methods, and clustering. Written by a chemometrician and a statistician, the book reflects the practical approach of chemometrics and the more formally oriented one of statistics. To enable a better understanding of the statistical methods, the authors apply them to real data examples from chemistry. They also examine results of the different methods, comparing traditional approaches with their robust counterparts. In addition, the authors use the freely available R package to implement methods, encouraging readers to go through the examples and adapt the procedures to their own problems. Focusing on the practicality of the methods and the validity of the results, this book offers concise mathematical descriptions of many multivariate methods and employs graphical schemes to visualize key concepts. It effectively imparts a basic understanding of how to apply statistical methods to multivariate scientific data.
This book presents the key technology of electronic noses, and systematically describes how e-noses can be used to automatically analyse odours. Appealing to readers from the fields of artificial intelligence, computer science, electrical engineering, electronics, and instrumentation

science, it addresses three main areas: First, readers will learn how to apply machine learning, pattern recognition and signal processing algorithms to real perception tasks. Second, they will be shown how to make their algorithms match their systems once the algorithms don't work because of the limitation of hardware resources. Third, readers will learn how to make schemes and solutions when the acquired data from their systems is not stable due to the fundamental issues affecting perceptron devices (e.g. sensors). In brief, the book presents and discusses the key technologies and new algorithmic challenges in electronic noses and artificial olfaction. The goal is to promote the industrial application of electronic nose technology in environmental detection, medical diagnosis, food quality control, explosive detection, etc. and to highlight the scientific advances in artificial olfaction and artificial intelligence. The book offers a good reference guide for newcomers to the topic of electronic noses, because it refers to the basic principles and algorithms. At the same time, it clearly presents the key challenges — such as long-term drift, signal uniqueness, and disturbance — and effective and efficient solutions, making it equally valuable for researchers engaged in the science and engineering of sensors, instruments, chemometrics, etc.
CLOUD AND IOT-BASED VEHICULAR AD HOC NETWORKS

This book details the architecture behind smart cars being fitted and connected with vehicular cloud computing, IoT and VANET as part of the intelligent transport system (ITS). As technology continues to weave itself more tightly into everyday life, socioeconomic development has become intricately tied to ever-evolving innovations. An example of this is the technology being developed to address the massive increase in the number of vehicles on the road, which has resulted in more traffic congestion and road accidents. This challenge is being addressed by developing new technologies to optimize traffic management operations. This book describes the state-of-the-art of the recent developments of Internet of Things (IoT) and cloud computing-based concepts that have been introduced to improve Vehicular Ad-Hoc Networks (VANET) with advanced cellular networks such as 5G networks and vehicular cloud concepts. 5G cellular networks provide consistent, faster and more reliable connections within the vehicular mobile nodes. By 2030, 5G networks will deliver the virtual reality content in VANET which will support vehicle navigation with real time communications capabilities, improving road safety and enhanced passenger comfort. In particular, the reader will learn: A range of new concepts in VANETs, integration with cloud computing and IoT, emerging wireless networking and computing models New VANET architecture, technology

*gap, business opportunities, future
applications, worldwide applicability,
challenges and drawbacks Details of the
significance of 5G Networks in VANET,
vehicular cloud computing, edge (fog)
computing based on VANET. Audience The book
will be widely used by researchers,
automotive industry engineers, technology
developers, system architects, IT
specialists, policymakers and students.
This book constitutes the refereed
proceedings of the 15th European Conference
on Ambient Intelligence, AmI 2019, held in
Rome, Italy, in November 2019. The 20 full
papers presented together with 10 short
papers were carefully reviewed and selected
from 50 submissions. The papers cover topics
such as embedded devices that can merge
unobtrusively and in natural ways using
information and intelligence hidden in the
network connecting these devices (e.g., the
Internet of Things). The main topic of AmI
2019 was "Data-driven Ambient Intelligence,"
which follows the vision of Calm Technology,
where technology is useful but does not
demand our full attention or interfere with
our usual behavior and activities.
Gas Sensors Based on Conducting Metal Oxides:
Basic Understanding, Technology and
Applications focuses on two distinct types of
gas sensors based on conducting metal oxides.
Ion conduction, applied in so-called solid-
state electrolytic sensors for one, and
electronic conduction used in*

semiconductivity gas sensors for the other. The well-known λ—probe, a key component to optimize combustion in car engines, is an example of the former type, and the in-cabin car air-quality control SnO2 and WO2 sensor array stands for the semiconductivity type. Chapters cover basic aspects of functioning principles and describe the technologies and challenges of present and future sensors. Provides reader background and context on sensors, principles, fabrication and applications Includes chapters on specific technological applications, such as exhaust sensors, environmental sensors, explosive gases alarms and more Presents a structured presentation that allows for quick reference of vital information
This book constitutes the refereed proceedings of the First International Conference on Advanced Informatics for Computing Research , ICAICR 2017, held in Jalandhar, India, in March 2017. The 32 revised full papers presented were carefully reviewed and selected from 312 submissions. The papers are organized in topical sections on computing methodologies, information systems, security and privacy, network services.
Electronic Noses and Tongues in Food Science describes the electronic products of advanced chemical and physical sciences combined with intuitive integration of microprocessors, advanced bioinformatics and statistics. These include, for example, voltammetric, bio-

electronic, piezoelectric platforms made from a variety of components including, nanoparticles, enzyme biosensors, heavy metals, graphite-epoxy composites, metal oxide semiconductors, microelectrodes, microfluidic channels, pre-manufactured gas sensors, redox enzymes and others and is an ideal resource for understanding and utilizing their power in Food Science settings. Devices used to analyse one particular food item can theoretically be adapted for other food items or components. This does not just mean the re-deploying the physical platforms but also the mode of bioinformatic and statistical analysis. This includes artificial neural networks (ANN), linear discriminant analysis (LDA), partial least squares (PLS), principal component analysis (PCA) etc. In other words, there is cross transference of chemistry, physics, concepts, techniques, findings and approaches from one food to another. Electronic noses and tongues are two of these devices but are advancing in application and importance. This book provides examples of the use of electronic noses and tongues to characterise components that contribute to sensory or compositional profiles, from ripening to harvesting and from storage of raw materials to packaging and consumption. These devises are suitable for high-throughput analysis, quality control or to determine the nature and extent of spoilage and adulteration, and have also been used to ascertain the

geographical origins of food and mixtures. Presents latest developments in the application of electronic nose and tongue technologies to a variety of food-specific needs Includes both electronic nose, electronic tongue and combined technology insights Each chapter has sections on: The physical and chemical platforms; Analysis of specific foods; Applications to other foods and areas of food science
This book presents selected papers from the 3rd International Conference on Micro-Electronics and Telecommunication Engineering, held at SRM Institute of Science and Technology, Ghaziabad, India, on 30-31 August 2019. It covers a wide variety of topics in micro-electronics and telecommunication engineering, including micro-electronic engineering, computational remote sensing, computer science and intelligent systems, signal and image processing, and information and communication technology.
Sensors, Methods, Applications
Biotechnology for Odor and Air Pollution Control
Principles, Operation and Developments
Compendium of Biomedical Instrumentation, 3 Volume Set
Advanced Informatics for Computing Research
Proceedings of the 2nd International Conference on Communication and Computing Systems (ICCCS 2018), December 1-2, 2018, Gurgaon, India

"Electronic noses" are instruments which mimic the sense of smell. Consisting of olfactory sensors and a suitable signal processing unit, they are able to detect and distinguish odors precisely and at low cost. This makes them very useful for a remarkable variety of applications in the food and pharmaceutical industry, in environmental control or clinical diagnostics and more. The scope covers biological and technical fundamentals and up-to-date research. Contributions by renowned international scientists as well as application-oriented news from successful "e-nose" manufacturers give a well-rounded account of the topic, and this coverage from R&D to applications makes this book a must-have read for e-nose researchers, designers and users alike.
This book presents the general objective of the REV2021 conference which is to contribute and discuss fundamentals, applications, and experiences in the field of Online and Remote Engineering, Virtual Instrumentation, and other related new technologies like Cross Reality, Data Science & Big Data, Internet of Things & Industrial Internet of Things, Industry 4.0, Cyber Security, and M2M & Smart Objects. Nowadays, online technologies are the core of most fields of engineering and the whole society and are inseparably

connected, for example, with Internet of Things, Industry 4.0 & Industrial Internet of Things, Cloud Technologies, Data Science, Cross & Mixed Reality, Remote Working Environments, Online & Biomedical Engineering, to name only a few. Since the first REV conference in 2004, we tried to focus on the upcoming use of the Internet for engineering tasks and the opportunities as well as challenges around it. In a globally connected world, the interest in online collaboration, teleworking, remote services, and other digital working environments is rapidly increasing. Another objective of the conference is to discuss guidelines and new concepts for engineering education in higher and vocational education institutions, including emerging technologies in learning, MOOCs & MOOLs, and Open Resources. REV2021 on "Online Engineering and Society 4.0" was the 17th in a series of annual events concerning the area of Remote Engineering and Virtual Instrumentation. It has been organized in cooperation with the International Engineering and Technology Institute (IETI) as an online event from February 24 to 26, 2021.

Here is the first book on biotechnological processes for controlling odor and air pollution emanating from industrial and municipal airstreams. Authors from academia and industry describe biotechnological methods ranging from those in laboratory stages to pilot evaluation to full-scale process implementation. In addition to the basic microbiology and engineering, the design, modeling, and control of bioreactors are discussed in detail.

This book includes the original, peer-reviewed research from the 2nd International Conference on Emerging Trends in Electrical, Communication and Information Technologies

(ICECIT 2015), held in December, 2015 at Srinivasa Ramanujan Institute of Technology, Ananthapuramu, Andhra Pradesh, India. It covers the latest research trends or developments in areas of Electrical Engineering, Electronic and Communication Engineering, and Computer Science and Information.
This book features research related to computational intelligence and energy and thermal aware management of computing resources. The authors publish original and timely research in current areas of power, energy, temperature, and environmental engineering as and advances in computational intelligence that are benefiting the fields. Topics include signal processing architectures, algorithms, and applications; biomedical informatics and computation; artificial intelligence and machine learning; green technologies in information; and more. The book includes contributions from a wide range of researchers, academicians, and industry professionals. The book is made up both of extended papers presented at the International Conference on Intelligent Computing and Sustainable System (ICICSS 2018), September 20-21, 2018, and other accepted papers on R&D and original research work related to the practice and theory of technologies to enable and support Intelligent Computing applications.
This book constitutes the refereed proceedings of the 12th Colombian Conference on Computing, CCC 2017, held in Cali, Colombia, in September 2017. The 56 revised full papers presented were carefully reviewed and selected from 186 submissions. The papers are organized in topical sections on information and knowledge management, software engineering and IT architectures, educational informatics, intelligent systems and robotics, human-computer interaction,

distributed systems and large-scale architectures, image processing, computer vision and multimedia, security of the information, formal methods, computational logic and theory of computation.

There were two reasons that induced me to plan and to organize this book, the first was the lack of a text entirely devoted to the subject of gas sensors, notwithstanding some books devoted to the various kind of chemical sensors have recently been published. The second reason was the need of introducing the basic topics of gas detection mechanisms to a growing number of researchers active in research and development laboratories of industries and uni versities. The field of chemical sensors is indeed in fast and consistent growth, as it is proved by the increased number of participants to the congresses that were recently held on this subject, namely the Third Meeting on Chemical Sensors (September 24 - 26, 1990, Cleveland), Transducers' 91 (June 24 - 27, 1991, S. Francisco) and EUROSENSORS V (September 30 - October 3, 1991, Rome). Therefore, this book is mainly intended as a reference text for researchers with a MS degree in physics, chemistry and electrical engineering; it reports the last progresses in the R. & D. and in the technology of gas sensors. I choose to deal specifically with the topic of gas sensors because these devices show a very large number of applications in the domestic and industrial field and they are characterized by a great effort of research and development. The field of medical instrumentation is inter-disciplinary, having interest groups both in medical and engineering professions. The number of professionals associated directly with the medical instrumentation field is increasing rapidly due to intensive penetration of medical instruments in the

health care sector. In addition, the necessity and desire to know about how instruments work is increasingly apparent. Most dictionaries/encyclopedias do not illustrate properly the details of the bio-medical instruments which can add to the knowledge base of the person on those instruments. Often, the technical terms are not covered in the dictionaries. Unless there is a seamless integration of the physiological bases and engineering principles underlying the working of a wide variety of medical instruments in a publication, the curiosity of the reader will not be satisfied. The purpose of this book is to provide an essential reference which can be used both by the engineering as well as medical communities to understand the technology and applications of a wide range of medical instruments. The book is so designed that each medical instrument/ technology will be assigned one or two pages, and approximately 450 medical instruments are referenced in this edition.

Assessing Hazards, Emergencies and Disaster Impacts Using Python and OpenCV

This book addresses major challenges faced by farmers and the technological solutions based on Internet of Things (IoT). A major challenge in agriculture is cultivating and supplying high-quality produce at the best. Currently, around 50% of global farm produce never reaches the end consumer due to wastage and suboptimal prices. The book presents solutions that reduce the transport costs, improve the predictability of prices based on data analytics and the current market conditions, and reduce the number of middle steps and agents between the farmer and the end consumer. It discusses the design of an IoT-based monitoring system to analyze crop environments and a method to improve the efficiency of decision-making by analyzing harvest statistics. Further, it explores climate-smart methods, known as smart agriculture, that have been adopted by a number of Indian farmers. This book highlights recent research on Soft Computing, Pattern Recognition, Information Assurance and Security. It presents 38 selected papers from the 10th International Conference on Soft Computing and Pattern Recognition (SoCPaR 2018) and the 14th International Conference on Information Assurance and Security (IAS 2018) held at Instituto Superior de Engenharia do Porto (ISEP), Portugal during December 13–15, 2018. SoCPaR – IAS 2018 is a premier conference and brings together researchers, engineers and practitioners whose work involves soft computing and information assurance and their applications in industry and the real world.

Including contributions by authors from over 25 countries, the book offers a valuable reference guide for all researchers, students and practitioners in the fields of Computer Science and Engineering.
Learn how to use a Raspberry Pi in conjunction with an Arduino to build a basic robot with advanced capabilities. Getting started in robotics does not have to be difficult. This book is an insightful and rewarding introduction to robotics and a catalyst for further directed study. You'll be led step by step through the process of building a robot that uses the power of a Linux based computer paired with the simplicity of Arduino. You'll learn why the Raspberry Pi is a great choice for a robotics platform; its strengths as well as its shortcomings; how to overcome these limitations by implementing an Arduino; and the basics of the Python programming language as well as some of the more powerful features. With the Raspberry Pi you can give your project the power of a Linux computer, while Arduino makes interacting with sensors and motors very easy. These two boards are complimentary in their functions; where one falters the other performs admirably. The book also includes references to other great works to help further your growth in the exciting, and now accessible, field of smart robotics. As a bonus, the final chapter of the book demonstrates the real power of the Raspberry Pi by implementing a basic vision system. Using OpenCV and a standard USB web cam, you will build a robot that can chase a ball. What You'll Learn Install Raspbian, the operating system that drives the Raspberry Pi Drive motors through an I2C motor controller Read data through sensors attached to an

Arduino Who This Book Is For Hobbyists and students looking for a rapid start in robotics. It assumes no technical background. Readers are guided to pursue the areas that interest them in more detail as they learn.

This book presents the proceedings of the International Conference on Computer Networks, Big Data and IoT (ICCBI-2018), held on December 19–20, 2018 in Madurai, India. In recent years, advances in information and communication technologies [ICT] have collectively aimed to streamline the evolution of internet applications. In this context, increasing the ubiquity of emerging internet applications with an enhanced capability to communicate in a distributed environment has become a major need for existing networking models and applications. To achieve this, Internet of Things [IoT] models have been developed to facilitate a smart interconnection and information exchange among modern objects – which plays an essential role in every aspect of our lives. Due to their pervasive nature, computer networks and IoT can easily connect and engage effectively with their network users. This vast network continuously generates data from heterogeneous devices, creating a need to utilize big data, which provides new and unprecedented opportunities to process these huge volumes of data. This International Conference on Computer Networks, Big Data, and Internet of Things [ICCBI] brings together state-of-the-art research work, which briefly describes advanced IoT applications in the era of big data. As such, it offers valuable insights for researchers and scientists involved in developing next-generation, big-data-driven IoT applications to

address the real-world challenges in building a smartly connected environment.

This book explores various challenging problems and applications areas of wireless sensor networks (WSNs), and identifies the current issues and future research challenges. Discussing the latest developments and advances, it covers all aspects of in WSNs, from architecture to protocols design, and from algorithm development to synchronization issues. As such the book is an essential reference resource for undergraduate and postgraduate students as well as scholars and academics working in the field.

This book provides a comprehensive overview of the state of the art in the field of thermal infrared remote sensing. Temperature is one of the most important physical environmental variables monitored by earth observing remote sensing systems. Temperature ranges define the boundaries of habitats on our planet. Thermal hazards endanger our resources and well-being. In this book renowned international experts have contributed chapters on currently available thermal sensors as well as innovative plans for future missions. Further chapters discuss the underlying physics and image processing techniques for analyzing thermal data. Ground-breaking chapters on applications present a wide variety of case studies leading to a deepened understanding of land and sea surface temperature dynamics, urban heat island effects, forest fires, volcanic eruption precursors, underground coal fires, geothermal systems, soil moisture variability, and temperature-based mineral discrimination. 'Thermal Infrared Remote Sensing: Sensors, Methods,

Applications' is unique because of the large field it spans, the potentials it reveals, and the detail it provides. This book is an indispensable volume for scientists, lecturers, and decision makers interested in thermal infrared technology, methods, and applications.

Emerging Trends in Electrical, Communications and Information Technologies

Proceedings of the Tenth International Conference on Soft Computing and Pattern Recognition (SoCPaR 2018)

Proceedings of Internet of Things for Technological Development, IoT4TD 2017

ICOST 2019

Introduction to Multivariate Statistical Analysis in Chemometrics

Proceedings of International Conference on Communication, Circuits, and Systems

Proceedings of ICECIT-2015

Electronic Nose: Algorithmic Challenges

Electronic Nose Technology

24th International Conference, ICONIP 2017, Guangzhou, China, November 14–18, 2017, Proceedings, Part V

Micro-Electronics and Telecommunication Engineering

Proceedings of the 3rd International Conference on Communications and Cyber Physical Engineering

First International Conference, ICAICR 2017, Jalandhar, India, March 17–18, 2017, Revised Selected Papers