Microcontroller Based Wireless Heart Rate Telemonitor For

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IoT Sensor-Based Activity Recognition Springer
In traditional educational settings, teachers often need help engaging students, adapting to diverse learning styles, and keeping pace with technological advancements, which can lead to disengagement, limited learning outcomes, and a lack of preparation for the demands of the modern world. Navigating Innovative Technologies and Intelligent Systems in Modern Education offers a transformative solution to these challenges. By exploring innovative strategies such as flipped learning, gamification, and personalized instruction, this book equips educators with the tools to create dynamic, student-centered learning environments. It emphasizes the importance of leveraging digital tools and resources to enhance teaching, assessment, and feedback, ensuring educators stay at the forefront of modern education. By implementing the strategies outlined in this book, educators can create inclusive, interactive classrooms that inspire, motivate, and empower students to reach their full potential.
Fundamentals of Electrocardiografia (ECG) With Arduino Uno Springer Nature
The International Conference on Signals, Systems and Automation (ICSSA 2011) aims to spread awareness in the research and academic community regarding cutting-edge technological advancements revolutionizing the world. The main emphasis of this conference is on dissemination of information, experience, and research results on the current topics of interest through in-depth discussions and participation of researchers from all over the world. The objective is to provide a platform to scientists, research scholars, and industrialists for interacting and exchanging ideas in a number of research areas. This will facilitate communication among researchers in different fields of Electronics and Communication Engineering. The International Conference on Intelligent System and Data Processing (ICISD 2011) is organized to address various issues that will foster the creation of intelligent solutions in the future. The primary goal of the conference is to bring together worldwide leading researchers, developers, practitioners, and educators interested in advancing the state of the art in computational intelligence and data processing for exchanging knowledge that encompasses a broad range of disciplines among various distinct communities. Another goal is to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in India and abroad.
Biologically Inspired Techniques in Many Criteria Decision Making Springer Nature
This book gathers the proceedings of the Third International Conference on Computational Advancement in Communication Circuits and Systems (ICCACCS 2020), organized virtually by Narula Institute of Technology, Kolkata, India. The book presents peer-reviewed papers that highlight new theoretical and experimental findings in the fields of electronics and communication engineering, including interdisciplinary areas like advanced computing, pattern recognition and analysis, and signal and image processing. The respective papers cover a broad range of principles, techniques, and applications in microwave devices, communication and networking, signal and image processing, computations and mathematics, and control.
International Conference on Communication, Computing and Electronics Systems Springer Nature
This book provides both the developers and the users with an awareness of the challenges and opportunities of advancements in healthcare paradigm with the application and availability of advanced hardware, software, tools, technique or algorithm development stemming the Internet of Things. The book helps readers to bridge the gap in their three understanding of three major domains and their interconnections: Hardware tested and software APP development for data collection, intelligent protocols for analysis and knowledge extraction. Medical expertise to interpret extracted knowledge towards disease prediction or diagnosis and support. Security experts to ensure data correctness for precise advice. The book provides state-of-the-art overviews by active researchers, technically elaborating healthcare architectures/frameworks, protocols, algorithms, methodologies followed by experimental results and evaluation. Future direction and scope will be precisely documented for interested readers.
The Future of Artificial Intelligence and Robotics Springer Nature
This book provides a collection of comprehensive research articles on data analytics and applications of wearable devices in healthcare. This Special Issue presents 28 research studies from 137 authors representing 37 institutions from 19 countries. To facilitate the understanding of the research articles, we have organized the book to show various aspects covered in this field, such as eHealth, technology-integrated research, prediction models, rehabilitation studies, prototype systems, community health studies, ergonomics design systems, technology acceptance model evaluation studies, telemonitoring systems, warning systems, application of sensors in sports studies, clinical systems, feasibility studies, geographical location based systems, tracking systems, observational studies, risk assessment studies, human activity recognition systems, impact measurement systems, and a systematic review. We would like to take this opportunity to invite high quality research articles for our next Special Issue entitled “Digital Health and Smart Sensors for Better Management of Cancer and Chronic Diseases” as a part of Sensors journal.
Proceedings of the Multi-Conference 2011 IGI Global
The concept of this book is ECG signals- Electrocardiography is connected with Arduino UNO- microcontroller. This book demonstrates how our heart waves can be connected to a microcontroller. What kind of obstruction or change occurs in the wave according to the different changes of the atmosphere can be known from this book. The ECG Signal plays an important role in the diagnosis of heart diseases and disorders. An ECG is a significant physiological signal for diagnosis of cardiac disease. Modern usage of monitoring devices with electrocardiogram is increasing. Huge storage space and large quantities of data are that, and ECG compression is required for efficient storage and it has been extracted from a medical database. Aninteresting research line focuses on transforming the original one-dimensional waveforms of the ECG into two-dimensional information, followed by a processing stage using image processing tools. Many cardiac abnormalities can be observed with the aid of an ECG interpretation including inadequate blood flow, heart muscle death due to coronary thrombosis and heart muscle enlargement. Arduino can be used to for the development of interactive objects, taking inputs to control outputs. It is connected to the Arduino hardware to communicate and upload sketches. Arduino can read information from input devices such as Trimmer(potentiometer), Antenna, Sensors, e.t.c, and can also send data to the output devices such as Speakers, LED, DC motor, LCD Screen, e.t.c. User communities are groups of people using a given product, the Arduino in this case. So, the design has been enhanced, and it helps drive the Arduino board for direction to future.
IoT-Based Data Analytics for the Healthcare Industry LAP Lambert Academic Publishing
A guide to intelligent decision and pervasive computing paradigms for healthcare analytics systems with a focus on the use of bio-sensors Intelligent Pervasive Computing Systems for Smarter Healthcare describes the innovations in healthcare made possible by computing through bio-sensors. The pervasive computing paradigm offers tremendous advantages in diversified areas of healthcare research and technology. The authors—noted experts in the field—provide the state-of-the-art intelligence paradigm that enables optimization of medical assessment for a healthy, authentic, safer, and more productive environment. Today’s computers are integrated through bio-sensors and generate a huge amount of information that can enhance our

ability to process enormous bio-informatics data that can be transformed into meaningful medical knowledge and help with diagnosis, monitoring and tracking health issues, clinical decision making, early detection of infectious disease prevention, and rapid analysis of health hazards. The text examines a wealth of topics such as the design and development of pervasive healthcare technologies, data modeling and information management, wearable biosensors and their systems, and more. This important resource: Explores the recent trends and developments in computing through bio-sensors and its technological applications Contains a review of biosensors and sensor systems and networks for mobile health monitoring Offers an opportunity for readers to examine the concepts and future outlook of intelligence on healthcare systems incorporating biosensor applications Includes information on privacy and security issues on wireless body area network for remote healthcare monitoring Written for scientists and application developers and professionals in related fields, Intelligent Pervasive Computing Systems for Smarter Healthcare is a guide to the most recent developments in intelligent computer systems that are applicable to the healthcare industry.

Human Friendly Mechatronics Springer Science & Business Media

Provides a comprehensive overview of the basic concepts behind the application and designs of medical instrumentation This premiere reference on medical instrumentation describes the principles, applications, and design of the medical instrumentation most commonly used in hospitals. It places great emphasis on design principles so that scientists with limited background in electronics can gain enough information to design instruments that may not be commercially available. The revised edition includes new material on microcontroller-based medical instrumentation with relevant code, device design with circuit simulations and implementations, dry electrodes for electrocardiography, sleep apnea monitor, Infusion pump system, medical imaging techniques and electrical safety. Each chapter includes new problems and updated reference material that covers the latest medical technologies. Medical Instrumentation: Application and Design, Fifth Edition covers general concepts that are applicable to all instrumentation systems, including the static and dynamic characteristics of a system, the engineering design process, the commercial development and regulatory classifications, and the electrical safety, protection, codes and standards for medical devices. The readers learn about the principles behind various sensor mechanisms, the necessary amplifier and filter designs for analog signal processing, and the digital data acquisition, processing, storage and display using microcontrollers. The measurements of both cardiovascular dynamics and respiratory dynamics are discussed, as is the developing field of biosensors. The book also covers general concepts of clinical laboratory instrumentation, medical imaging, various therapeutic and prosthetic devices, and more. Emphasizes design throughout so scientists and engineers can create medical instruments Updates the coverage of modern sensor signal processing New material added to the chapter on modern microcontroller use Features revised chapters, descriptions, and references throughout Includes many new worked out examples and supports student problem-solving Offers updated, new, and expanded materials on a companion webpage Supplemented with a solutions manual containing complete solutions to all problems Medical Instrumentation: Application and Design, Fifth Edition is an excellent book for a senior to graduate-level course in biomedical engineering and will benefit other health professionals involved with the topic.

Handbook of Research on Healthcare Administration and Management Springer Nature

This book comprises of 74 contributions from the experts covering the following topics. " Information Communication Technologies " Network Technologies " Wireless And Sensor Networks " Soft Computing " Circuits and Systems " Software Engineering " Data Mining " Bioinformatics " Data and Network Security

Electronic Devices, Circuits, and Systems for Biomedical Applications CRC Press

The book titled Advanced Computational and Communication Paradigms: Proceedings of International Conference on ICACCP 2017, Volume 1 presents refereed high-quality papers of the First International Conference on Advanced Computational and Communication Paradigms (ICACCP 2017) organized by the Department of Computer Science and Engineering, Sikkim Manipal Institute of Technology, held from 8– 10 September 2017. ICACCP 2017 covers an advanced computational paradigms and communications technique which provides failsafe and robust solutions to the emerging problems faced by mankind. Technologists, scientists, industry professionals and research scholars from regional, national and international levels are invited to present their original unpublished work in this conference. There were about 550 technical paper submitted. Finally after peer review, 142 high-quality papers have been accepted and registered for oral presentation which held across 09 general sessions and 05 special sessions along with 04 keynote address and 06 invited talks. This volume comprises 65 accepted papers of ICACCP 2017.

Advanced Computational and Communication Paradigms CRC Press

IoT Based Data Analytics for the Healthcare Industry: Techniques and Applications explores recent advances in the analysis of healthcare industry data through IoT data analytics. The book covers the analysis of ubiquitous data generated by the healthcare industry, from a wide range of sources, including patients, doctors, hospitals, and health insurance companies. The book provides AI solutions and support for healthcare industry end-users who need to analyze and manipulate this vast amount of data. These solutions feature deep learning and a wide range of intelligent methods, including simulated annealing, tabu search, genetic algorithm, ant colony optimization, and particle swarm optimization. The book also explores challenges, opportunities, and future research directions, and discusses the data collection and pre-processing stages, challenges and issues in data collection, data handling, and data collection set-up. Healthcare industry data or streaming data generated by ubiquitous sensors cocooned into the IoT requires advanced analytics to transform data into information. With advances in computing power, communications, and techniques for data acquisition, the need for advanced data analytics is in high demand. - Provides state-of-art methods and current trends in data analytics for the healthcare industry - Addresses the top concerns in the healthcare industry using IoT and data analytics, and machine learning and deep learning techniques - Discusses several potential AI techniques developed using IoT for the healthcare industry - Explores challenges, opportunities, and future research directions, and discusses the data collection and pre-processing stages

A Microcontroller Based Multi-channel Heart Rate Measurement System CRC Press

The application of machine learning is growing exponentially into every branch of business and science, including medical science. This book presents the integration of machine learning (ML) and deep learning (DL) algorithms that can be applied in the healthcare sector to reduce the time required by doctors, radiologists, and other medical professionals for analyzing, predicting, and diagnosing the conditions with accurate results. The book offers important key aspects in the development and implementation of ML and DL approaches toward developing prediction tools and models and improving medical diagnosis. The contributors explore the recent trends, innovations, challenges, and solutions, as well as case studies of the applications of ML and DL in intelligent system-based disease diagnosis. The chapters also highlight the basics and the need for applying mathematical aspects with reference to the development of new medical models. Authors also explore ML and DL in relation to artificial intelligence (AI) prediction tools, the discovery of drugs, neuroscience, diagnosis in multiple imaging modalities, and pattern recognition approaches to functional magnetic resonance imaging images. This book is for students and researchers of computer science and engineering, electronics and communication engineering, and information technology; for biomedical engineering researchers, academicians, and educators; and for students and professionals in other areas of the healthcare sector. Presents key aspects in the development and the implementation of ML and DL approaches toward developing prediction tools, models, and improving medical diagnosis Discusses the recent trends, innovations, challenges, solutions, and applications of intelligent system-based disease diagnosis Examines DL theories, models, and tools to enhance health information systems Explores ML and DL in relation to AI prediction tools, discovery of drugs, neuroscience, and diagnosis in multiple imaging modalities Dr. K. Gayathri Devi is a Professor at the Department of Electronics and Communication Engineering, Dr. N.G.P Institute of Technology, Tamil Nadu, India. Dr. Kishore Balasubramanian is an Assistant Professor (Senior Scale) at the Department of EEE at Dr. Mahalingam College of Engineering & Technology, Tamil Nadu, India. Dr. Le Anh Ngoc is a Director of Swinburne Innovation Space and Professor in Swinburne University of Technology (Vietnam).

The 15th International Conference on Biomedical Engineering Academic Press

Nowadays, the number of heart attack patients is increasing day by day. Though it is tough to save heart attack patients, we can increase the statistics of saving the lives of those patients as well as the lives of those whom the heart attack patients are responsible for. The main design of this project is to track heart attack patients suffering a heart attack during driving, send them medical help and stop the vehicle they are driving to ensure that the persons along them are spared from accidents. An eye blinking sensor is used to monitor the eye blinking rate and a spO2 sensor is used to check the pulse rate of the patient. Both are connected to a micro controller. If eye blinking stops, then the signal is sent to the controller to make an alarm through the buffer. If the spO2 sensor perceives a variation in the pulse rate or low oxygen content in the blood, which may result in heart failure, then the controller stops the motor of the vehicle. Then, a Tarang F4 transmitter is used to sent the vehicle number and the mobile phone number of the patient to the nearest medical station within 25 km for medical aid. The pulse rate monitored via LCD .The Tarang F4 receiver acquires the signal and passes through the controller, the number gets displayed on the LCD screen and an alarm is produced through a buzzer as soon the signal is received. Five topics are discussed in this project: detecting the patient BPM and the eye blinking status; transmitting via Tarang F4 in case of abnormalities in the patient; the patient status is displayed and indicated by a buzzer; the hospital unit receives the patient's mobile phone number and car number and the communication between the vehicle and the hospital through Tarang F4.

Computational Science and Engineering Springer Science & Business Media

This volume presents the processing of the 15th ICMBE held from 4th to 7th December 2013, Singapore. Biomedical engineering is applied in most aspects of our healthcare ecosystem. From electronic health records to diagnostic tools to therapeutic, rehabilitative and regenerative treatments, the work of biomedical engineers is evident. Biomedical engineers work at the intersection of engineering, life sciences and healthcare. The engineers would use principles from applied science including mechanical, electrical, chemical and computer engineering together with physical sciences including physics, chemistry and mathematics to apply them to biology and medicine. Applying such concepts to the human body is very much the same concepts that go into building and programming a machine. The goal is to better understand, replace or fix a target system to ultimately improve the quality of healthcare. With this understanding, the conference proceedings offer a single platform for individuals and organizations working in the biomedical engineering related field to gather and network with each other in so doing create the catalyst for future development of biomedical engineering in Asia.

Report of the 12th Meeting of the Technical Advisory Group Elsevier

This book faces the interdisciplinary challenge of formulating performance-assessing design approaches for networked cyber-physical systems (NCPSs). Its novel distributed multilayer cooperative control deals simultaneously with communication-network and control performance required for the network and application layers of an NCPS respectively. Practically, it distributes the computational burden among different devices, which act cooperatively to achieve NCPS goals. The approach can be applied to NCPSs based on both wired and wireless technologies and so is suitable for future network infrastructures in which different protocols and technologies coexist. The book reports realistic results from performance evaluation of the new approach, when applied in different operative scenarios. Readers of this book will benefit by: learning a general, technology-independent methodology for the design and implementation of cooperative distributed algorithms for flow control at the network layer of an NCPS that gives algorithm-parameter-tuning guidelines for assessing the desired quality of service performance; learning a general methodology for the design and implementation of consensus-based algorithms at the application layer that allows monitoring and control of distributed physical systems and gives algorithm-parameter-tuning guidelines for assessing the desired control system performance; understanding the main network simulators needed to validate the effectiveness of the proposed multilayer control approach in different realistic network operation scenarios; and practising with a cooperative multilayer control project that assesses acceptable NCPS performance in networked monitoring and robot systems, autonomous and queuing networks, and other critical human relief applications. Researchers, graduate students and practitioners working in automation, engineering, sensor networks, mobile robotics and computer networks will find this book instructive. It will also be helpful to network administrators and technicians implementing application-layer and network-layer solutions or installing, configuring or troubleshooting network and control system components of NCPSs.

MC68HCll Microcontroller Based Heart Preventricular Contraction Monitor MDPI

Computational Science and Engineering contains peer-reviewed research presented at the International Conference on Computational Science and Engineering (RCC Institute of Information Technology, Kolkata, India, 4-6 October 2016). The contributions cover a wide range of topics: - electronic devices - photonics - electromagnetics - soft computing - artificial intelligence - modern communication systems Focussing on strong theoretical and methodological approaches and applications, Computational Science and Engineering will be of interest to academia and professionals involved or interested in the above mentioned domains.

Data Analytics and Applications of the Wearable Sensors in Healthcare Springer

The Biomed 2011 brought together academicians and practitioners in engineering and medicine in this ever progressing field. This volume presents the proceedings of this international conference which was hold in conjunction with the 8th Asian Pacific Conference on Medical and Biological Engineering (APCMBE 2011) on the 20th to the 23rd of June 2011 at Berjaya Times Square Hotel, Kuala Lumpur. The topics covered in the conference proceedings include: Artificial organs, bioengineering

education, bionanotechnology, biosignal processing, bioinformatics, biomaterials, biomechanics, biomedical imaging, biomedical instrumentation, BioMEMS, clinical engineering, prosthetics.

Recent Developments in Computing and Its Applications Springer Nature

This Conference proceeding presents high-quality peer-reviewed papers from the International Conference on Electronics, Biomedical Engineering, and Health Informatics (ICEBEHI) 2020 held at Surabaya, Indonesia. The contents are broadly divided into three parts: (i) Electronics, (ii) Biomedical Engineering, and (iii) Health Informatics. The major focus is on emerging technologies and their applications in the domain of biomedical engineering. It includes papers based on original theoretical, practical, and experimental simulations, development, applications, measurements, and testing. Featuring the latest advances in the field of biomedical engineering applications, this book serves as a definitive reference resource for researchers, professors, and practitioners interested in exploring advanced techniques in the field of electronics, biomedical engineering, and health informatics. The applications and solutions discussed here provide excellent reference material for future product development.

Multilayer Control of Networked Cyber-Physical Systems John Wiley & Sons

This book includes high impact papers presented at the International Conference on Communication, Computing and Electronics Systems 2019, held at the PPG Institute of Technology, Coimbatore, India, on 15-16 November, 2019. Discussing recent trends in cloud computing, mobile computing, and advancements of electronics systems, the book covers topics such as automation, VLSI, embedded systems, integrated device technology, satellite communication, optical communication, RF communication, microwave engineering, artificial intelligence, deep learning, pattern recognition, Internet of Things, precision models, bioinformatics, and healthcare informatics.

Internet of Things Based Smart Healthcare Springer Nature

This book features selected papers presented at the Fourth International Conference on Nanoelectronics, Circuits and Communication Systems (NCCS 2018). Covering topics such as MEMS and nanoelectronics, wireless communications, optical communications, instrumentation, signal processing, the Internet of Things, image processing, bioengineering, green energy, hybrid vehicles, environmental science, weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers, telemetry systems, embedded systems, and sensor network applications in mines, it offers a valuable resource for young scholars, researchers, and academics alike.