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Flexible Electronics for Electric Vehicles
Fundamentals of Digital Logic and Microcontrollers
Micromechatronics
Proceedings of the Multi-Conference 2011
13th International Conference on Theory and Application of Fuzzy Systems and Soft Computing — ICAFS-2018
Microcontroller-Based Temperature Monitoring and Control
Temperature Control Using PID Controller
Advances in Renewable Energy and Sustainable Environment
PIC Basic Projects
Advances in Communication and Computational Technology
Interfacing PIC Microcontrollers
Proceedings of First International Conference on Smart System, Innovations and Computing
Facilitating Global Collaboration and Knowledge Sharing in Higher Education With Generative AI

Intelligent Systems and Sustainable Computing
Detection of Pathogens in Water Using Micro and Nano-Technology
Computer Science and Engineering
Hardware Implementation Of Intelligent Temperature Control System
Advanced PIC Microcontroller Projects in C
Embedded Digital Control with Microcontrollers

TATE BREWER

Microprocessors & Introduction to Microcontroller EOLSS Publications
This book compiles the refereed papers presented during the 2nd Flexible Electronics for Electric Vehicles (FlexEV - 2021). It presents the diligent work of the research community on flexible electronics applications in different allied fields of engineering - engineering materials to electrical engineering to electronics and communication engineering. The theoretical research concepts are supported with extensive reviews highlighting the trends in the possible and real-life applications of electric vehicles. This book will be useful for research scholars, electric vehicles professionals, driving system designers, and postgraduates from allied domains. This book incorporates economical and efficient electric vehicle driving and the latest innovations in electric vehicle technology with their paradigms and methods that employ knowledge in the research community.
Principles of Automation and Control Newnes
Embedded systems are today, widely deployed in just about every piece of machinery from toasters to spacecraft. Embedded system designers face many challenges. They are asked to produce increasingly complex systems using the latest technologies, but these technologies are changing faster than ever. They are asked to produce better quality designs with a shorter time-to-market. They are asked to implement increasingly complex functionality but more importantly to satisfy numerous other constraints. To achieve the current goals of design, the designer must be aware with such design constraints and more importantly, the factors that have a direct effect on them.One of the challenges facing embedded system designers is the selection of the optimum processor for the application in hand; single-purpose, general-purpose or application specific. Microcontrollers are one member of the family of the application specific processors.The book concentrates on the use of microcontroller as the embedded system?s processor, and how to use it in many embedded system applications. The book covers both the hardware and software aspects needed to design using microcontroller.The book is ideal for undergraduate students and also the engineers that are working in the field of digital system design.Contents• Preface;• Process design metrics;• A systems approach to digital system design;• Introduction to microcontrollers and microprocessors;• Instructions and Instruction sets;• Machine language and assembly language;• System memory; Timers, counters and watchdog timer;• Interfacing to local devices / peripherals;• Analogue data and the analogue I/O subsystem;• Multiprocessor communications;• Serial

Communications and Network-based interfaces.

ARM-Based Microcontroller Multitasking Projects John Wiley & Sons

PIC Projects and Applications Using C details how to program the PIC microcontroller in the C language. The book takes a learn-by-doing approach, with applications covering topics such as inputs, outputs, keypads, alphanumeric displays, analogue-to-digital conversion, radio transmitters and receivers, data EEPROM, interrupts and timing. To aid debugging, the book provides a section detailing the use of the simulator and in-circuit debugger. With this book you will learn: How to program the PIC microcontroller in C Techniques for using the simulator and debuggers to find faults on your code The ins and outs of interfacing circuits, such as radio modules and liquid crystal displays How to use the PIC on-board functions, such as interrupts and timing modules, and make analogue measurements Relevant parts of the language are introduced and explained when required for those new to the subject Core principles are introduced gradually for self-paced learning Explains how and why a software program works, and how to alter and expand the code

Microcontrollers in Practice Springer Nature

This book provides a dual perspective on the Internet of Things and ubiquitous computing, along with their applications in healthcare and smart cities. It also covers other interdisciplinary aspects of the Internet of Things like big data, embedded Systems and wireless Sensor Networks. Detailed coverage of the underlying architecture, framework, and state-of the art methodologies form the core of the book.

PIC Microcontroller Projects in C Newnes

This volume spans a wide range of technical disciplines and technologies, including complex systems, biomedical engineering, electrical engineering, energy, telecommunications, mechanical engineering, civil engineering, and computer science. The papers included in this volume were presented at the International Symposium on Innovative and Interdisciplinary Applications of Advanced Technologies (IAT), held in Neum, Bosnia and Herzegovina on June 26 and 27, 2016. This highly interdisciplinary volume is devoted to various aspects and types of systems. Systems thinking is crucial for successfully building and understanding man-made, natural, and social systems.

ARM-based Microcontroller Projects Using mbed Newnes

Bachelor Thesis from the year 2013 in the subject Computer Science - Programming, Northumbria University, course: BEng. Electrical and Electronic Engineering (Hons.), language: English, abstract: Chamber is used to study atmospheric turbulence effects on FSO signals and this experiment is done inside the laboratory to avoid the interference of sunlight light and also it is hard to create turbulence outside laboratory as outside temperature and pressure will affect the turbulence created inside this chamber. This project is all about controlling all parameters (temperature, pressure, humidity) using sensors, fans, thermistors through embedded circuit. As observed from previous work, high end microPIC (PIC18 series) although it has many functionality and large program memory size, it is hard to control all sensors, fans, thermistor using 1 PIC1866K80, So in this project mid-range PIC (PIC16

series) are used to control sensors, fans and thermistors. In this project, temperature, humidity, pressure sensors are controlled by different microcontrollers and taking their reading to manage the performance of PWM fans and thermistors inside the chamber. These components are very important to configure and monitor the atmospheric condition inside the chamber. This project focuses on the use of PIC16 family microcontrollers to be programmed in C language or in assembly to control all sensors, fans and thermistor and build PCB layout. In this project, Rs-232 or Com port will be used as an interface to control the PIC16 microcontroller instruction and procedure through computer.

Empirical Aspects of Advancements in Science, Engineering and Technologies Springer Nature

The edited volume contains original papers contributed to 1st International Conference on Smart System, Innovations and Computing (SSIC 2017) by researchers from different countries. The contributions focuses on two main areas, i.e. Smart Systems Innovations which includes applications for smart cities, smart grid, social computing and privacy challenges with their theory, specification, design, performance, and system building. And second Computing of Complex Solutions which includes algorithms, security solutions, communication and networking approaches. The volume provides a snapshot of current progress in related areas and a glimpse of future possibilities. This volume is useful for researchers, Ph.D. students, and professionals working in the core areas of smart systems, innovations and computing.

Advances in Computer Science, Intelligent Systems and Environment Newnes

Interfacing PIC Microcontrollers, 2nd Edition is a great introductory text for those starting out in this field and as a source reference for more experienced engineers. Martin Bates has drawn upon 20 years of experience of teaching microprocessor systems to produce a book containing an excellent balance of theory and practice with numerous working examples throughout. It provides comprehensive coverage of basic microcontroller system interfacing using the latest interactive software, Proteus VSM, which allows real-time simulation of microcontroller based designs and supports the development of new applications from initial concept to final testing and deployment. Comprehensive introduction to interfacing 8-bit PIC microcontrollers Designs updated for current software versions MPLAB v8 & Proteus VSM v8 Additional applications in wireless communications, intelligent sensors and more

Security and Trust Issues in Internet of Things Newnes

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.

Controlling the atmospheric turbulence, microPIC programming Universal-Publishers

Updated to reflect the latest advances in the field, the Sixth Edition of Fundamentals of Digital Logic and Microcontrollers further enhances its reputation as the most accessible introduction to the basic principles and tools required in the design of digital systems. Features updates and revision to more than half of the material from the previous edition Offers an all-encompassing focus on the areas of computer design, digital logic, and digital systems, unlike other texts in the marketplace Written with clear and concise explanations of fundamental topics such as number system and Boolean algebra, and simplified examples and tutorials utilizing the PIC18F4321 microcontroller Covers an enhanced version of both combinational and sequential logic design, basics of computer organization, and microcontrollers

Frequency References, Power Management for SoC, and Smart Wireless Interfaces CRC Press

The book is written for an undergraduate course on the 8085 and 8086 microprocessors and 8051 microcontroller. It provides comprehensive coverage of the hardware and software aspects of 8085 and 8086 microprocessors and 8051 microcontroller. The book uses plain and lucid language to explain each topic. A large number of programming examples is the feature of this book. The book provides the logical method of describing the various complicated concepts and stepwise techniques for easy understanding, making the subject more interesting. The book is divided into three parts. The first part focuses on the 8085 microprocessor. It teaches you the 8085 architecture, pin description, bus organization, instruction set, addressing modes, instruction formats, Assembly Language Programming (ALP), instruction timing diagrams, interrupts and interfacing 8085 with support chips, memory and peripheral ICs - 8251, 8253, 8255, 8259 and 8279. It also explains the interfacing of 8085 with data converters - ADC and DAC- and introduces a temperature control system design. The second part focuses on the 8086 microprocessor. It teaches you the 8086 architecture, register organization, memory segmentation, interrupts, addressing modes, operating modes - minimum and maximum modes, interfacing 8086 with support chips, minimum and maximum mode 8086 systems and timings. The third part focuses on the 8051 microcontroller. It teaches you the 8051 architecture, pin description, instruction set,

programming 8051 and interfacing 8051 with external memory. It explains timers/counters, serial port, interrupts of 8051 and their programming. It also describes the interfacing 8051 with keyboards, LCDs and LEDs and explains the control of servomotor, stepper motors and washing machine using 8051.

Proceedings of the Third International Conference on Computational Intelligence and Informatics CRC Press

Microcontroller-Based Temperature Monitoring and Control is an essential and practical guide for all engineers involved in the use of microcontrollers in measurement and control systems. The book provides design principles and application case studies backed up with sufficient control theory and electronics to develop your own systems. It will also prove invaluable for students and experimenters seeking real-world project work involving the use of a microcontroller. Techniques for the application of microcontroller-based control systems are backed up with the basic theory and mathematics used in these designs, and various digital control techniques are discussed with reference to digital sample theory. The first part of the book covers temperature sensors and their use in measurement, and includes the latest non-invasive and digital sensor types. The second part covers sampling procedures, control systems and the application of digital control algorithms using a microcontroller. The final chapter describes a complete microcontroller-based temperature control system, including a full software listing for the programming of the controller. *Provides practical guidance and essential theory making it ideal for engineers facing a design challenge or students devising a project *Includes real-world design guides for implementing a microcontroller-based control systems *Requires only basic mathematical and engineering background as the use of microcontrollers is introduced from first principles

Advanced Technologies, Systems, and Applications Newnes

Chatbots powered by artificial intelligence (AI) have captivated the academic world as tools for human-like interaction across various settings. Within the realm of education, AI-powered chatbots, such as ChatGPT, hold the potential to revolutionize teaching, learning, and research processes. By simulating human conversation through vast data and machine learning algorithms, generative AI has unveiled new opportunities for personalized and adaptive learning experiences. Facilitating Global Collaboration and Knowledge Sharing in Higher Education With Generative AI delves into the promising prospects and challenges of applying generative AI in education while employing a critical interdisciplinary perspective. The book offers comprehensive insights into the transformative effects of generative AI on teaching, learning, and research. However, the application of generative AI in education also brings ethical, pedagogical, and technical challenges to the forefront. Concerns over privacy, data protection, and the impact of automation on human interaction and creativity demand thorough examination and practical solutions. Intended for educators, researchers, and administrators in higher education institutions, as well as policymakers and industry professionals at the intersection of AI and higher education. The book

encompasses a wide range of themes, including the impact of AI-generated content on student engagement and performance in online learning environments, ethical implications of automating education through AI-powered chatbots, personalization of learning experiences for diverse student populations, and the challenges of integrating generative AI into traditional classroom settings.

Automated Temperature Control for Rapid Heating Rates in an Elevated Temperature Environment Springer Science & Business Media

In order to meet the demands of industries and academic research, a cost effective temperature control system was developed to provide accelerated heat up rates between 5--10°C/sec. This apparatus was used to perform tensile tests on a 70XX series aluminum alloy to determine mechanical properties at elevated temperatures. The automated temperature control system is comprised of two propane torches which heat each end of a tensile specimen during elevated temperature testing. Specimen temperatures are controlled by a PID algorithm which regulates stepper motor position and thus propane torch flame intensity. User inputs to the system are provided via a graphical user interface, with overall system control provided by an Arduino microcontroller. Successful testing of the 70XX series aluminum alloy occurred at temperatures of 25°C, 225°C, and 425°C and strain rates of 0.05/sec and 0.5/sec. The results clearly show a direct relationship between increased temperatures and material elongation. Yield and ultimate tensile strength, however, decreased in value as temperature increased. Strain rate had an opposite effect on material properties and elongations as elevated temperatures, causing yield strength and ultimate tensile strengths to increase and elongation to decrease.

Handbook of Research on the Internet of Things Applications in Robotics and Automation LAP Lambert Academic Publishing

Recently Temperature measurement and control is a major requirement in most process industries that is, those industries that handle and convert gases, liquids, and bulk solids into products. Chemical, petroleum, petrochemical, polymer, plastic and larger segments of metallurgical and food processing industries, are examples. Chemical reactions, material separation, distillation, drying, evaporation, absorption, crystallization, Baking, extrusion, and thermal therapies are processes that normally occur at controlled temperatures. Typical temperature control loops employ the popular proportional plus integral plus derivative (PID) control algorithm. However, there are many control loops that use the ON-OFF control algorithm. It is well known that ON-OFF control is a simple, time optimal control strategy whose application is made easier by micro-controllers combined with modern solid-state switching devices such as Thyristors, Diacs, and Triacs

Microcontroller Theory and Applications with the PIC18F Springer Nature

Principles of Automation and Control is a concise textbook that explains the basics of robust automation and control strategies. It demonstrates the essentials for meeting consumer needs and ensuring cost-effective manufacturing processes without compromising product quality. With a focus on Industry 4.0, this book explores the principles and applications of automation in industrial systems,

emphasizing efficiency, profitability, and flexibility. The thirteen chapters cover automated processes, control theory, computer control devices, industrial automation tools, and practical examples of system automation. The text uses a multidisciplinary approach with simple language to cater to the needs of readers at all levels (learners, beginner engineers, and professionals) seeking to expand their knowledge in automation and control theory and practice. Real-world case studies and empirical findings are also highlighted, which show how automated business solutions can enhance performance.

Embedded Controller Hardware Design Elsevier

A thorough revision that provides a clear understanding of the basic principles of microcontrollers using C programming and PIC18F assembly language This book presents the fundamental concepts of assembly language programming and interfacing techniques associated with typical microcontrollers. As part of the second edition's revisions, PIC18F assembly language and C programming are provided in separate sections so that these topics can be covered independent of each other if desired. This extensively updated edition includes a number of fundamental topics. Characteristics and principles common to typical microcontrollers are emphasized. Interfacing techniques associated with a basic microcontroller such as the PIC18F are demonstrated from chip level via examples using the simplest possible devices, such as switches, LEDs, Seven-Segment displays, and the hexadecimal keyboard. In addition, interfacing the PIC18F with other devices such as LCD displays, ADC, and DAC is also included. Furthermore, topics such as CCP (Capture, Compare, PWM) and Serial I/O using C along with simple examples are also provided. Microcontroller Theory and Applications with the PIC18F, 2nd Edition is a comprehensive and self-contained book that emphasizes characteristics and principles common to typical microcontrollers. In addition, the text: Includes increased coverage of C language programming with the PIC18F I/O and interfacing techniques Provides a more detailed explanation of PIC18F timers, PWM, and Serial I/O using C Illustrates C interfacing techniques through the use of numerous examples, most of which have been implemented successfully in the laboratory This new edition of Microcontroller Theory and Applications with the PIC18F is excellent as a text for undergraduate level students of electrical/computer engineering and computer science.

Digital System Design - Use of Microcontroller Springer Science & Business Media

This book comprises the select peer-reviewed proceedings of the National Conference on Renewable Energy and Sustainable Environment (NCRESE) 2019. The book brings together the latest developments in harvesting, storing and optimizing alternate and renewable energy resources. It covers latest developments in green energy technologies as well as smart grids, and their applications towards a sustainable environment. The book can be useful for beginners, academicians, entrepreneurs, and professionals interested in renewable energy technologies and sustainable environment practices.

The Internet of Things John Wiley & Sons

The book is a collection of best selected research papers presented at the International Conference on Intelligent Systems and Sustainable Computing (ICISSC 2021), held in School of

Engineering, Malla Reddy University, Hyderabad, India, during 24–25 September 2021. The book covers recent research in intelligent systems, intelligent business systems, soft computing, swarm intelligence, artificial intelligence and neural networks, data mining & data warehousing, cloud computing, distributed computing, big data analytics, Internet of Things (IoT), machine learning, speech processing, sustainable high-performance systems, VLSI and embedded systems, image and video processing, and signal processing and communication.

Programming the PIC Microcontroller with MBASIC Bentham Science Publishers

Detection of Pathogens in Water Using Micro and Nano-Technology aims to promote the uptake of innovative micro and nano-technological approaches towards the development of an integrated, cost-effective nano-biological sensor useful for security and environmental assays. The book describes the concerted efforts of a large European research project and the achievements of additional leading research groups. The reported knowledge and expertise should support in the innovation and integration of often separated unitary processes. Sampling, cell lysis and DNA/RNA extraction, DNA hybridisation detection micro- and nanosensors, microfluidics, together also with computational modelling and risk assessment can be integrated in the framework of the current and evolving European regulations and needs. The development and uptake of molecular methods is revolutionizing the field of waterborne pathogens detection, commonly performed with time-consuming cultural methods. The molecular detection methods are enabling the development of integrated instruments based on biosensor that will ultimately automate the full pathway of the microbiological analysis of water. Editors: Giampaolo Zuccheri, University of Bologna, Italy and Nikolaos Asproulis, Cranfield University, UK