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Intelligent Systems in Cybernetics and Automation TheoryConference Proceeding. New Perspectives in Scienze EducationIntelligent Computing and Information ScienceUnderstanding and Applying Advanced On-board Bus ElectronicsVehicular NetworkingIntelligent Vehicular Networks and CommunicationsController Area Network A Complete Guide - 2020 EditionModular Systems for Energy Usage ManagementThe Convergence of Internet of Things and Cloud for Smart ComputingController Area Network Prototyping With ArduinoCybersecurity Issues in Emerging TechnologiesController Area Network ProjectsCAN System EngineeringMaking HandsSensor-Systeme und deren Anwendung in autonomen Fahrzeugen am Beispiel des Artificial Intelligence Concept CarFramework für die Realisierung eines hybriden Gesamtsystems zur hardwareunabhängigen Entwicklung elektronischer FahrzeugapplikationenAdvanced Information and Computer Technology in Engineering and Manufacturing, Environmental EngineeringSD Card Projects Using the PIC MicrocontrollerMachine Learning and Data Mining in Pattern RecognitionSteuerungsintegrierte Fertigungsprozeßüberwachung bei spanender BearbeitungHandbook of Networked and Embedded Control SystemsAdvances in Network ManagementComprehensive Energy Management - Safe Adaptation, Predictive Control and Thermal ManagementAdvanced PIC Microcontroller Projects in CStoring EnergyUnderstanding and Using the Controller Area Network Communication ProtocolEine effiziente IPv6 Implementierung für SteuergeräteController Area NetworkThe Control HandbookBuilding Embedded Linux SystemsSensor Networks for Sustainable DevelopmentPIC Microcontroller Projects in CPractical Microcontroller Engineering with ARM TechnologyExperiences of Test AutomationComputerworldFormal Methods for Open Object-Based Distributed SystemsMicrosoft .NET Gadgeteer : Electronics Projects for Hobbyists and InventorsTesting Software and SystemsIPv6 in der Automobil-IndustrieReal-Time Embedded Systems

Intelligent Systems in Cybernetics and Automation Theory

Conference Proceeding. New Perspectives in Scienze Education

Extensively revised and updated to encompass the latest developments in the PIC 18FXXX series, this book demonstrates how to develop a range of microcontroller applications through a project-based approach. After giving an introduction to

programming in C using the popular mikroC Pro for PIC and MPLAB XC8 languages, this book describes the project development cycle in full. The book walks you through fully tried and tested hands-on projects, including many new, advanced topics such as Ethernet programming, digital signal processing, and RFid technology. This book is ideal for engineers, technicians, hobbyists and students who have knowledge of the basic principles of PIC microcontrollers and want to develop more advanced applications using the PIC18F series. This book Includes over fifty projects which are divided into three categories: Basic, Intermediate, and Advanced. New projects in this edition: Logic probe Custom LCD font design Hi/Lo game Generating various waveforms in real-time Ultrasonic height measurement Frequency counter Reaction timer GPS projects Closed-loop ON/OFF temperature control Bluetooth projects (master and slave) RFid projects Clock using Real-time-clock (RTC) chip RTC alarm project Graphics LCD (GLCD) projects Barometer+thermometer+altimeter project Plotting temperature on GLCD Ethernet web browser based control Ethernet UDP based control Digital signal processing (Low Pass Filter design) Automotive LIN bus project Automotive CAN bus project Multitasking projects (using both cooperative and Round-robin scheduling) Unipolar stepper motor projects Bipolar stepper motor projects Closed-loop ON/OFF DC motor control A clear introduction to the PIC 18FXXX microcontroller's architecture Covers developing wireless and sensor network applications, SD card projects, and multi-tasking; all demonstrated with the block and circuit diagram, program description in PDL, program listing, and program description Includes more than 50 basic, intermediate, and advanced projects

Intelligent Computing and Information Science

The book discusses the emerging topic of comprehensive energy management in electric vehicles from the viewpoint of academia and from the industrial perspective. It provides a seamless coverage of all relevant systems and control algorithms for comprehensive energy management, their integration on a multi-core system and their reliability assurance (validation and test). Relevant European projects contributing to the evolvement of comprehensive energy management in fully electric vehicles are also included. This volume includes contributions on model based functional safety and fault-tolerant E/E architectures, advanced control making use of external information (from a cloud) as well and thermal management as a central part for energy optimization and finally some aspects on fuel cells. The second volume (ISBN ..) includes chapters on ECO driving and ECO routing covering different approaches for optimal speed profiles for a given route (mostly interconnecting with cloud data).

Understanding and Applying Advanced On-board Bus Electronics

A unique book that consists entirely of test automation case studies from a variety of domains - from the top names in the field * *Proven advice to empower development organizations to save time by mirroring others' experiences and save money by avoiding others' mistakes. *Insightful case studies from a wide variety of domains, including aerospace, pharmaceuticals, insurance, technology, and telecommunications. *Focuses on the basic issues, rather then technology trends, to give the book a long shelf life. The practice of test automation is becoming more and more popular, but many organizations are not yet experiencing success with it. This book unveils the secrets of how automation has been made to work in reality. The knowledge gained by reading this book can save months or years of effort in automating software testing by helping organizations avoid expensive mistakes and take advantage of proven ideas. By its nature, this book shows the current state of software test automation practice. The authors aim to keep the contributions focused on those things that are more universal (e.g. people issues, return on investment, etc.) and to minimize detailed technical content where this does not impede the process of learning valuable lessons, in order to give the book as long a shelf life as possible. Software practitioners always enjoy reading about what happened to others. For example, at conferences, case study presentations are usually very well attended. The authors/editors have gathered together a collection of experiences from a cross-section of industries and countries, both success stories and failures, in both agile and traditional development. In addition to the case studies, the authors/editors comment on issues raised in these stories, and also include a chapter summarizing good practices and common pitfalls.

Vehicular Networking

From the Foreword: "the presentation of real-time scheduling is probably the best in terms of clarity I have ever read in the professional literature. Easy to understand, which is important for busy professionals keen to acquire (or refresh) new knowledge without being bogged down in a convoluted narrative and an excessive detail overload. The authors managed to largely avoid theoretical-only presentation of the subject, which frequently affects books on operating systems. an indispensable [resource] to gain a thorough understanding of the real-time systems from the operating systems perspective, and to stay up to date with the recent trends and actual developments of the open-source real-time operating systems." —Richard Zurawski, ISA Group, San Francisco, California, USA Real-time embedded systems are integral to the global technological and social space, but references still rarely offer professionals the sufficient mix of theory and practical examples required to meet intensive economic, safety, and other demands on system development. Similarly, instructors have lacked a resource to help students fully understand the field. The information was out there, though often at the abstract level, fragmented and scattered throughout literature from different engineering disciplines and computing sciences. Accounting for readers' varying practical needs and experience levels, Real Time Embedded Systems: Open-Source Operating Systems

Perspective offers a holistic overview from the operating-systems perspective. It provides a long-awaited reference on real-time operating systems and their almost boundless application potential in the embedded system domain. Balancing the already abundant coverage of operating systems with the largely ignored real-time aspects, or "physicality," the authors analyze several realistic case studies to introduce vital theoretical material. They also discuss popular open-source operating systems—Linux and FreRTOS, in particular—to help embedded-system designers identify the benefits and weaknesses in deciding whether or not to adopt more traditional, less powerful, techniques for a project.

Intelligent Vehicular Networks and Communications

"[a] very unique book that integrates benefits of modular systems for enhanced sustainability to meet the global challenges of rapid and sometimes uncontrolled industrialization in the 21st century."—Pinakin Patel, T2M Global This book examines the role of the modular approach for the back end of the energy industry—energy usage management. It outlines the use of modular approaches for the processes used to improve energy conservation and efficiency, which are preludes to the prudent use of energy. Since energy consumption is conventionally broken down into four sectors—residential, transportation, industrial, and commercial—the discussions on energy usage management are also broken down into these four sectors in the book. The book examines the use of modular systems for five application areas that cover the sectors described above: buildings, vehicles, computers and electrical/electronic products, district heating, and wastewater treatment and desalination. This book also discusses the use of a modular approach for energy storage and transportation. Finally, it describes how the modular approach facilitates bottom-up, top-down, and hybrid simulation and modeling of the energy systems from various scientific and socioeconomic perspectives. Aimed at industry professionals and researchers involved in the energy industry, this book illustrates in detail, with the help of concrete industrial examples, how a modular approach can facilitate management of energy usage.

Controller Area Network A Complete Guide - 2020 Edition

This is the biggest, most comprehensive, and most prestigious compilation of articles on control systems imaginable. Every aspect of control is expertly covered, from the mathematical foundations to applications in robot and manipulator control. Never before has such a massive amount of authoritative, detailed, accurate, and well-organized information been available in a single volume. Absolutely everyone working in any aspect of systems and controls must have this book!

Modular Systems for Energy Usage Management

The report provides an overview of electronics and its application to buses and other transportation sectors. The report then addresses electronic integration, potential benefits offered by integration, and transit agency experiences with the technology. The report concludes with guidelines for implementing transit bus electronics. It is intended to be a primer on the subject, providing essential background information to serve as a starting point for acquiring additional knowledge.

The Convergence of Internet of Things and Cloud for Smart Computing

The vast majority of control systems built today are embedded; that is, they rely on built-in, special-purpose digital computers to close their feedback loops. Embedded systems are common in aircraft, factories, chemical processing plants, and even in cars–a single high-end automobile may contain over eighty different computers. The design of embedded controllers and of the intricate, automated communication networks that support them raises many new questions—practical, as well as theoretical—about network protocols, compatibility of operating systems, and ways to maximize the effectiveness of the embedded hardware. This handbook, the first of its kind, provides engineers, computer scientists, mathematicians, and students a broad, comprehensive source of information and technology to address many questions and aspects of embedded and networked control. Separated into six main sections—Fundamentals, Hardware, Software, Theory, Networking, and Applications—this work unifies into a single reference many scattered articles, websites, and specification sheets. Also included are case studies, experiments, and examples that give a multifaceted view of the subject, encompassing computation and communication considerations.

Controller Area Network Prototyping With Arduino

The threat landscape is evolving with tremendous speed. We are facing an extremely fast-growing attack surface with a diversity of attack vectors, a clear asymmetry between attackers and defenders, billions of connected IoT devices, mostly reactive detection and mitigation approaches, and finally big data challenges. The clear asymmetry of attacks and the enormous amount of data are additional arguments to make it necessary to rethink cybersecurity approaches in terms of reducing the attack surface, to make the attack surface dynamic, to automate the detection, risk assessment, and mitigation, and to investigate the prediction and prevention of attacks with the utilization of emerging technologies like blockchain, artificial intelligence and machine learning. This book contains eleven chapters dealing with different Cybersecurity Issues in

Emerging Technologies. The issues that are discussed and analyzed include smart connected cars, unmanned ships, 5G/6G connectivity, blockchain, agile incident response, hardware assisted security, ransomware attacks, hybrid threats and cyber skills gap. Both theoretical analysis and experimental evaluation of state-of-the-art techniques are presented and discussed. Prospective readers can be benefitted in understanding the future implications of novel technologies and proposed security solutions and techniques. Graduate and postgraduate students, research scholars, academics, cybersecurity professionals, and business leaders will find this book useful, which is planned to enlighten both beginners and experienced readers.

Cybersecurity Issues in Emerging Technologies

Over the past two decades, business volume of hardware and software in the U.S has decreased by about seventy percent, while the cost of management and support has grown from $20 billion to $140 billion. With close to seventy percent of this growing figure being spent on the management of legacy systems and only thirty percent on new systems, improvements in the development of self-managing systems have become a cost-saving priority for many corporations and an issue of strategic importance for many economies. Investigating the latest theories, methods, and technologies, Advances in Network Management provides the insight of a recognized expert into the fundamental concepts and contemporary challenges in network management. From basic concepts to research-level material, it details the evolution of network management solutions in network management paradigms, protocols, and techniques. The book also addresses dependencies between network management and application-level service management. This forward-looking resource investigates advanced networks and network services including—autonomic computing, context-aware systems management, and automatic techniques aiming at self-management (self-configuration, self-healing, self-optimization, and self-protection). With its breadth and depth of coverage in theoretical, technical, and research topics, this book provides time-tested guidance for dealing with the growing complexity of network services while improving cost efficiencies in your IT department.

Controller Area Network Projects

The first microcontroller textbook to provide complete and systemic introductions to all components and materials related to the ARM® Cortex®-M4 microcontroller system, including hardware and software as well as practical applications with real examples. This book covers both the fundamentals, as well as practical techniques in designing and building microcontrollers in industrial and commercial applications. Examples included in this book have been compiled, built, and tested Includes Both ARM® assembly and C codes Direct Register Access (DRA) model and the Software Driver (SD) model programming techniques

and discussed If you are an instructor and adopted this book for your course, please email ieeeproposals@wiley.com to get access to the instructor files for this book.

CAN System Engineering

Making Hands

Recent advances in technology and manufacturing have made it possible to create small, powerful, energy-efficient, cost-effective sensor nodes for specialized telecommunication applications—nodes "smart" enough to be capable of adaptation, self-awareness, and self-organization. Sensor Networks for Sustainable Development examines sensor network technologies that increase the quality of human life and encourage societal progress with minimal effect on the earth's natural resources and environment. Organized as a collection of articles authored by leading experts in the field, this valuable reference captures the current state of the art and explores applications where sensor networks are used for sustainable development in: Agriculture Environment Energy Healthcare Transportation Disaster management Beneficial to designers and planners of emerging telecommunication networks, researchers in related industries, and students and academia seeking to learn about the impact of sensor networks on sustainable development, Sensor Networks for Sustainable Development provides scientific tutorials and technical information about smart sensor networks and their use in everything from remote patient monitoring to improving safety on the roadways and beyond.

Sensor-Systeme und deren Anwendung in autonomen Fahrzeugen am Beispiel des Artificial Intelligence Concept Car

This book addresses the various challenges and open questions relating to CAN communication networks. Opening with a short introduction into the fundamentals of CAN, the book then examines the problems and solutions for the physical layout of networks, including EMC issues and topology layout. Additionally, a discussion of quality issues with a particular focus on test techniques is presented. Each chapter features a collection of illuminating insights and detailed technical information supplied by a selection of internationally-regarded experts from industry and academia. Features: presents thorough coverage of architectures, implementations and application of CAN transceiver, data link layer and so-called higher layer software; explains

CAN EMC characteristics and countermeasures, as well as how to design CAN networks; demonstrates how to practically apply and test CAN systems; includes examples of real networks from diverse applications in automotive engineering, avionics, and home heating technology.

Framework für die Realisierung eines hybriden Gesamtsystems zur hardwareunabhängigen Entwicklung elektronischer Fahrzeugapplikationen

During the last 15 years, the interest in vehicular communication has grown, especially in the automotive industry. Due to the envisioned mass market, projects focusing on Car-to-X communication experience high public visibility. This book presents vehicular communication in a broader perspective that includes more than just its application to the automotive industry. It provides, researchers, engineers, decision makers and graduate students in wireless communications with an introduction to vehicular communication focussing on car-to-x and train-based systems. Emphasizes important perspectives of vehicular communication including market area, application areas, and standardization issues as well as selected topics featuring aspects of developing, prototyping, and testing vehicular communication systems. Supports the reader in understanding common characteristics and differences between the various application areas of vehicular communication. Offers both an overview of the application area and an in-depth discussion of key technologies in these areas. Written by a wide range of experts in the field.

Advanced Information and Computer Technology in Engineering and Manufacturing, Environmental Engineering

What are your best practices for minimizing Controller area network project risk, while demonstrating incremental value and quick wins throughout the Controller area network project lifecycle? What relationships among Controller area network trends do you perceive? How do you ensure that the Controller area network opportunity is realistic? Do you cover the five essential competencies: Communication, Collaboration, Innovation, Adaptability, and Leadership that improve an organizations ability to leverage the new Controller area network in a volatile global economy? Which Controller area network impacts are significant? This astounding Controller Area Network self-assessment will make you the assured Controller Area Network domain specialist by revealing just what you need to know to be fluent and ready for any Controller Area Network challenge. How do I reduce the effort in the Controller Area Network work to be done to get problems solved? How can I ensure that plans of action include

every Controller Area Network task and that every Controller Area Network outcome is in place? How will I save time investigating strategic and tactical options and ensuring Controller Area Network costs are low? How can I deliver tailored Controller Area Network advice instantly with structured going-forward plans? There's no better guide through these mind-expanding questions than acclaimed best-selling author Gerard Blokdyk. Blokdyk ensures all Controller Area Network essentials are covered, from every angle: the Controller Area Network self-assessment shows succinctly and clearly that what needs to be clarified to organize the required activities and processes so that Controller Area Network outcomes are achieved. Contains extensive criteria grounded in past and current successful projects and activities by experienced Controller Area Network practitioners. Their mastery, combined with the easy elegance of the self-assessment, provides its superior value to you in knowing how to ensure the outcome of any efforts in Controller Area Network are maximized with professional results. Your purchase includes access details to the Controller Area Network self-assessment dashboard download which gives you your dynamically prioritized projects-ready tool and shows you exactly what to do next. Your exclusive instant access details can be found in your book. You will receive the following contents with New and Updated specific criteria: - The latest quick edition of the book in PDF - The latest complete edition of the book in PDF, which criteria correspond to the criteria in - The Self-Assessment Excel Dashboard - Example pre-filled Self-Assessment Excel Dashboard to get familiar with results generation - In-depth and specific Controller Area Network Checklists - Project management checklists and templates to assist with implementation INCLUDES LIFETIME SELF ASSESSMENT UPDATES Every self assessment comes with Lifetime Updates and Lifetime Free Updated Books. Lifetime Updates is an industry-first feature which allows you to receive verified self assessment updates, ensuring you always have the most accurate information at your fingertips.

SD Card Projects Using the PIC Microcontroller

This volume is based on the research papers presented in the 4th Computer Science On-line Conference. The volume Intelligent Systems in Cybernetics and Automation Control Theory presents new approaches and methods to real-world problems, and in particular, exploratory research that describes novel approaches in the field of cybernetics and automation control theory. Particular emphasis is laid on modern trends in selected fields of interest. New algorithms or methods in a variety of fields are also presented. The Computer Science On-line Conference (CSOC2015) is intended to provide an international forum for discussions on the latest high-quality research results in all areas related to Computer Science. The addressed topics are the theoretical aspects and applications of Computer Science, Artificial Intelligences, Cybernetics, Automation Control Theory and Software Engineering.

Machine Learning and Data Mining in Pattern Recognition

Steuerungsintegrierte Fertigungsprozeßüberwachung bei spanender Bearbeitung

This two-volume set (CCIS 134 and CCIS 135) constitutes the refereed proceedings of the International Conference on Intelligent Computing and Information Science, ICICIS2011, held in Chongqing, China, in January 2011. The 226 revised full papers presented in both volumes, CCIS 134 and CCIS 135, were carefully reviewed and selected from over 600 initial submissions. The papers provide the reader with a broad overview of the latest advances in the field of intelligent computing and information science.

Handbook of Networked and Embedded Control Systems

Formal Methods for Open Object-Based Distributed Systems presents the leading edge in several related fields, specifically object-orientated programming, open distributed systems and formal methods for object-oriented systems. With increased support within industry regarding these areas, this book captures the most up-to-date information on the subject. Many topics are discussed, including the following important areas: object-oriented design and programming; formal specification of distributed systems; open distributed platforms; types, interfaces and behaviour; formalisation of object-oriented methods. This volume comprises the proceedings of the International Workshop on Formal Methods for Open Object-based Distributed Systems (FMOODS), sponsored by the International Federation for Information Processing (IFIP) which was held in Florence, Italy, in February 1999. Formal Methods for Open Object-Based Distributed Systems is suitable as a secondary text for graduate-level courses in computer science and telecommunications, and as a reference for researchers and practitioners in industry, commerce and government.

Advances in Network Management

This book is ideal for the engineer, technician, hobbyist and student who have knowledge of the basic principles of PIC microcontrollers and want to develop more advanced applications using the 18F series. The architecture of the PIC 18FXXX series as well as typical oscillator, reset, memory, and input-output circuits is completely detailed. After giving an introduction

to programming in C, the book describes the project development cycle in full, giving details of the process of editing, compilation, error handling, programming and the use of specific development tools. The bulk of the book gives full details of tried and tested hands-on projects, such as the 12C BUS, USB BUS, CAN BUS, SPI BUS and real-time operating systems. A clear introduction to the PIC 18FXXX microcontroller's architecture 20 projects, including developing wireless and sensor network applications, using I2C BUS, USB BUS, CAN BUS and the SPI BUS, which give the block and circuit diagram, program description in PDL, program listing and program description Numerous examples of using developmental tools: simulators, in-circuit debuggers (especially ICD2) and emulators

Comprehensive Energy Management - Safe Adaptation, Predictive Control and Thermal Management

Linux® is being adopted by an increasing number of embedded systems developers, who have been won over by its sophisticated scheduling and networking, its cost-free license, its open development model, and the support offered by rich and powerful programming tools. While there is a great deal of hype surrounding the use of Linux in embedded systems, there is not a lot of practical information. Building Embedded Linux Systems is the first in-depth, hard-core guide to putting together an embedded system based on the Linux kernel. This indispensable book features arcane and previously undocumented procedures for: Building your own GNU development toolchain Using an efficient embedded development framework Selecting, configuring, building, and installing a target-specific kernel Creating a complete target root filesystem Setting up, manipulating, and using solid-state storage devices Installing and configuring a bootloader for the target Cross-compiling a slew of utilities and packages Debugging your embedded system using a plethora of tools and techniques Details are provided for various target architectures and hardware configurations, including a thorough review of Linux's support for embedded hardware. All explanations rely on the use of open source and free software packages. By presenting how to build the operating system components from pristine sources and how to find more documentation or help, this book greatly simplifies the task of keeping complete control over one's embedded operating system, whether it be for technical or sound financial reasons.Author Karim Yaghmour, a well-known designer and speaker who is responsible for the Linux Trace Toolkit, starts by discussing the strengths and weaknesses of Linux as an embedded operating system. Licensing issues are included, followed by a discussion of the basics of building embedded Linux systems. The configuration, setup, and use of over forty different open source and free software packages commonly used in embedded Linux systems are also covered. uClibc, BusyBox, U-Boot, OpenSSH, thttpd, tftp, strace, and gdb are among the packages discussed.

Advanced PIC Microcontroller Projects in C

This book to offers a hands-on guide to designing, analyzing and debugging a communication infrastructure based on the Controller Area Network (CAN) bus. Although the CAN bus standard is well established and currently used in most automotive systems, as well as avionics, medical systems and other devices, its features are not fully understood by most developers, who tend to misuse the network. This results in lost opportunities for better efficiency and performance. These authors offer a comprehensive range of architectural solutions and domains of analysis. It also provides formal models and analytical results, with thorough discussion of their applicability, so that it serves as an invaluable reference for researchers and students, as well as practicing engineers.

Storing Energy

Bachelorarbeit aus dem Jahr 2009 im Fachbereich Elektrotechnik, Note: 1, FH Kärnten, Standort Spittal (Elektrotechnik), Sprache: Deutsch, Abstract: Die Auswahl der Sensorik spielt bei autonomen Fahrzeugen eine besondere Rolle, da sich die gesamte Umfelderkennung und die Navigation auf diese Messdaten stützen. Da es keinen perfekten Sensor gibt und jedes Messverfahren mit Fehlern behaftet ist, gilt es den für die jeweilige Anwendung günstigsten Kompromiss zwischen tolerierbarer Unvollkommenheit und spezifischen Vorteilen zu finden. Diese Problematik stellt sich im Projekt „Artificial Intelligence Concept Car" (kurz AICC) und wird im Kontext mit der praktischen Anwendung in dieser Bachelorarbeit näher beleuchtet. Um die Anforderungen an die Sensorik und die sich daraus ergebenden Problemstellungen besser verstehen zu können, wird zu Beginn auf das grundlegende Konzept autonomer Umfelderkennung und Navigation eingegangen. Im Weiteren werden verschiedenste Sensoren auf deren Eignung für den Einsatz in autonomen Fahrzeugen geprüft. Basierend auf den gewonnenen Erkenntnissen wird ein den Anforderungen des Projekts AICC angepasstes Sensorkonzept entwickelt. Abschließend wird auf die Einbindung der Sensoren am Konzeptfahrzeug AICC eingegangen und die damit verbundenen Erkenntnisse werden ausführlich diskutiert.

Understanding and Using the Controller Area Network Communication Protocol

Die Dissertation präsentiert ein Framework zur durchgängigen Entwicklung von Fahrzeugapplikationen, das ein Gesamtsystem aus Fahrzeug, Fahrer und Umfeld für den gesamten Entwicklungsprozess zur Verfügung stellt. Bewerkstelligt wird dies, indem jeder realen Komponente eine virtuelle Komponente gegenübersteht. Zur Evaluation wurde eine Referenzimplementierung

erstellt, die in mehreren Fallstudien in den Bereichen Konzept- und Funktionsentwicklung sowie in der Produktion evaluiert wurde.

Eine effiziente IPv6 Implementierung für Steuergeräte

Making Hands: The Design and Use of Upper Extremity Prosthetics provides a historical account of the development of upper extremity prostheses. It describes different aspects surrounding the development of key elements of mechanisms and control, for prosthetic hands and arms, and includes biographical sketches of some key contributors. The field is broad and uses knowledge from a wide range of disciplines. Sections cover the background to give researchers and professionals what they need to learn about adjacent fields. The author's expertise on the control of prostheses makes this a very comprehensive resource on the topic. Covers research and technological innovation in the development of upper limb prostheses Introduces upper limb prosthetics from the different perspectives of biology, engineering, clinical practice and industry Discusses innovations of the recent decades, rapid manufacture, the 'citizen engineer', and how these things may shape prosthetics in the future

Controller Area Network

Intelligent Vehicular Network and Communications: Fundamentals, Architectures and Solutions begins with discussions on how the transportation system has transformed into today's Intelligent Transportation System (ITS). It explores the design goals, challenges, and frameworks for modeling an ITS network, discussing vehicular network model technologies, mobility management architectures, and routing mechanisms and protocols. It looks at the Internet of Vehicles, the vehicular cloud, and vehicular network security and privacy issues. The book investigates cooperative vehicular systems, a promising solution for addressing current and future traffic safety needs, also exploring cooperative cognitive intelligence, with special attention to spectral efficiency, spectral scarcity, and high mobility. In addition, users will find a thorough examination of experimental work in such areas as Controller Area Network protocol and working function of On Board Unit, as well as working principles of roadside unit and other infrastructural nodes. Finally, the book examines big data in vehicular networks, exploring various business models, application scenarios, and real-time analytics, concluding with a look at autonomous vehicles. Proposes cooperative, cognitive, intelligent vehicular networks Examines how intelligent transportation systems make more efficient transportation in urban environments Outlines next generation vehicular networks technology

The Control Handbook

PIC Microcontrollers are a favorite in industry and with hobbyists. These microcontrollers are versatile, simple, and low cost making them perfect for many different applications. The 8-bit PIC is widely used in consumer electronic goods, office automation, and personal projects. Author, Dogan Ibrahim, author of several PIC books has now written a book using the PIC18 family of microcontrollers to create projects with SD cards. This book is ideal for those practicing engineers, advanced students, and PIC enthusiasts that want to incorporate SD Cards into their devices. SD cards are cheap, fast, and small, used in many MP3 players, digital and video cameras, and perfect for microcontroller applications. Complete with Microchip's C18 student compiler and using the C language this book brings the reader up to speed on the PIC 18 and SD cards, knowledge which can then be harnessed for hands-on work with the eighteen projects included within. Two great technologies are brought together in this one practical, real-world, hands-on cookbook perfect for a wide range of PIC fans. Eighteen fully worked SD projects in the C programming language Details memory cards usage with the PIC18 family

Building Embedded Linux Systems

This book constitutes the refereed proceedings of the 27th IFIP WG 6.1 International Conference on Testing Software and Systems, ICTSS 2015, held in Sharjah and Dubai, United Arab Emirates, in November 2015. The 14 revised full papers and 4 short papers presented were carefully reviewed and selected from 42 submissions. The papers are organized in topical sections on model based testing, test derivation methods, monitoring and fault localization, model and system testing, and real-time systems.

Sensor Networks for Sustainable Development

This book presents the know-how of the real-time IoT application development activity including a basic understanding of the IoT architecture, use cases, smart computing, and the associated challenges in design and development of the IoT system. All the technical details related to protocol stack, technologies, and platforms used for the implementation are explained. It further includes techniques and case studies that include smart computing on the IoT–Cloud models along with test beds for experimentation purposes. The book aims at setting up the groundwork for the creation of applications that can help make day-to-day tasks simpler by meeting the needs of varied sectors like education, health care, agriculture, and so forth. Features: • Covers IoT cloud convergence with a focus on complex industrial IoT case studies. • Discusses the broad background of

IoT–Cloud convergence architectures and its fundamentals along with resource provisioning mechanisms. • Emphasizes the use of context in developing context-aware IoT solutions. • Presents a novel C-model that explains the IoT application development phases. • Discusses a simplified convergence model that depicts the role of Cloud in an IoT application. This book aims at graduate students, researchers, and professionals getting started in the IoT field.

PIC Microcontroller Projects in C

This two-volume set LNAI 10934 and LNAI 10935 constitutes the refereed proceedings of the 14th International Conference on Machine Learning and Data Mining in Pattern Recognition, MLDM 2018, held in New York, NY, USA in July 2018. The 92 regular papers presented in this two-volume set were carefully reviewed and selected from 298 submissions. The topics range from theoretical topics for classification, clustering, association rule and pattern mining to specific data mining methods for the different multi-media data types such as image mining, text mining, video mining, and Web mining.

Practical Microcontroller Engineering with ARM Technology

Inhaltsangabe:Einleitung: Die Firma Elektrobit Automotive GmbH bietet einen für das OSEK-Betriebssystem optimierten TCP/IP-Stack für den gängigen IPv4-Standard an. Diese ressourcenschonende und schlanke Implementierung zeichnet sich durch besonders hohe Performance auf kleinen Prozessoren gegenüber alternativen, freien und kommerziellen TCP/IP-Produkten ab. Insbesondere die Umsetzung eines dynamischen Protokolls wie TCP/IP in der sehr statischen Umgebung eines Automotive-Steuergerätes erfordert besondere Aufmerksamkeit, bietet damit aber auch ein interessantes und herausforderndes Thema für eine wissenschaftliche Arbeit. IPv4 ist das gegenwärtig am meisten genutzte Internet-Protokoll. Problematisch ist allerdings der auf 32 Bit begrenzte Adressraum, welcher eine maximale Anzahl von 4,295 Milliarden Geräten adressieren kann. Mit dem Wirtschaftsboom in Asien und dem Bedarf an IP-Adressen für mobile Endgeräte, für Haushaltsgeräte (Kühlschrank), Sensor-Netzwerke für Brücken, Häuser usw. oder RFID-Chips und in Zukunft auch für Fernsehgeräte und Kfz-Fahrzeuge, steigt der Bedarf an IP-Adressen rapide an. Die Zahl der Internetnutzer weltweit hat im Jahr 2005 die Milliarden-Marke überschritten berichten die Marktforscher von [ETFO06]. Sie rechnen mit einem Anstieg der Nutzerzahlen auf zwei Milliarden für das Jahr 2011. Bereits 1993 begann man daher mit der Entwicklung von TCP/IP-Version 6. IPv6 bietet einen Adressbereich von 128 Bit. Damit kann man wesentlich mehr Rechner im Internet mit IP-Adressen versehen: ca. 340 Sextillionen (2 hoch 128)! Es können also rein rechnerisch für jeden Quadratmillimeter Oberfläche der Erde ungefähr 667 Billiarden IPv6-Adressen zur Verfügung gestellt werden. In Asien werden die IPv4-Adressen schon knapp und auch

allgemein wird der Adressraum des IPv4-Protokolls nicht ausreichen, denn neben einer exponentiell ansteigenden Zahl von neuen benötigten IP-Adressen ist ein großer Teil des IP-Adressraums nicht nutzbar, da er für Sonderaufgaben (Multicast) zugeteilt ist oder zu großen Subnetzen gehört. Die Normen werden von der IETF gesetzt. Da die Umstellung von IPv4 auf IPv6 kontinuierlich verlaufen soll, sind bereits viele Geräte mit einer Dual-Stack-Implementierung ausgestattet, d.h. sie verfügen über beide Protokollvarianten. Das heißt zudem, dass im Kernbereich des Netzes beide Protokolle parallel gefahren werden können. Für jedes Teilnetz, zum Beispiel einzelne Unternehmen oder Abteilungen, kann nun separat entschieden []

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Selected, peer reviewed papers from the 2013 International Conference on Advances in Materials Science and Manufacturing Technology (AMSMT 2013), May 18-19, 2013, Xiamen, Fujian, China

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Formal Methods for Open Object-Based Distributed Systems

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Microsoft .NET Gadgeteer : Electronics Projects for Hobbyists and Inventors

The Controller Area Network (CAN) was originally developed to be used as a vehicle data bus system in passenger cars. Today, CAN controllers are available from over 20 manufacturers, and CAN is finding applications in other fields, such as medical, aerospace, process control, automation, and so on. This book is written for students, for practising engineers, for hobbyists, and for everyone else who may be interested to learn more about the CAN bus and its applications. The aim of this book is to teach you the basic principles of CAN networks and in addition the development of microcontroller based projects using the CAN bus. In summary, this book enables the reader to: Learn the theory of the CAN bus used in automotive industry; Learn the principles, operation, and programming of microcontrollers; Design complete microcontroller based projects using the C language; Develop complete real CAN bus projects using microcontrollers; Learn the principles of OBD systems used to debug vehicle electronics. You will learn how to design microcontroller based CAN bus nodes, build a CAN bus, develop high-level programs, and then exchange data in real-time over the bus. You will also learn how to build microcontroller hardware and interface it to LEDs, LCDs, and A/D converters. The book assumes that the reader has some knowledge on basic electronics. Knowledge of the C programming language will be useful in later chapters of the book, and familiarity with at least one member of the PIC series of microcontrollers will be an advantage, especially if the reader intends to develop microcontroller based projects using the CAN bus. The CD contains a special demo version of the mikroC compiler which supports the key microcontrollers including: PIC, dsPIC, PIC24, PIC32 and AVR. This special version additionally features an advanced CAN library of intuitive and simple-to-use functions to encourage programming with easy and comfortable development of CAN networks.

Testing Software and Systems

Energy Storage discusses the needs of the world’s future energy and climate change policies, covering the various types of renewable energy storage in one comprehensive volume that allows readers to conveniently compare the different technologies and find the best process that suits their particularly needs. Each chapter is written by an expert working in the field and includes copious references for those wishing to study the subject further. Various systems are discussed, including mechanical/kinetic, thermal, electrochemical and other chemical, as well as other emerging technologies. Incorporating the advancements in storing energy as described in this book will help the people of the world further overcome the problems related to future energy and climate change. Covers most types of energy storage that is being considered today, and allows comparisons to be made Each chapter is written by a world expert in the field, providing the latest developments is this fast

moving and vital field Covers technical, environmental, social and political aspects related to the storing of energy and in particular renewable energy

IPv6 in der Automobil-Industrie

While the Arduino is not widely considered an industrial-strength solution, it provides, due to its low price and ease of programming, the perfect prototyping platform for all kinds of Controller Area Network (CAN) applications. This book, written by a leading expert on CAN technologies, guides the reader through the process of acquiring all necessary hardware and software components, the implementation of the CAN driver, and the implementation of programs (Arduino Sketches) to read, send, process, and display data from and to a CAN network. The collection of programming examples cumulates into a full-fledged USB-to-CAN Gateway communicating with a Windows/Linux PC. This book will enable you to achieve CAN functionality literally within only a few hours.

Real-Time Embedded Systems

IPv4 ist das gegenw rtig am meisten genutzte Internet-Protokoll. Problematisch ist allerdings der auf 32 Bit begrenzte Adressraum, welcher eine maximale Anzahl von 4,295 Milliarden Ger ten adressieren kann. Mit dem Wirtschaftsboom in Asien und dem Bedarf an IP-Adressen f r mobile Endger te, f r Haushaltsger te (K hlschrank), Sensor-Netzwerke f r Br cken, H user oder RFID-Chips und in Zukunft auch f r Fernsehger te und Kfz-Fahrzeuge, steigt der Bedarf an IP-Adressen rapide an. Bereits 1993 begann man daher mit der Entwicklung von TCP/IP-Version 6. IPv6 bietet einen Adressbereich von 128 Bit. Damit kann man wesentlich mehr Rechner im Internet mit IP-Adressen versehen: ca. 340 Sextillionen! Es k nnen also rein rechnerisch f r jeden Quadratmillimeter Oberfl che der Erde ungef hr 667 Billiarden IPv6-Adressen zur Verf gung gestellt werden. Da die Umstellung von IPv4 auf IPv6 kontinuierlich verlaufen soll, sind bereits viele Ger te mit einer Dual-Stack-Implementierung ausgestattet, d.h. sie verf gen ber beide Protokollvarianten. Auch die Automobil-Branche ist betroffen. Es gibt bereits heute Kfz-Steuerger te, welche f r die Diagnoseschnittstelle des Fahrzeugs das IPv4-Protokoll zur bertragung der Daten einsetzen. Diese Steuerger te bestehen aus Mikrocontrollern, die h ufig Einschr nkungen wie geringe Prozessorleistung und wenig Speicher unterliegen. Die Implementierung eines so komplexen Protokolls wie IPv6 wird in dieser Umgebung zu einer echten Herausforderung. In diesem Buch wird anhand einem konkreten Beispiel gezeigt, wie die Embedded-Software eines IPv4-Protokollstacks zu einem IPv4/IPv6-Dualstack erweitert werden kann.