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Plato and the Nerd - Edward Ashford Lee 2018-10-09
How humans and technology evolve together in a creative partnership. In this book, Edward Ashford Lee makes a bold claim: that the creators of digital technology have an unsurpassed medium for creativity. Technology has advanced to the point where progress seems limited not by physical constraints but the human imagination. Writing for both literate technologists and numerate humanists, Lee makes a case for engineering—creating technology—as a deeply intellectual and fundamentally creative process. Explaining why digital technology has been so transformative and so liberating, Lee argues that the real power of technology stems from its partnership with humans. Lee explores the ways that engineers use models and abstraction to build inventive artificial worlds and to give us things that we never dreamed of—for example, the ability to carry in our pockets everything humans have ever published. But he also attempts to counter the runaway enthusiasm of some technology boosters who claim everything in the physical world is a computation—that even such complex phenomena as human cognition are software operating on digital data. Lee argues that the evidence for this is weak, and the likelihood that nature has limited itself to processes that conform to today's notion of digital computation is remote. Lee goes on to argue that artificial intelligence's goal of reproducing human cognitive functions in computers vastly underestimates the potential of computers. In his view, technology is coevolving with humans. It augments our cognitive and physical capabilities while we nurture, develop, and propagate the technology itself. Complementarity is more likely than competition.
Sādhanā - 1994

The Constitution of India - Arun K Thiruvengadam 2017-12-28
This book provides an overview of the content and functioning of the Indian Constitution, with an emphasis on the broader socio-political context. It focuses on the overarching principles and the main institutions of constitutional governance that the world's longest written constitution inaugurated in 1950. The nine chapters of the book deal with specific aspects of the Indian constitutional tradition as it has evolved across seven decades of India's existence as an independent nation. Beginning with the pre-history of the Constitution and its making, the book moves onto an examination of the structural features and actual operation of the Constitution's principal governance institutions. These include the executive and the parliament, the institutions of federalism and local government, and the judiciary. An unusual feature of Indian constitutionalism that is highlighted here is the role played by technocratic institutions such as the Election Commission, the Comptroller and Auditor General, and a set of new regulatory institutions, most of which were created during the 1990s. A considerable portion of the book evaluates issues relating to constitutional rights, directive principles and the constitutional regulation of multiple forms of identity in India. The important issue of constitutional change in India is approached from an atypical perspective. The book employs a narrative form to describe the twists, turns and challenges confronted across nearly seven decades of the working of the constitutional order. It departs from conventional Indian constitutional scholarship in placing less emphasis on constitutional doctrine (as evolved in judicial decisions delivered by the High Courts and the Supreme Court). Instead, the book turns the spotlight on the political bargains and extra-legal developments that have influenced constitutional evolution. Written in accessible prose that avoids undue legal jargon, the book aims at a general audience that is interested in understanding the complex yet fascinating challenges posed by constitutionalism in India. Its unconventional approach to some classic issues will stimulate the more seasoned student of constitutional law and politics.
Introduction to Communication Systems - Upamanyu Madhow

2014-11-24
An accessible undergraduate textbook introducing key fundamental principles behind modern communication systems, supported by exercises, software problems and lab exercises.
American Book Publishing Record - 2005

Intelligent Pervasive Computing Systems for Smarter Healthcare - Arun Kumar Sangaiah 2019-06-21
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.

Advances in Signal Processing and Communication - Banmali S. Rawat 2018-11-19
This book is a collection of selected peer-reviewed papers presented at the International Conference on Signal Processing and Communication (ICSC 2018). It covers current research and developments in the fields of communications, signal processing, VLSI circuits and systems, and embedded systems. The book offers in-depth discussions and analyses of latest problems across different sub-fields of signal processing and communications. The contents of this book will prove to be useful for students, researchers, and professionals working in electronics and electrical engineering, as well as other allied fields.
Information and Communication Technology for Competitive Strategies (ICTCS 2020) - Amit Joshi 2021-07-26
This book contains the best selected research papers presented at ICTCS 2020: Fifth International Conference on Information and Communication Technology for Competitive Strategies. The conference was held at Jaipur, Rajasthan, India, during 11–12 December 2020. The book covers state-of-the-art as well as emerging topics pertaining to ICT and effective strategies for its implementation for engineering and managerial applications. This book contains papers mainly focused on ICT for computation, algorithms and data analytics, and IT security.
Embedded Control for Mobile Robotic Applications - Leena Vachhani 2022-08-23
An all-in-one resource for designing and implementing embedded control in mobile robotics In Embedded Control for Mobile Robotic Applications,

a distinguished trio of researchers delivers an authoritative and fulsome resource for understanding embedded control and robotics. The book includes coverage of a variety of embedded platforms, their use in controller implementation, stability analyses of designed controllers, and two new approaches for designing embedded controllers. The authors offer a full chapter on Field-Programmable-Gate-Array (FPGA) architecture development for controller design that is perfect for both practitioners and students taking robotics courses and provide a companion website that includes MATLAB codes for simulation and embedded platform-specific code for mobile robotic applications (in Embedded C and Verilog). The two approaches discussed by the authors—the top-down methodology and the bottom-up methodology—are of immediate practical utility to both practicing professionals in the field and students studying control applications and mobile robotics. The book also offers: A thorough introduction to embedded control, including processor, IC, and design technology, as well as a discussion of limitations in embedded control design Comprehensive explorations of the bottom-up and top-down methods, including computations using CORDIC, interval arithmetic, sliding surface design, and switched nonlinear systems Practical discussions of generic FPGA architecture design, including Verilog, PID controllers, DC motors and Encoder, and a systematic approach for designing architecture using FSMD In-depth examinations of discrete-time controller design, including the approximation to discrete-time transfer function and embedded implementation stability Perfect for practitioners working in embedded control design and control applications in robotics, Embedded Control for Mobile Robotic Applications will also earn a place in the libraries of academicians, researchers, senior undergraduate students, and graduate students in these fields.

Introduction to Embedded Systems - Edward Ashford Lee 2011
This book strives to identify and introduce the durable intellectual ideas of embedded systems as a technology and as a subject of study. The emphasis is on modeling, design, and analysis of cyber-physical systems, which integrate computing, networking, and physical processes.

Introduction to Embedded Systems, Second Edition - Edward Ashford Lee 2016-12-30
An introduction to the engineering principles of embedded systems, with a focus on modeling, design, and analysis of cyber-physical systems. The most visible use of computers and software is processing information for human consumption. The vast majority of computers in use, however, are much less visible. They run the engine, brakes, seatbelts, airbag, and audio system in your car. They digitally encode your voice and construct a radio signal to send it from your cell phone to a base station. They command robots on a factory floor, power generation in a power plant, processes in a chemical plant, and traffic lights in a city. These less visible computers are called embedded systems, and the software they run is called embedded software. The principal challenges in designing and analyzing embedded systems stem from their interaction with physical processes. This book takes a cyber-physical approach to embedded systems, introducing the engineering concepts underlying embedded systems as a technology and as a subject of study. The focus is on modeling, design, and analysis of cyber-physical systems, which integrate computation, networking, and physical processes. The second edition offers two new chapters, several new exercises, and other improvements. The book can be used as a textbook at the advanced undergraduate or introductory graduate level and as a professional reference for practicing engineers and computer scientists. Readers should have some familiarity with machine structures, computer programming, basic discrete mathematics and algorithms, and signals and systems.

Formal Techniques in Real-Time and Fault-Tolerant Systems - Mathai Joseph 1988-09-14
This book is based on material from current research projects and cooperations and from a recent workshop in the area of Knowledge Base Management Systems. It contains 25 revised papers and related discussions that concentrate on the integration of Database Technology (deductive databases, extended relational technology, object-oriented systems) and Artificial Intelligence (in particular logic programming and knowledge representation). The emphasis of the book is on the integration of DB/AI technology required for knowledge Base Management Systems. The book isolates major conceptual contributions, systems extensions, and reseach directions that lead towards that goal. This book is a European counterpart to another volume in the Topics in Information Systems Series, 'On Knowledge Base Management Systems', resulting from a North American workshop and edited by M. Brodie and

J. Mylopoulos, which concentrates on theoretical results and the more abstract levels of Knowledge Base Management.

Advances in VLSI, Communication, and Signal Processing - David Harvey 2020-10-14
This book comprises select peer-reviewed papers from the International Conference on VLSI, Communication and Signal processing (VCAS) 2019, held at Motilal Nehru National Institute of Technology (MNNIT) Allahabad, Prayagraj, India. The contents focus on latest research in different domains of electronics and communication engineering, in particular microelectronics and VLSI design, communication systems and networks, and signal and image processing. The book also discusses the emerging applications of novel tools and techniques in image, video and multimedia signal processing. This book will be useful to students, researchers and professionals working in the electronics and communication domain.

Shape Memory Polymers - Jinlian Hu 2014-05-27
Shape-memory polymers (SMP) are a unique branch of the smart materials family which are capable of changing shape on-demand upon exposure to external stimulus. The discovery of SMP made a significant breakthrough in the developments of novel smart materials for a variety of engineering applications, superseded the traditional materials, and also influenced the current methods of product designing. This book provides the latest advanced information of on-going research domains of SMP. This will certainly enlighten the reader to the achievements and tremendous potentials of SMP. The basic fundamentals of SMP, including shape-memory mechanisms and mechanics are described. This will aid reader to become more familiar with SMP and the basic concepts, thus guiding them in undergoing independent research in the SMP field. The book also provides the reader with associated challenges and existing application problems of SMP. This could assist the reader to focus more on these issues and further exploit their knowledge to look for innovative solutions. Future outlooks of SMP research are discussed as well. This book should prove to be extremely useful for academics, R&D managers, researcher scientists, engineers, and all others related to the SMP research.

Advances in VLSI, Communication, and Signal Processing - Debashis Dutta 2019-12-03
This book comprises select proceedings of the International Conference on VLSI, Communication and Signal processing (VCAS 2018). It looks at latest research findings in VLSI design and applications. The book covers a wide range of topics in electronics and communication engineering, especially in the area of microelectronics and VLSI design, communication systems and networks, and image and signal processing. The contents of this book will be useful to researchers and professionals alike.

Embedded Systems Design - Arnold S. Berger 2001-12-15
* Hardware/Software Partitioning * Cross-Platform Development * Firmware Debugging * Performance Analysis * Testing & Integration Get into embedded systems programming with a clear understanding of the development cycle and the specialized aspects of

Evolutionary Computing and Mobile Sustainable Networks - V. Suma 2020-07-31
This book features selected research papers presented at the International Conference on Evolutionary Computing and Mobile Sustainable Networks (ICECMSN 2020), held at the Sir M. Visvesvaraya Institute of Technology on 20–21 February 2020. Discussing advances in evolutionary computing technologies, including swarm intelligence algorithms and other evolutionary algorithm paradigms which are emerging as widely accepted descriptors for mobile sustainable networks virtualization, optimization and automation, this book is a valuable resource for researchers in the field of evolutionary computing and mobile sustainable networks.

Interconnecting Smart Objects with IP - Jean-Philippe Vasseur 2010-07-06
Interconnecting Smart Objects with IP: The Next Internet explains why the Internet Protocol (IP) has become the protocol of choice for smart object networks. IP has successfully demonstrated the ability to interconnect billions of digital systems on the global Internet and in private IP networks. Once smart objects can be easily interconnected, a whole new class of smart object systems can begin to evolve. The book discusses how IP-based smart object networks are being designed and deployed. The book is organized into three parts. Part 1 demonstrates why the IP architecture is well suited to smart object networks, in contrast to non-IP based sensor network or other proprietary systems that interconnect to IP networks (e.g. the public Internet of private IP

networks) via hard-to-manage and expensive multi-protocol translation gateways that scale poorly. Part 2 examines protocols and algorithms, including smart objects and the low power link layers technologies used in these networks. Part 3 describes the following smart object network applications: smart grid, industrial automation, smart cities and urban networks, home automation, building automation, structural health monitoring, and container tracking. Shows in detail how connecting smart objects impacts our lives with practical implementation examples and case studies Provides an in depth understanding of the technological and architectural aspects underlying smart objects technology Offers an in-depth examination of relevant IP protocols to build large scale smart object networks in support of a myriad of new services

Embedded System Design - Peter Marwedel 2010-11-16
Until the late 1980s, information processing was associated with large mainframe computers and huge tape drives. During the 1990s, this trend shifted toward information processing with personal computers, or PCs. The trend toward miniaturization continues and in the future the majority of information processing systems will be small mobile computers, many of which will be embedded into larger products and interfaced to the physical environment. Hence, these kinds of systems are called embedded systems. Embedded systems together with their physical environment are called cyber-physical systems. Examples include systems such as transportation and fabrication equipment. It is expected that the total market volume of embedded systems will be significantly larger than that of traditional information processing systems such as PCs and mainframes. Embedded systems share a number of common characteristics. For example, they must be dependable, efficient, meet real-time constraints and require customized user interfaces (instead of generic keyboard and mouse interfaces). Therefore, it makes sense to consider common principles of embedded system design. Embedded System Design starts with an introduction into the area and a survey of specification models and languages for embedded and cyber-physical systems. It provides a brief overview of hardware devices used for such systems and presents the essentials of system software for embedded systems, like real-time operating systems. The book also discusses evaluation and validation techniques for embedded systems. Furthermore, the book presents an overview of techniques for mapping applications to execution platforms. Due to the importance of resource efficiency, the book also contains a selected set of optimization techniques for embedded systems, including special compilation techniques. The book closes with a brief survey on testing. Embedded System Design can be used as a text book for courses on embedded systems and as a source which provides pointers to relevant material in the area for PhD students and teachers. It assumes a basic knowledge of information processing hardware and software. Courseware related to this book is available at http://ls12-www.cs.tu-dortmund.de/~marwedel.

Design Through Verilog HDL - T. R. Padmanabhan 2003-11-05
A comprehensive resource on Verilog HDL for beginners and experts Large and complicated digital circuits can be incorporated into hardware by using Verilog, a hardware description language (HDL). A designer aspiring to master this versatile language must first become familiar with its constructs, practice their use in real applications, and apply them in combinations in order to be successful. Design Through Verilog HDL affords novices the opportunity to perform all of these tasks, while also offering seasoned professionals a comprehensive resource on this dynamic tool. Describing a design using Verilog is only half the story: writing test-benches, testing a design for all its desired functions, and how identifying and removing the faults remain significant challenges. Design Through Verilog HDL addresses each of these issues concisely and effectively. The authors discuss constructs through illustrative examples that are tested with popular simulation packages, ensuring the subject matter remains practically relevant. Other important topics covered include: Primitives Gate and Net delays Buffers CMOS switches State machine design Further, the authors focus on illuminating the differences between gate level, data flow, and behavioral styles of Verilog, a critical distinction for designers. The book's final chapters deal with advanced topics such as timescales, parameters and related constructs, queues, and switch level design. Each chapter concludes with exercises that both ensure readers have mastered the present material and stimulate readers to explore avenues of their own choosing. Written and assembled in a paced, logical manner, Design Through Verilog HDL provides professionals, graduate students, and advanced undergraduates with a one-of-a-kind resource.

Recent Advances in Power Electronics and Drives - Shailendra Kumar 2022
This book contains select proceedings of EPREC-2021 with a focus on power electronics and drives. The book includes original research and case studies that present recent developments in power electronics focusing on power inverters and converters. The book also consists of research work on electrical drives, regulated power supplies, operation of FACTS & HVDC, etc. The book will be a valuable reference guide for beginners, researchers, and professionals interested in the advancements of power electronics and drives.

Advances in Communication, Devices and Networking - Rabindranath Bera 2019-02-15
The book covers recent trends in the field of devices, wireless communication and networking. It presents the outcomes of the International Conference in Communication, Devices and Networking (ICCDN 2018), which was organized by the Department of Electronics and Communication Engineering, Sikkim Manipal Institute of Technology, Sikkim, India on 2–3 June, 2018. Gathering cutting-edge research papers prepared by researchers, engineers and industry professionals, it will help young and experienced scientists and developers alike to explore new perspectives, and offer them inspirations on addressing real-world problems in the field of electronics, communication, devices and networking.

Inventive Systems and Control - V. Suma 2021-06-08
This book presents selected papers from the 5th International Conference on Inventive Systems and Control (ICISC 2021), held on 7–8 January 2021 at JCT College of Engineering and Technology, Coimbatore, India. The book includes an analysis of the class of intelligent systems and control techniques that utilises various artificial intelligence technologies, where there are no mathematical models and systems available to make them remain controlled. Inspired by various existing intelligent techniques, the primary goal is to present the emerging innovative models to tackle the challenges faced by the existing computing and communication technologies. The proceedings of ICISC 2021 aim at presenting the state-of-the-art research developments, trends, and solutions for the challenges faced by the intelligent systems and control community with the real-world applications. The included research articles feature the novel and unpublished research works on intelligent system representation and control.

Deep Learning and Parallel Computing Environment for Bioengineering Systems - Arun Kumar Sangaiah 2019-07-26
Deep Learning and Parallel Computing Environment for Bioengineering Systems delivers a significant forum for the technical advancement of deep learning in parallel computing environment across bio-engineering diversified domains and its applications. Pursuing an interdisciplinary approach, it focuses on methods used to identify and acquire valid, potentially useful knowledge sources. Managing the gathered knowledge and applying it to multiple domains including health care, social networks, mining, recommendation systems, image processing, pattern recognition and predictions using deep learning paradigms is the major strength of this book. This book integrates the core ideas of deep learning and its applications in bio engineering application domains, to be accessible to all scholars and academicians. The proposed techniques and concepts in this book can be extended in future to accommodate changing business organizations' needs as well as practitioners' innovative ideas. Presents novel, in-depth research contributions from a methodological/application perspective in understanding the fusion of deep machine learning paradigms and their capabilities in solving a diverse range of problems Illustrates the state-of-the-art and recent developments in the new theories and applications of deep learning approaches applied to parallel computing environment in bioengineering systems Provides concepts and technologies that are successfully used in the implementation of today's intelligent data-centric critical systems and multi-media Cloud-Big data

ICT for Competitive Strategies - Durgesh Kumar Mishra 2020-05-05
Fourth International Conference on Information and Communication Technology for Competitive Strategies targets state-of-the-art as well as emerging topics pertaining to information and communication technologies (ICTs) and effective strategies for its implementation for engineering and intelligent applications.

Intelligent Decision Support Systems for Sustainable Computing - Arun Kumar Sangaiah 2017-03-14
This unique book dicusses the latest research, innovative ideas, challenges and computational intelligence (CI) solutions in sustainable computing. It presents novel, in-depth fundamental research on achieving a sustainable lifestyle for society, either from a methodological

or from an application perspective. Sustainable computing has expanded to become a significant research area covering the fields of computer science and engineering, electrical engineering and other engineering disciplines, and there has been an increase in the amount of literature on aspects sustainable computing such as energy efficiency and natural resources conservation that emphasizes the role of ICT (information and communications technology) in achieving system design and operation objectives. The energy impact/design of more efficient IT infrastructures is a key challenge in realizing new computing paradigms. The book explores the uses of computational intelligence (CI) techniques for intelligent decision support that can be exploited to create effectual computing systems, and addresses sustainability problems in computing and information processing environments and technologies at the different levels of CI paradigms. An excellent guide to surveying the state of the art in computational intelligence applied to challenging real-world problems in sustainable computing, it is intended for scientists, practitioners, researchers and academicians dealing with the new challenges and advances in area.

Advances in Communication and Computational Technology - Gurdeep Singh Hura 2020-08-13
This book presents high-quality peer-reviewed papers from the International Conference on Advanced Communication and Computational Technology (ICACCT) 2019 held at the National Institute of Technology, Kurukshetra, India. The contents are broadly divided into four parts: (i) Advanced Computing, (ii) Communication and Networking, (iii) VLSI and Embedded Systems, and (iv) Optimization Techniques.The major focus is on emerging computing technologies and their applications in the domain of communication and networking. The book will prove useful for engineers and researchers working on physical, data link and transport layers of communication protocols. Also, this will be useful for industry professionals interested in manufacturing of communication devices, modems, routers etc. with enhanced computational and data handling capacities.

Cognitive Computing for Big Data Systems Over IoT - Arun Kumar Sangaiah 2017-12-30
This book brings a high level of fluidity to analytics and addresses recent trends, innovative ideas, challenges and cognitive computing solutions in big data and the Internet of Things (IoT). It explores domain knowledge, data science reasoning and cognitive methods in the context of the IoT, extending current data science approaches by incorporating insights from experts as well as a notion of artificial intelligence, and performing inferences on the knowledge The book provides a comprehensive overview of the constituent paradigms underlying cognitive computing methods, which illustrate the increased focus on big data in IoT problems as they evolve. It includes novel, in-depth fundamental research contributions from a methodological/application in data science accomplishing sustainable solution for the future perspective. Mainly focusing on the design of the best cognitive embedded data science technologies to process and analyze the large amount of data collected through the IoT, and aid better decision making, the book discusses adapting decision-making approaches under cognitive computing paradigms to demonstrate how the proposed procedures as well as big data and IoT problems can be handled in practice. This book is a valuable resource for scientists, professionals, researchers, and academicians dealing with the new challenges and advances in the specific areas of cognitive computing and data science approaches.

Methods and Tools for Efficient Model-Based Development of Cyber-Physical Systems with Emphasis on Model and Tool Integration - Alachew Mengist 2019-08-21
Model-based tools and methods are playing important roles in the design and analysis of cyber-physical systems before building and testing physical prototypes. The development of increasingly complex CPSs requires the use of multiple tools for different phases of the development lifecycle, which in turn depends on the ability of the supporting tools to interoperate. However, currently no vendor provides comprehensive end-to-end systems engineering tool support across the entire product lifecycle, and no mature solution currently exists for integrating different system modeling and simulation languages, tools and algorithms in the CPSs design process. Thus, modeling and simulation tools are still used separately in industry. The unique challenges in integration of CPSs are a result of the increasing heterogeneity of components and their interactions, increasing size of systems, and essential design requirements from various stakeholders. The corresponding system development involves several specialists in different domains, often using different modeling languages and tools. In order to address the

challenges of CPSs and facilitate design of system architecture and design integration of different models, significant progress needs to be made towards model-based integration of multiple design tools, languages, and algorithms into a single integrated modeling and simulation environment. In this thesis we present the need for methods and tools with the aim of developing techniques for numerically stable co-simulation, advanced simulation model analysis, simulation-based optimization, and traceability capability, and making them more accessible to the model-based cyber physical product development process, leading to more efficient simulation. In particular, the contributions of this thesis are as follows: 1) development of a model-based dynamic optimization approach by integrating optimization into the model development process; 2) development of a graphical co-modeling editor and co-simulation framework for modeling, connecting, and unified system simulation of several different modeling tools using the TLM technique; 3) development of a tool-supported method for multidisciplinary collaborative modeling and traceability support throughout the development process for CPSs; 4) development of an advanced simulation modeling analysis tool for more efficient simulation.

Advances in Communication Systems and Networks - J. Jayakumari 2020-06-13
This book presents the selected peer-reviewed papers from the International Conference on Communication Systems and Networks (ComNet) 2019. Highlighting the latest findings, ideas, developments and applications in all areas of advanced communication systems and networking, it covers a variety of topics, including next-generation wireless technologies such as 5G, new hardware platforms, antenna design, applications of artificial intelligence (AI), signal processing and optimization techniques. Given its scope, this book can be useful for beginners, researchers and professionals working in wireless communication and networks, and other allied fields.

Advances in Communication, Signal Processing, VLSI, and Embedded Systems - Shubhakar Kalya 2019-11-30
This book comprises selected peer-reviewed papers from the International Conference on VLSI, Signal Processing, Power Systems, Illumination and Lighting Control, Communication and Embedded Systems (VSPICE-2019). The contents are divided into five broad topics - VLSI and embedded systems, signal processing, power systems, illumination and control, and communication and networking. The book focuses on the latest innovations, trends, and challenges encountered in the different areas of electronics and communication, and electrical engineering. It also offers potential solutions and provides an insight into various emerging areas such as image fusion, bio-sensors, and underwater sensor networks. This book can prove to be useful for academics and professionals interested in the various sub-fields of electronics and communication engineering.

Innovative Design and Development Practices in Aerospace and Automotive Engineering - Ram P. Bajpai 2016-09-17
The book presents the best articles presented by researchers, academicians and industrial experts in the International Conference on "Innovative Design and Development Practices in Aerospace and Automotive Engineering (I-DAD 2016)". The book discusses new concept designs, analysis and manufacturing technologies, where more swing is for improved performance through specific and/or multifunctional linguistic design aspects to downsize the system, improve weight to strength ratio, fuel efficiency, better operational capability at room and elevated temperatures, reduced wear and tear, NVH aspects while balancing the challenges of beyond Euro IV/Barat Stage IV emission norms, Greenhouse effects and recyclable materials. The innovative methods discussed in the book will serve as a reference material for educational and research organizations, as well as industry, to take up challenging projects of mutual interest.

Introduction to Embedded Systems, Second Edition - Edward Ashford Lee 2017-01-06
An introduction to the engineering principles of embedded systems, with a focus on modeling, design, and analysis of cyber-physical systems. The most visible use of computers and software is processing information for human consumption. The vast majority of computers in use, however, are much less visible. They run the engine, brakes, seatbelts, airbag, and audio system in your car. They digitally encode your voice and construct a radio signal to send it from your cell phone to a base station. They command robots on a factory floor, power generation in a power plant, processes in a chemical plant, and traffic lights in a city. These less visible computers are called embedded systems, and the software they run is called embedded software. The principal challenges in designing

and analyzing embedded systems stem from their interaction with physical processes. This book takes a cyber-physical approach to embedded systems, introducing the engineering concepts underlying embedded systems as a technology and as a subject of study. The focus is on modeling, design, and analysis of cyber-physical systems, which integrate computation, networking, and physical processes. The second edition offers two new chapters, several new exercises, and other improvements. The book can be used as a textbook at the advanced undergraduate or introductory graduate level and as a professional reference for practicing engineers and computer scientists. Readers should have some familiarity with machine structures, computer programming, basic discrete mathematics and algorithms, and signals and systems.

Cognitive Computing for Big Data Systems Over IoT - Arun Kumar Sangaiah 2018-01-10
This book brings a high level of fluidity to analytics and addresses recent trends, innovative ideas, challenges and cognitive computing solutions in big data and the Internet of Things (IoT). It explores domain knowledge, data science reasoning and cognitive methods in the context of the IoT, extending current data science approaches by incorporating insights from experts as well as a notion of artificial intelligence, and performing inferences on the knowledge The book provides a comprehensive overview of the constituent paradigms underlying cognitive computing methods, which illustrate the increased focus on big data in IoT problems as they evolve. It includes novel, in-depth fundamental research contributions from a methodological/application in data science accomplishing sustainable solution for the future perspective. Mainly focusing on the design of the best cognitive embedded data science technologies to process and analyze the large amount of data collected through the IoT, and aid better decision making, the book discusses adapting decision-making approaches under cognitive computing paradigms to demonstrate how the proposed procedures as well as big data and IoT problems can be handled in practice. This book is a valuable resource for scientists, professionals, researchers, and academicians dealing with the new challenges and advances in the specific areas of cognitive computing and data science approaches.

Internet of Things - Arun Kumar Rana 2021-10-19
Internet of things (IoT) is the connection and communication of physical objects (smart devices) over the internet. In this recent age, people's daily lives are dependent on the internet through their smartphones, tablets, Smart TVs, micro-controllers, Smart Tags, computers, laptops, and cars to name a few. This book discusses different ways to create a better IoT network and/or IoT platforms to improve the efficiency and quality of these products and subsequently their users' lives. In addition, this book provides future research directions in energy, industry, and healthcare, and explores the different applications of IoT and its associated technologies. It provides an overview and explanation of the software architecture, middleware, data processing and data management as well as security, sensors, actuators and algorithms used to create a working IoT platform. The editors then go on to examine IoT networks and platforms as they relate to energy industry including, energy efficiency and management, intelligent energy management, smart energy through blockchain and energy-efficient/aware routing/scheduling challenges and issues. They then explore IoT as it applies to healthcare including biomedical image and signal analysis and disease prediction and diagnosis. Finally the editors examine the prospects and applications of IoT for industry through the concepts of smart industry, including architecture, blockchain, and Industry 4.0. This book is intended for senior undergraduate and graduate students, researchers and industry professionals working on IoT applications and infrastructure. Reviews IoT software architecture and middleware, data processing and management, security, privacy and reliability, architectures, protocols, technologies, algorithms, and smart objects, sensors, and actuators Explores IoT as it applies to energy, including energy efficiency and management, intelligent energy management, smart energy through blockchain and energy-efficient/aware routing/scheduling challenges and issues Examines IoT as it applies to healthcare including biomedical image and signal analysis, and disease prediction and diagnosis Examines IoT as it applies to smart industry including architecture, blockchain, and Industry 4.0 Discusses different ways to create a better IoT network or IoT platform

Advances in Electronics, Communication and Computing - Akhtar Kalam 2017-10-27
This book is a compilation of research work in the interdisciplinary areas of electronics, communication, and computing. This book is specifically targeted at students, research scholars and academicians. The book covers the different approaches and techniques for specific applications, such as particle-swarm optimization, Otsu's function and harmony search optimization algorithm, triple gate silicon on insulator (SOI)MOSFET, micro-Raman and Fourier Transform Infrared Spectroscopy (FTIR) analysis, high-k dielectric gate oxide, spectrum sensing in cognitive radio, microstrip antenna, Ground-penetrating radar (GPR) with conducting surfaces, and digital image forgery detection. The contents of the book will be useful to academic and professional researchers alike.

Futuristic Communication and Network Technologies - A. Sivasubramanian 2021-10-11
This book presents select proceedings of the International Conference on Futuristic Communication and Network Technologies (CFCNT 2020) conducted at Vellore Institute of Technology, Chennai. It covers various domains in communication engineering and networking technologies. This volume comprises of recent research in areas like optical communication, optical networks, optics and optical computing, emerging trends in photonics, MEMS and sensors, active and passive RF components and devices, antenna systems and applications, RF devices and antennas for microwave emerging technologies, wireless communication for future networks, signal and image processing, machine learning/AI for networks, internet of intelligent things, network security and blockchain technologies. This book will be useful for researchers, professionals, and engineers working in the core areas of electronics and communication.

Principles of Cyber-Physical Systems - Rajeev Alur 2015-04-24
A foundational text that offers a rigorous introduction to the principles of design, specification, modeling, and analysis of cyber-physical systems. A cyber-physical system consists of a collection of computing devices communicating with one another and interacting with the physical world via sensors and actuators in a feedback loop. Increasingly, such systems are everywhere, from smart buildings to medical devices to automobiles. This textbook offers a rigorous and comprehensive introduction to the principles of design, specification, modeling, and analysis of cyber-physical systems. The book draws on a diverse set of subdisciplines, including model-based design, concurrency theory, distributed algorithms, formal methods of specification and verification, control theory, real-time systems, and hybrid systems, explaining the core ideas from each that are relevant to system design and analysis. The book explains how formal models provide mathematical abstractions to manage the complexity of a system design. It covers both synchronous and asynchronous models for concurrent computation, continuous-time models for dynamical systems, and hybrid systems for integrating discrete and continuous evolution. The role of correctness requirements in the design of reliable systems is illustrated with a range of specification formalisms and the associated techniques for formal verification. The topics include safety and liveness requirements, temporal logic, model checking, deductive verification, stability analysis of linear systems, and real-time scheduling algorithms. Principles of modeling, specification, and analysis are illustrated by constructing solutions to representative design problems from distributed algorithms, network protocols, control design, and robotics. This book provides the rapidly expanding field of cyber-physical systems with a long-needed foundational text by an established authority. It is suitable for classroom use or as a reference for professionals.

AI-Centric Smart City Ecosystems - Alex Khang 2022-12-30
Over the next few years, smart city technologies will be rolled out, and the IoT devices and AI-centric systems will provide even more far-reaching connectivity. This book presents various concepts in the design and development of a smart city and methodologies and solutions involved in designing contemporary infrastructure for building smart cities around the world. The book will focus mainly on six areas of smart city infrastructures: smart city entities, IoT-based solutions, AI-centric control systems, smart systems, cybersecurity mechanisms, data science, and cloud computing for the deployment of the smart ecosystem. AI-Centric Smart City Ecosystem: Technologies, Design, and Implementation will discuss the role of AI-centric innovative systems and beyond intelligent solutions in the smart city framework. Readers will discover how to apply design principles and technologies for operating intelligent cities and develop an understanding of how to integrate AI-based control systems to make systems smarter. The book will present various concepts in the design and development of smart cities and methodologies and solutions involved in designing modern infrastructure. Also, readers can discover how to develop applications and connect the IoT devices for collecting and mining real-time data and

uncover the challenges and techniques for improving the automatic operation in the smart city by using high-tech solutions. This book is intended to serve the needs of the industry, engineers, professionals, researchers, and master's and doctoral students studying emerging technologies in smart city ecosystems.

Basic VLSI Design - Douglas A. Pucknell 1985