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Throughout human history, technological advancements have been made for the ease of human labor. With our most recent advancements, it has been the work of scholars to discover ways for machines to take over a large part of this labor and reduce human intervention. These advancements may become essential processes to nearly every industry. It is essential to be knowledgeable about automation so that it may be applied. *Research Anthology on Cross-Disciplinary Designs and Applications of Automation* is a comprehensive resource on the emerging designs and application of automation. This collection features a number of authors spanning multiple disciplines such as home automation, healthcare automation, government automation, and more. Covering topics such as human-machine interaction, trust calibration, and sensors, this research anthology is an excellent resource for technologists, IT specialists, computer engineers, systems and software engineers, manufacturers, engineers, government officials, professors, students, healthcare administration, managers, CEOs, researchers, and academicians. This book presents the latest research findings, innovative research results, methods and development techniques related to P2P, grid, cloud and Internet computing from both theoretical and practical perspectives. It also reveals the synergies among such large-scale computing paradigms. P2P, grid, cloud and Internet computing technologies have rapidly become established as breakthrough paradigms for solving complex problems by enabling aggregation and sharing of an increasing variety of distributed computational resources at large scale. Grid computing originated as a paradigm for high-performance computing,

as an alternative to expensive supercomputers through different forms of large-scale distributed computing. P2P computing emerged as a new paradigm after client-server and web-based computing and has proved useful in the development of social networking, B2B (business to business), B2C (business to consumer), B2G (business to government), and B2E (business to employee). Cloud computing has been defined as a “computing paradigm where the boundaries of computing are determined by economic rationale rather than technical limits,” and it has fast become a computing paradigm with applicability and adoption in all application domains and which provides utility computing at a large scale. Lastly, Internet computing is the basis of any large-scale distributed computing paradigms; it has developed into a vast area of flourishing fields with enormous impact on today’s information societies, and serving as a universal platform comprising a large variety of computing forms such as grid, P2P, cloud and mobile computing. As the demand for efficient energy sources continues to grow around the globe, electrical systems are becoming more essential in an effort to meet these increased needs. As these systems are being utilized more frequently, it becomes imperative to find ways of optimizing their overall function. The Handbook of Research on Emerging Technologies for Electrical Power Planning, Analysis, and Optimization features emergent methods and research in the systemic and strategic planning of energy usage. Highlighting theoretical perspectives and empirical research, this handbook is a comprehensive reference source for researchers, practitioners, students, and professionals interested in the current advancements and efficient use in power systems. The Home Networking Conference 2007 provided an international technical forum for experts from industry and academia everywhere in the world to exchange ideas and present results of ongoing researches in home networking. The IFIP series publishes state-of-the-art results in the sciences and technologies of information and communication. Proceedings and post-proceedings of referred international conferences in computer science and interdisciplinary fields are featured. First published in 2005. Advanced Lighting Controls is edited by Craig DiLouie and written for engineers, architects, lighting designers, electrical contractors, distributors, and building owners and managers. Advanced lighting controls, indicated by research as the "next big thing," are now mandated by the ASHRAE/IES 91.1-1999 energy standard, the basis for all state energy codes in the U.S., and are becoming the norm rather than the exception in new construction. This book provides in-depth information about the major trends, technologies, codes, and design techniques shaping the use of today's lighting control systems, including dimming, automatic switching, and global as well as personal control. This book covers the latest advances in the rapid growing field of inter-cooperative collective intelligence aiming the integration and cooperation of various computational resources, networks and intelligent processing paradigms to collectively build intelligence and advanced decision support and interfaces for end-users. The book brings a comprehensive view of the state-of-the-art in the field of integration of sensor networks, IoT and Cloud computing, massive and intelligent querying and processing of data. As a result, the book presents lessons learned so far and identifies new research issues, challenges and opportunities for further research and development agendas. Emerging areas of applications are also identified and usefulness of inter-cooperative collective intelligence is envisaged. Researchers, software developers, practitioners and students interested in the field of inter-cooperative collective intelligence will find the comprehensive coverage of this book useful for their research, academic, development and practice activity. This book constitutes the refereed proceedings of the EUC 2007 workshops held in conjunction with the IFIP International Conference on Embedded and Ubiquitous Computing, EUC 2007, in Taipei, Taiwan, in December 2007. The 69 revised full papers presented together with four invited papers were carefully reviewed and selected from about 200 submissions to the seven workshops. A broad range of topics are covered. Wolfgang Glatthaar International Business Machines (IBM), Gennany The rapid developments in information technology (IT) will continue through the coming years. New application areas will be added. Whereas the use of information technology in the past decade has been concentrated primarily on business and public administration, in future the suppliers of information technology will develop an increasing number of applications for the private household (see fig. 1). Traditional perspective: New

perspective: 'IT-solutions for the "IT-solutions for the company' private household" ~ \..... \..... \..... \.....
..... \..... \\\\ Fig. 1. New perspective on information technology This development has already generated considerable market dynamics. Latest forecasts for the USA suggest that by 1996 at the latest the private household will present greater sales potential for home computers than business and public administration. VI Preface Up to now the use of information technology in the private household has not been regarded as highly significant by either business or science, even though PCs have become widespread in the private sphere. In the ESPRIT framework there have been individual projects dealing with home networks, and in a number of Asian and European countries, as well as America, experiments with interactive television are taking place. Internet and commercial online services are experiencing rapid growth. This application area for information technology in the private household, which is generating increasing business attention, must also be the subject of appropriate research activities. With the increased pace of global, economical and technological development, change has become an inevitable feature of any organisation to survive in the competitive market. If it is a planned change process, the HR practitioner can use any of the existing general models or theories of change and use suggestive interventions to increase effectiveness and capability to change itself. When the magnitude of change is unpredictable or the degree of the organisational process or systems is unorganised, the existing models or practice of planned change is still in the formative stage, and there is room for continuous refinement and improvement. This book will bridge this gap in the current organisational development and change literature by benefiting the HR practitioner with six real case studies. The cases bring out the interventions adopted, key activities associated with the successful implementation of interventions and the critical role played by HR in achieving organisational effectiveness. This book captures the transformational journey of a diverse set of companies and weaves various dimensions into a common coherent framework for the field of HRM in Change Management. The case studies illustrate six powerful organisational experiences, listing the major activities contributing to effective change management from motivating change, vision, support from key stakeholders, transition management to organisational and HR commitment for implementation. By demonstrating the role of HR as a 'change agent,' this volume will be valuable to researchers, academics, managers and students in the fields of human resource management and change management. Prepare yourself for the digital transformation with the Microsoft Power Platform KEY FEATURES ● Learn using concrete examples, minimal theoretical coverage, and practical Power Platform illustrations. ● Explore the interactive understanding of the no-code concept and various Power Platform components for building intelligent systems. ● Learn to develop robust end-to-end applications using numerous solutions provided in each chapter. DESCRIPTION The author of 'Microsoft Power Platform Up and Running' is an experienced subject expert on technology, so the book is engaging, well-illustrated, and aims to make it easier to implement the technology in your daily life. The book covers all aspects of the Power Platform in an efficient and easy-to-understand manner, and it is accompanied by a series of practical exercises. The author also makes every effort to ensure that even a non-techie can begin using a power platform after reading this book. The book begins with the basics, explaining what low-code and no-code are and showing how to maximize efficiency in creating business applications for one's organization. Next, the book describes the Microsoft Power Platform's foundation, as well as all its components and services. Readers will begin with practical exercises right away, beginning with provisioning a Power Platform environment. Next, the book delves deeper into the Power Platform components such as Power Apps, Power Automate, Power BI, and Power Virtual Agents. Towards the end, the book explains practical exercises for each feature or service where you will gradually build a small business solution for a fictitious organization, Project Wizards, Inc. Throughout the book, you'll discover every component of power platform, including Power Apps, Power Pages, Power Automate, and Power Virtual Agents, in building exciting and valuable solutions to your needs. WHAT YOU WILL LEARN ● Learn to use Microsoft's Power Platform and its various components like a champ. ● Efficiently manage Microsoft Dataverse to build data models. ● Take

lessons in Power Automate and Power Apps to develop automation solutions and business apps. ● Create analytical reports and dashboards using the creative Power BI tool. ● Gain knowledge of implementing and managing Power Platform's administration, security, and governance in practice.

WHO THIS BOOK IS FOR This book is geared toward business managers, business analysts, IT professionals, and anyone interested in bringing modernization to their company's daily operations. You don't need to have any prior experience with the power platform.

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Get the home of tomorrow, today! Absolute Beginner's Guide to Home Automation will help you turn your ordinary home into a high-tech haven. Want to schedule your lights to turn on while you're on vacation? Stuck late at work and want to start the roast you put in the crock pot this morning? You can make it all happen with the help of existing 110V electrical wiring in your home and this step-by-step tutorial. Through simple, do-it-yourself instructions, you will walk through the process of outfitting every room in your home with a network connection that you can control with a few clicks on your computer keyboard. Complete with illustrations and photographs, Absolute Beginner's Guide to Home Automation will have you riding the wave of the future in no time. This book provides you with an introduction to the Microsoft automation solutions: Azure Automation and Service Management Automation. Throughout the chapters, the text explores these tools and how they can be used to meet the automation needs of your Microsoft Azure cloud solutions or your enterprise datacenter environments. We provide considerations on the features of each solution, and how they can be architected to fit your needs. Next, the text explores the interfaces you will use to interact with the solutions, including the web-based portals, Windows PowerShell command-line interaction, and programmatic access via the web services. The text then covers how you implement and manage automation using runbooks, assets, and Integration Modules, along with how you can use a source control system to manage runbook content. Finally, some examples of automation scenarios are discussed, providing you with samples that can be used to speed development in your own solution.

Contributors, mostly from large electronics corporations, discuss the prospect of standardizing codes and controls for systems of energy management and building automation, to allow products from different suppliers to be combined and integrated. Topics include hardware and software, architecture, and control systems. As control systems are becoming more complex and capable with much functionality, it requires more efforts not only to maintain correct operations but also to protect them from various threats. Security of the control network which connects entities in the system and serves as a path for information transfer between them is a major cause of concern. Operators of the control systems have taken a conservative way to provide a protection to the network where it is simply isolated from other systems and networks that could introduce access channels. Even though the isolation provides a great protection, it limits management efficiency and expandability of the system. Solving the problem of providing interconnectivity as well as sufficient protection to the control network is not trivial. Existing work proposed a solution where they applied a multi-tier web server system to the control system in the effort to provide better connectivity and introduced a concept of redundant authentication to mitigate risks to the system. In this architecture, a front end system that accepts requests from users is required to provide a non-repudiable credential of the requesting user when it passes the request to a back end proxy that has access privilege on the control system. This limits malicious actions that could be performed by the compromised front end system. It, however, forces every recently authenticated user to share the vulnerability in the case of the compromised front end system due to a requirement that clients should remain unmodified. In this thesis, we suggest a new solution with a client program to overcome the above limitation and provide a better protection. Installation of the client program is required in order to access the control system from the outside network. With this architecture, users who have chosen to opt out by not installing the client

program are safe from the risk introduced by other users who have chosen to install the program and use the service. Non-repudiable credentials are still required with every request to the control system hence containing the possible actions of the compromised front end system on the control system. We validate our strategy on Building Automation System (BAS) testbed with a practical application which allows users to unlock doors of the building. Through expanded intelligence, the use of robotics has fundamentally transformed the business industry. Providing successful techniques in robotic design allows for increased autonomous mobility, which leads to a greater productivity and production level. *Rapid Automation: Concepts, Methodologies, Tools, and Applications* provides innovative insights into the state-of-the-art technologies in the design and development of robotics and their real-world applications in business processes. Highlighting a range of topics such as workflow automation tools, human-computer interaction, and swarm robotics, this multi-volume book is ideally designed for computer engineers, business managers, robotic developers, business and IT professionals, academicians, and researchers. This book provides in-depth results and case studies in innovation from actual work undertaken in collaboration with industry partners in Architecture, Engineering, and Construction (AEC). Scientific advances and innovative technologies in the sector are key to shaping the changes emerging as a result of Industry 4.0. Mainstream Building Information Management (BIM) is seen as a vehicle for addressing issues such as industry fragmentation, value-driven solutions, decision-making, client engagement, and design/process flow; however, advanced simulation, computer vision, Internet of Things (IoT), blockchain, machine learning, deep learning, and linked data all provide immense opportunities for dealing with these challenges and can provide evidenced-based innovative solutions not seen before. These technologies are perceived as the “true” enablers of future practice, but only recently has the AEC sector recognised terms such as “golden key” and “golden thread” as part of BIM processes and workflows. This book builds on the success of a number of initiatives and projects by the authors, which include seminal findings from the literature, research and development, and practice-based solutions produced for industry. It presents these findings through real projects and case studies developed by the authors and reports on how these technologies made a real-world impact. The chapters and cases in the book are developed around these overarching themes: • BIM and AEC Design and Optimisation: Application of Artificial Intelligence in Design • BIM and XR as Advanced Visualisation and Simulation Tools • Design Informatics and Advancements in BIM Authoring • Green Building Assessment: Emerging Design Support Tools • Computer Vision and Image Processing for Expediting Project Management and Operations • Blockchain, Big Data, and IoT for Facilitated Project Management • BIM Strategies and Leveraged Solutions This book is a timely and relevant synthesis of a number of cogent subjects underpinning the paradigm shift needed for the AEC industry and is essential reading for all involved in the sector. It is particularly suited for use in Masters-level programs in Architecture, Engineering, and Construction. Compared with other wireless communication technologies, such as Bluetooth, WiFi, and UWB, ZigBee is a far more reliable, affordable, and energy-efficient option. It is also the only global wireless communication standard for easily deployed, low-power consumption products. *ZigBee Network Protocols and Applications* provides detailed descriptions of This open access book provides a comprehensive view on data ecosystems and platform economics from methodical and technological foundations up to reports from practical implementations and applications in various industries. To this end, the book is structured in four parts: Part I “Foundations and Contexts” provides a general overview about building, running, and governing data spaces and an introduction to the IDS and GAIA-X projects. Part II “Data Space Technologies” subsequently details various implementation aspects of IDS and GAIA-X, including eg data usage control, the usage of blockchain technologies, or semantic data integration and interoperability. Next, Part III describes various “Use Cases and Data Ecosystems” from various application areas such as agriculture, healthcare, industry, energy, and mobility. Part IV eventually offers an overview of several “Solutions and Applications”, eg including products and experiences from companies like Google, SAP, Huawei, T-Systems, Innopay and many more. Overall, the book provides professionals in industry with an encompassing overview of the technological and economic aspects of data spaces,

based on the International Data Spaces and Gaia-X initiatives. It presents implementations and business cases and gives an outlook to future developments. In doing so, it aims at proliferating the vision of a social data market economy based on data spaces which embrace trust and data sovereignty. Amadeus announces it has acquired the airline network planning software business of Optym, a leader in network optimization. The two companies have been partners for more than three years, jointly delivering solutions to Southwest Airlines, easyJet, and LATAM Airlines. The Amadeus Sky Suite will be further integrated into the Amadeus Airline Platform, including software for network optimization and simulation, frequency and capacity planning, network planning and forecasting, and a flight scheduling development platform. As a result of this transaction, 90 employees will be dedicated to the Amadeus Sky Suite. These employees join the Airlines R&D unit, reporting to Christophe Bousquet, Senior Vice President, Airlines R&D; the Amadeus Sky Suite is part of Amadeus' Airlines Offer Suite of solutions. The acquisition is effective immediately, and the companies have begun integration and employee onboarding, continuing to serve customers with a focus on business as usual. Financial details are confidential. Optym will continue to operate as a separate entity focused on other areas of business.

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, tftpd, tftp, strace, and gdb are among the packages discussed. There are a number of different system concepts that have gained much relevance in the area of embedded systems over the past couple of years. First, there is the classic concept of embedded systems where the focus is on control systems for physical processes. Secondly, the notion of pervasive computing has evolved, where the vision foresees everyday objects having some form of computation capacity and, in most cases, sensing and communication facilities. Thirdly, the notion of wireless sensor networks has arisen, where small computing devices are able to sense their environment and cooperate in order to achieve a well-defined goal. These three types of quite diverse systems share a lot of commonalities on the one hand and, on the other hand, have some complementary aspects in common that make a combination of these systems into a coherent system vision promising. In particular, the important notions of control, heterogeneity, wireless communication, dynamic and ad-hoc nature and cost are prevalent to various degrees in each of these systems. A future system concept needs to combine the strong points of all three system concepts in at least these functional aspects. It has to provide support for the control of physical processes like today's embedded systems do, have as good support for device heterogeneity and

spontaneity of usage as required by pervasive and ubiquitous computing approaches, and has to be as cost efficient and wirelessly agile as wireless sensor networks are. These new systems consist, therefore, of individual entities or objects that jointly strive to reach a common goal, which will typically be a goal in sensing or control, and are dynamically and loosely federating themselves for cooperation, taking care not to overtax their available resources. This book presents a roadmap to these concepts which are summarized as cooperating objects. The capability and use of IT and web based energy information and control systems has expanded from single facilities to multiple facilities and organizations with buildings located throughout the world. This book answers the question of how to take the mass of available data and extract from it simple and useful information which can determine what actions to take to improve efficiency and productivity of commercial, institutional and industrial facilities. The book also provides insight into the areas of advanced applications for web based EIS and ECS systems, and the integration of IT/web based information and control systems with existing BAS systems. This book promotes the benefits of the development and application of energy information and control systems. This wave of information technology (IT) and web-based energy information and control systems (web based EIS/ECS) continues to roll on with increasing speed and intensity. This handbook presents recent technological advancements in the field, as well as a compilation of the best information from three previous books in this area. The combined thrust of this information is that the highest level functions of the building and facility automation system are delivered by a web based EIS/ECS system that provides energy management, facility management, overall facility operational management and ties in with the enterprise resource management system for the entire facility or the group of facilities being managed. This book is for anyone who wants to learn Intel Galileo for home automation and cross-platform software development. No knowledge of programming with Intel Galileo is assumed, but knowledge of the C programming language is essential. Automation, a mixture of algorithms, robots, software, and avatars, is transforming all types of jobs and industries. This book responds to one critical question for the design and construction industry: "how are architects, engineers, and contractors using information technology to further automate their practices?" Addressing the use of new digital technologies, particularly parametric automation for design and construction in the building industry, this book looks at how technologically advanced architectural and engineering practices are semi-automating their design processes by using sophisticated algorithms to transform their workflows. The book also documents a set of firms that are further advancing automation by using pre-fabrication, modularization, and custom designs via robotics. Featuring contributions from major technology vendors, industry consortia, and government and private research establishments, the Industrial Communication Technology Handbook, Second Edition provides comprehensive and authoritative coverage of wire- and wireless-based specialized communication networks used in plant and factory automation, automotive applications, avionics, building automation, energy and power systems, train applications, and more. New to the Second Edition: 46 brand-new chapters and 21 substantially revised chapters Inclusion of the latest, most significant developments in specialized communication technologies and systems Addition of new application domains for specialized networks The Industrial Communication Technology Handbook, Second Edition supplies readers with a thorough understanding of the application-specific requirements for communication services and their supporting technologies. It is useful to a broad spectrum of professionals involved in the conception, design, development, standardization, and use of specialized communication networks as well as academic institutions engaged in engineering education and vocational training. Transform your IT organization from one weighed down by set practices to one with a DevOps culture and a cloud-first strategy that is optimized by automation and other lean practices. In this engaging read, you will discover the opportunities, challenges, lessons, and rewards that CA Technologies encountered when making their agile and DevOps transformation. In Enterprise DevOps Framework author Shamayel Farooqui shows you how agile adoption will enable your organization to stay ahead in an ever-changing business environment and meet your customers' needs. He includes detailed references to key concepts such as agile,

hybrid and cloud technology, infrastructure management, and process automation. What You'll Learn Establish the focus areas for your IT organization Prepare for the challenges of transforming your enterprise to a DevOps, agile organization Know the key steps for executing an enterprise DevOps strategy Build a strong team of DevOps individuals focused on improving the efficiency of your organization through Agile methodologies, automation, cloud adoption, and "infrastructure as code" practices Who This Book Is For IT administrators, operational personnel, cloud professionals, DevOps professionals, human resources professionals, managers, and C-level staff With the widespread availability of high-speed, high-capacity microprocessors and microcomputers with high-speed communication ability, and sophisticated energy analytics software, the technology to support deployment of automated diagnostics is now available, and the opportunity to apply automated fault detection and diagnostics to every system and piece of equipment in a facility, as well as for whole buildings, is imminent. The purpose of this book is to share information with a broad audience on the state of automated fault detection and diagnostics for buildings applications, the benefits of those applications, emerging diagnostic technology, examples of field deployments, the relationship to codes and standards, automated diagnostic tools presently available, guidance on how to use automated diagnostics, and related issues. Build an end-to-end business solution in the cognitive automation lifecycle and explore UiPath Document Understanding, UiPath AI Center, and Druid Key Features Explore out-of-the-box (OOTB) AI Models in UiPath Learn how to deploy, manage, and continuously improve machine learning models using UiPath AI Center Deploy UiPath-integrated chatbots and master UiPath Document Understanding Book Description Artificial intelligence (AI) enables enterprises to optimize business processes that are probabilistic, highly variable, and require cognitive abilities with unstructured data. Many believe there is a steep learning curve with AI, however, the goal of our book is to lower the barrier to using AI. This practical guide to AI with UiPath will help RPA developers and tech-savvy business users learn how to incorporate cognitive abilities into business process optimization. With the hands-on approach of this book, you'll quickly be on your way to implementing cognitive automation to solve everyday business problems. Complete with step-by-step explanations of essential concepts, practical examples, and self-assessment questions, this book will help you understand the power of AI and give you an overview of the relevant out-of-the-box models. You'll learn about cognitive AI in the context of RPA, the basics of machine learning, and how to apply cognitive automation within the development lifecycle. You'll then put your skills to test by building three use cases with UiPath Document Understanding, UiPath AI Center, and Druid. By the end of this AI book, you'll be able to build UiPath automations with the cognitive capabilities of intelligent document processing, machine learning, and chatbots, while understanding the development lifecycle. What you will learn Discover how to bridge the gap between RPA and cognitive automation Understand how to configure, deploy, and maintain ML models in UiPath Explore OOTB models to manage documents, chats, emails, and more Prepare test data and test cases for user acceptance testing (UAT) Build a UiPath automation to act upon Druid responses Find out how to connect custom models to RPA Who this book is for AI Engineers and RPA developers who want to upskill and deploy out-of-the-box models using UiPath's AI capabilities will find this guide useful. A basic understanding of robotic process automation and machine learning will be beneficial but not mandatory to get started with this UiPath book. This book constitutes the refereed proceedings of the 7th International Conference on Ubiquitous Computing and Ambient Intelligence, UCAmI 2013, held in Guanacaste, Costa Rica, in December 2013. The 46 research papers presented together with 8 papers of the workshop UrbAI 2013 were carefully reviewed and selected from numerous submissions. The papers are grouped in topical sections on human interaction in ambient intelligence, ICT instrumentation and middleware support for smart environments and objects, adding intelligence for environment adaption and key application domains for ambient intelligence. This volume presents the proceedings of the 9th Cold Climate HVAC conference, which was held in Kiruna, Sweden in 2018. The conference highlighted key technologies and processes that allow scientists, designers, engineers, manufacturers and other decision makers in cold climate regions to achieve good indoor environmental quality

(IEQ) with a minimum use of energy and other resources. The conference addressed various technical, economic and social aspects of buildings and HVAC systems in new and renovated buildings. This proceedings volume gathers peer-reviewed papers by a diverse and international range of authors and showcases perspectives and practices in cold climate building design from around the globe. The following major aspects, which include both fundamental and theoretical research as well as applications and case studies, are covered: (1) Energy and power efficiency and low-energy buildings; (2) Renovating buildings; (3) Efficient HVAC components; (4) Heat pumps and geothermal systems; (5) Municipal and city energy systems; (6) Construction management; (7) Buildings in operation; (8) Building simulation; (9) Reference data; (10) Transdisciplinary connections and social aspects; (11) Indoor environments and health; (12) Moisture safety and water damage; (13) Codes, regulations, standards and policies; and (14) Other aspects of buildings in cold climates.

Abstract: Most of the energy consumed in the United States comes from residential and commercial buildings. This fact has increased the research interest in building automation systems that can lead to energy efficient buildings. These systems are essentially distributed and depend on a communication network that gathers sensing data from the environment, processes the results and provides feedback by sending commands to actuators. Wireless sensor networks have been proved as a flexible and cost saving solution for building automation. In this thesis, we present an implementation of a hierarchical wireless network for building automation and control systems using TinyOS. Also, a simulation study of data aggregation on top of the hierarchical wireless network is carried out to see its impact in the network performance. An authoritative and comprehensive guide to managing energy conservation in infrastructures *Energy Conservation in Residential, Commercial, and Industrial Facilities* offers an essential guide to the business models and engineering design frameworks for the implementation of energy conservation in infrastructures. The presented models of both physical and technological systems can be applied to a wide range of structures such as homes, hotels, public facilities, industrial facilities, transportation, and water/energy supply systems. The authors—noted experts in the field—explore the key performance indicators that are used to evaluate energy conservation strategies and the energy supply scenarios as part of the design and operation of energy systems in infrastructures. The text is based on a systems approach that demonstrates the effective management of building energy knowledge and supports the simulation, evaluation, and optimization of several building energy conservation scenarios. In addition, the authors explore new methods of developing energy semantic network (ESN) superstructures, energy conservation optimization techniques, and risk-based life cycle assessments. This important text: Defines the most effective ways to model the infrastructure of physical and technological systems Includes information on the most widely used techniques in the validation and calibration of building energy simulation Offers a discussion of the sources, quantification, and reduction of uncertainty Presents a number of efficient energy conservation strategies in infrastructure systems, including HVAC, lighting, appliances, transportation, and industrial facilities Describes illustrative case studies to demonstrate the proposed energy conservation framework, practices, methods, engineering designs, control, and technologies Written for students studying energy conservation as well as engineers designing the next generation of buildings, *Energy Conservation in Residential, Commercial, and Industrial Facilities* offers a wide-ranging guide to the effective management of energy conservation in infrastructures. This guide "will help you turn your ordinary house into a high-tech haven."--Page 4 of cover. This double volume set (LNAI 10863-10864) constitutes the refereed proceedings of the 25th International Workshop, EG-ICE 2018, held in Lausanne, Switzerland, in June 2018. The 58 papers presented in this volume were carefully reviewed and selected from 108 submissions. The papers are organized in topical sections on Advanced Computing in Engineering, Computer Supported Construction Management, Life-Cycle Design Support, Monitoring and Control Algorithms in Engineering, and BIM and Engineering Ontologies. *Plant Intelligent Automation and Digital Transformation: Process and Factory Automation* is an expansive four volume collection reviewing every major aspect of the intelligent automation and digital transformation of power, process and manufacturing plants, from the specific control and automation systems pertinent to

various power process plants through manufacturing and factory automation systems. This volume introduces the foundations of automation control theory, networking practices and communication for power, process and manufacturing plants considered as integrated digital systems. In addition, it discusses Distributed control System (DCS) for Closed loop controls system (CLCS) and PLC based systems for Open loop control systems (OLCS) and factory automation. This book provides in-depth guidance on functional and design details pertinent to each of the control types referenced above, along with the installation and commissioning of control systems. Introduces the foundations of control systems, networking and industrial data communications for power, process and manufacturing plant automation Reviews core functions, design details and optimized configurations of plant digital control systems Addresses advanced process control for digital control systems (inclusive of software implementations) Provides guidance for installation commissioning of control systems in working plants Giving you a combination of general principles, applied practice and information on the state-of-the-art, this book will give you the information you need to incorporate the latest systems and technologies into your building projects. It focuses on a number of important issues, such as: Network communication protocols and standards, including the application of the internet. The integration and interfacing of building automation subsystems and multiple building systems. Local and supervisory control strategies for typical building services systems. The automation system configuration and technologies for air-conditioning control, lighting system control, security and access control, and fire safety control. Whether you're a project manager or engineer planning the systems set-up for a high value building, or a building engineering or management student looking for a practical guide to automation and intelligent systems, this book provides a valuable introduction and overview. Distributed Control Applications: Guidelines, Design Patterns, and Application Examples with the IEC 61499 discusses the IEC 61499 reference architecture for distributed and reconfigurable control and its adoption by industry. The book provides design patterns, application guidelines, and rules for designing distributed control applications based on the IEC 61499 reference model. Moreover, examples from various industrial domains and laboratory environments are introduced and explored.

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