

IoT Solutions In Microsoft S Azure IoT Suite

We are living in the middle of a Fourth Industrial Revolution, with new technology leading to dramatic shifts in everything from manufacturing to supply chain logistics. In a lively, developing field of academic, procurement is often neglected. Despite this, procurement plays a vital role, connecting the organization with its ecosystem. At a time of change and economic crisis, a new business model is called for, which this book aims to define. Based on the applications of Industry 4.0 concepts to procurement, this book describes Procurement 4.0 as a method and a set of tools, helping businesses to improve the value of their products, reduce waste, become more flexible, and address the business needs of the future. It will appeal to academics in the area, as well as practitioners.

The International Conference on Communications, Management, and Information Technology (ICCMIT'16) provides a discussion forum for scientists, engineers, educators and students about the latest discoveries and realizations in the foundations, theory, models and applications of systems inspired on nature, using computational intelligence methodologies, as well as in emerging areas related to the three tracks of the conference: Communication Engineering, Knowledge, and Information Technology. The best 25 papers to be included in the book will be carefully reviewed and selected from numerous submissions, then revised and expanded to provide deeper insight into trends shaping future ICT.

This book relates research being implemented in three main research areas: secure connectivity and intelligent systems, real-time analytics and manufacturing knowledge and virtual manufacturing. Manufacturing SMEs and MNCs want to see how Industry 4.0 is implemented. On the other hand, groundbreaking research on this topic is constantly growing. For the aforesaid reason, the Singapore Agency for Science, Technology and Research (A*STAR), has created the model factory initiative. In the model factory, manufacturers, technology providers and the broader industry can (i) learn how I4.0 technologies are implemented on real-world manufacturing use-cases, (ii) test process improvements enabled by such technologies at the model factory facility, without disrupting their own operations, (iii) co-develop technology solutions and (iv) support the adoption of solutions at their everyday industrial operation. The book constitutes a clear base ground not only for inspiration of researchers, but also for companies who will want to adopt smart manufacturing approaches coming from Industry 4.0 in their pathway to digitization.

Use a step-by-step process to create and deploy your first Azure IoT Edge solution. Modern day developers and architects in today's cloud-focused world must understand when it makes sense to leverage the cloud. Computing on the edge is a new paradigm for most people. The Azure IoT Edge platform uses many existing technologies that may be familiar to developers, but understanding how to leverage those technologies in an edge computing scenario can be challenging. Beginning Azure IoT Edge Computing demystifies computing on the edge and explains, through concrete examples and exercises, how and when to leverage the power of intelligent edge computing. It introduces the possibilities of intelligent edge computing using the Azure IoT Edge platform, and guides you through hands-on exercises to make edge computing approachable, understandable, and highly useful. Through user-friendly discussion you will not only understand how to build edge solutions, but also when to build them. By explaining some common solution patterns, the decision on when to use the cloud and when to avoid the cloud will become much clearer. What You'll Learn Create and deploy Azure IoT Edge solutions Recognize when to leverage the intelligent edge pattern and when to avoid it Leverage the available developer tooling to develop and debug IoT Edge solutions Know which off-the-shelf edge computing modules are available Become familiar with some of the lesser-known device protocols used in conjunction with edge computing Understand how to securely deploy and bootstrap an IoT Edge device Explore related topics such as containers and secure device provisioning Who This Book Is For Developers or architects who want to understand edge computing and when and where to use it. Readers should be familiar with C# or Python and have a high-level understanding of the Azure IoT platform.

This book highlights the recent research on hybrid intelligent systems and their various practical applications. It presents 58 selected papers from the 20th International Conference on Hybrid Intelligent Systems (HIS 2020) and 20 papers from the 12th World Congress on Nature and Biologically Inspired Computing (NaBIC 2020), which was held online, from December 14 to 16, 2020. A premier conference in the field of artificial intelligence, HIS - NaBIC 2020 brought together researchers, engineers and practitioners whose work involves intelligent systems, network security and their applications in industry. Including contributions by authors from 25 countries, the book offers a valuable reference guide for all researchers, students and practitioners in the fields of science and engineering.

Do you recognize Microsoft Azure IoT solutions achievements? What are the revised rough estimates of the financial savings/opportunity for Microsoft Azure IoT solutions improvements? How do you manage Microsoft Azure IoT solutions Knowledge Management (KM)? What role does communication play in the success or failure of a Microsoft Azure IoT solutions project? What are the current costs of the Microsoft Azure IoT solutions process? Defining, designing, creating, and implementing a process to solve a challenge or meet an objective is the most valuable role... In EVERY group, company, organization and department. Unless you are talking a one-time, single-use project, there should be a process. Whether that process is managed and implemented by humans, AI, or a combination of the two, it needs to be designed by someone with a complex enough perspective to ask the right questions. Someone capable of asking the right questions and step back and say, 'What are we really trying to accomplish here? And is there a different way to look at it?' This Self-Assessment empowers people to do just that - whether their title is entrepreneur, manager, consultant, (Vice-)President, CxO etc... - they

are the people who rule the future. They are the person who asks the right questions to make Microsoft Azure IoT Solutions investments work better. This Microsoft Azure IoT Solutions All-Inclusive Self-Assessment enables You to be that person. All the tools you need to an in-depth Microsoft Azure IoT Solutions Self-Assessment. Featuring 945 new and updated case-based questions, organized into seven core areas of process design, this Self-Assessment will help you identify areas in which Microsoft Azure IoT Solutions improvements can be made. In using the questions you will be better able to: - diagnose Microsoft Azure IoT Solutions projects, initiatives, organizations, businesses and processes using accepted diagnostic standards and practices - implement evidence-based best practice strategies aligned with overall goals - integrate recent advances in Microsoft Azure IoT Solutions and process design strategies into practice according to best practice guidelines Using a Self-Assessment tool known as the Microsoft Azure IoT Solutions Scorecard, you will develop a clear picture of which Microsoft Azure IoT Solutions areas need attention. Your purchase includes access details to the Microsoft Azure IoT Solutions self-assessment dashboard download which gives you your dynamically prioritized projects-ready tool and shows your organization exactly what to do next. 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 Microsoft Azure IoT Solutions 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.

This exciting book explores the past, present and future of IoT, presenting the most prominent technologies that comprise IoT applications, including cloud computing, edge computing, embedded computing, Big Data, Artificial Intelligence (AI), blockchain and cybersecurity. A comprehensive description of the full range of the building blocks that comprise emerging IoT systems and applications is provided, while illustrating the evolution of IoT systems from the legacy small scale sensor systems and wireless sensor networks, to today's large scale IoT deployments that comprise millions of connected devices in the cloud and smart objects with (semi)autonomous behavior. It also provides an outlook for the future evolution of IoT systems, based on their blending with AI and the use of emerging technologies like blockchain for massively decentralized applications. The full spectrum of technologies that are closely associated with the term IoT since its introduction are explored. The book also highlights the main challenges that are associated with the development and deployment of IoT applications at scale, including network connectivity, security, and interoperability challenges. First tech sensors, wireless sensor networks and radio-frequency identification (RFID) tags are covered. Machine learning, big data and security issues are also explored.

Collect and analyze sensor and usage data from Internet of Things applications with Microsoft Azure IoT Suite. Internet connectivity to everyday devices such as light bulbs, thermostats, and even voice-command devices such as Google Home and Amazon.com's Alexa is exploding. These connected devices and their respective applications generate large amounts of data that can be mined to enhance user-friendliness and make predictions about what a user might be likely to do next. Microsoft's Azure IoT Suite is a cloud-based platform that is ideal for collecting data from connected devices. You'll learn in this book about data acquisition and analysis, including real-time analysis. Real-world examples are provided to teach you to detect anomalous patterns in your data that might lead to business advantage. We live in a time when the amount of data being generated and stored is growing at an exponential rate. Understanding and getting real-time insight into these data is critical to business. IoT Solutions in Microsoft's Azure IoT Suite walks you through a complete, end-to-end journey of how to collect and store data from Internet-connected devices. You'll learn to analyze the data and to apply your results to solving real-world problems. Your customers will benefit from the increasingly capable and reliable applications that you'll be able to deploy to them. You and your business will benefit from the gains in insight and knowledge that can be applied to delight your customers and increase the value from their business. What You'll Learn Go through data generation, collection, and storage from sensors and devices, both relational and non-relational Understand, from end to end, Microsoft's analytic services and where they fit into the analytical ecosystem Look at the Internet of your things and find ways to discover and draw on the insights your data can provide Understand Microsoft's IoT technologies and services, and stitch them together for business insight and advantage Who This Book Is For Developers and architects who plan on delivering IoT solutions, data scientists who want to understand how to get better insights into their data, and anyone needing or wanting to do real-time analysis of data from the Internet of Things Discover how the Internet of Things will change the information and communication technology industry in the next decade The Intelligent Internet of Things explores a unique type of Internet of Things (IoT) architecture, for example, the Web of Things (WoT) with its open character that breaks the barriers among various IoT vertical applications. The authors—noted experts on the topic—examine and compare key technologies from physical to platform level, especially the Narrow Band Internet of Things (NB-IoT) technology. They discuss applications with different data transmission requirements that are typical to IoT. The text also describes the requirements of WoT applications on 5G and includes detailed information on WoT technologies. The Intelligent Internet of Things examines three typical WoT applications: the monitoring application of south-to-north water diversion projects; smart driving applications; and network optimization applications. In addition, the text explores testing and authentication of IoT key technologies, with the required equipment, platform, and outdoor environment development. This important book: Provides information on what IoT/WoT is, when to use it, how to provide IoT services with certain technologies, and more Discusses restful architecture, main protocols (ZigBee, 6lowpan, CoAP, HTML5) Explores key technologies on different layers (sensing, gathering, application) Examines how IoT will change the information and communication technology industry Written for professionals working in IoT development, management and big data analytics, Intelligent Internet of Things offers an overview of IoT architecture, key technology, current

applications and future development of the technology.

Build a strong and efficient IoT solution at industrial and enterprise level by mastering industrial IoT using Microsoft Azure. This book focuses on the development of the industrial Internet of Things (IIoT) paradigm, discussing various architectures, as well as providing nine case studies employing IoT in common industrial domains including medical, supply chain, finance, and smart homes. The book starts by giving you an overview of the basic concepts of IoT, after which you will go through the various offerings of the Microsoft Azure IoT platform and its services. Next, you will get hands-on experience of IoT applications in various industries to give you a better picture of industrial solutions and how you should take your industry forward. As you progress through the chapters, you will learn real-time applications in IoT in agriculture, supply chain, financial services, retail, and transportation. Towards the end, you will gain knowledge to identify and analyze IoT security and privacy risks along with a detailed sample project. The book fills an important gap in the learning of IoT and its practical use case in your industry. Therefore, this is a practical guide that helps you discover the technologies and use cases for IIoT. By the end of this book, you will be able to build industrial IoT solution in Microsoft Azure with sensors, stream analytics, and serverless technologies. What You Will Learn Provision, configure, and connect devices with Microsoft Azure IoT hub Stream analytics using structural data and non-structural data such as images Use stream analytics, serverless technology, and IoT SaaS offerings Work with common sensors and IoT devices Who This Book Is For IoT architects, developers, and stakeholders working with the industrial Internet of Things.

Society is now completely driven by data with many industries relying on data to conduct business or basic functions within the organization. With the efficiencies that big data bring to all institutions, data is continuously being collected and analyzed. However, data sets may be too complex for traditional data-processing, and therefore, different strategies must evolve to solve the issue. The field of big data works as a valuable tool for many different industries. The Research Anthology on Big Data Analytics, Architectures, and Applications is a complete reference source on big data analytics that offers the latest, innovative architectures and frameworks and explores a variety of applications within various industries. Offering an international perspective, the applications discussed within this anthology feature global representation. Covering topics such as advertising curricula, driven supply chain, and smart cities, this research anthology is ideal for data scientists, data analysts, computer engineers, software engineers, technologists, government officials, managers, CEOs, professors, graduate students, researchers, and academicians.

Though an individual can process a limitless amount of information, the human brain can only comprehend a small amount of data at a time. Using technology can improve the process and comprehension of information, but the technology must learn to behave more like a human brain to employ concepts like memory, learning, visualization ability, and decision making. Emerging Trends and Applications in Cognitive Computing is a fundamental scholarly source that provides empirical studies and theoretical analysis to show how learning methods can solve important application problems throughout various industries and explain how machine learning research is conducted. Including innovative research on topics such as deep neural networks, cyber-physical systems, and pattern recognition, this collection of research will benefit individuals such as IT professionals, academicians, students, researchers, and managers.

Learn Azure in a Month of Lunches, Second Edition, is a tutorial on writing, deploying, and running applications in Azure. In it, you'll work through 21 short lessons that give you real-world experience. Each lesson includes a hands-on lab so you can try out and lock in your new skills. Summary You can be incredibly productive with Azure without mastering every feature, function, and service. Learn Azure in a Month of Lunches, Second Edition gets you up and running quickly, teaching you the most important concepts and tasks in 21 practical bite-sized lessons. As you explore the examples, exercises, and labs, you'll pick up valuable skills immediately and take your first steps to Azure mastery! This fully revised new edition covers core changes to the Azure UI, new Azure features, Azure containers, and the upgraded Azure Kubernetes Service. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Microsoft Azure is vast and powerful, offering virtual servers, application templates, and prebuilt services for everything from data storage to AI. To navigate it all, you need a trustworthy guide. In this book, Microsoft engineer and Azure trainer Iain Foulds focuses on core skills for creating cloud-based applications. About the book Learn Azure in a Month of Lunches, Second Edition, is a tutorial on writing, deploying, and running applications in Azure. In it, you'll work through 21 short lessons that give you real-world experience. Each lesson includes a hands-on lab so you can try out and lock in your new skills. What's inside Understanding Azure beyond point-and-click Securing applications and data Automating your environment Azure services for machine learning, containers, and more About the reader This book is for readers who can write and deploy simple web or client/server applications. About the author Iain Foulds is an engineer and senior content developer with Microsoft. Table of Contents PART 1 - AZURE CORE SERVICES 1 Before you begin 2 Creating a virtual machine 3 Azure Web Apps 4 Introduction to Azure Storage 5 Azure Networking basics PART 2 - HIGH AVAILABILITY AND SCALE 6 Azure Resource Manager 7 High availability and redundancy 8 Load-balancing applications 9 Applications that scale 10 Global databases with Cosmos DB 11 Managing network traffic and routing 12 Monitoring and troubleshooting PART 3 - SECURE BY DEFAULT 13 Backup, recovery, and replication 14 Data encryption 15 Securing information with Azure Key Vault 16 Azure Security Center and updates PART 4 - THE COOL STUFF 17 Machine learning and artificial intelligence 18 Azure Automation 19 Azure containers 20 Azure and the Internet of Things 21 Serverless computing

This book highlights research and survey articles dedicated to big data techniques for cyber-physical system (CPS), which addresses the close interactions and feedback controls between cyber components and physical components. The book first discusses some fundamental big data problems and solutions in large scale distributed CPSs. The book then addresses the design and control challenges in multiple CPS domains such as vehicular system, smart city, smart building, and digital microfluidic biochips. This book also presents the recent advances and trends in the maritime simulation system and the flood defence system.

As innovators continue to explore and create new developments within the fields of artificial intelligence and computer science, subfields such as machine learning and the internet of things (IoT) have emerged. Now, the internet of everything (IoE), foreseen as a cohesive and intelligent connection of people, processes, data, and things, is theorized to make internet connections more valuable by converting information into wise actions that create unprecedented capabilities, richer experiences, and economic opportunities to all players in the market. Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities discusses the theoretical, design, evaluation, implementation, and use of innovative technologies within the fields of IoE,

machine learning, and IoT. Featuring research on topics such as low-power electronics, mobile technology, and artificial intelligence, this book is ideally designed for computer engineers, software developers, investigators, advanced-level students, professors, and professionals seeking coverage on the various contemporary theories, technologies, and tools in IoT engineering. This book constitutes the refereed proceedings of the 4th International Symposium on Ubiquitous Networking, UNet 2018, held in Hammamet, Morocco, in May 2018. The 35 full papers presented together with 5 short papers in this volume were carefully reviewed and selected from 87 submissions. The focus of UNet is on technical challenges and solutions related to such a widespread adoption of networking technologies, including broadband multimedia, machine-to-machine applications, Internet of things, security and privacy, data engineering, sensor networks and RFID technologies.

This document brings together a set of latest data points and publicly available information relevant for Technology Industry. We are very excited to share this content and believe that readers will benefit from this periodic publication immensely.

This book describes how to architect and design Internet of Things (IoT) solutions that provide end-to-end security and privacy at scale. It is unique in its detailed coverage of threat analysis, protocol analysis, secure design principles, intelligent IoT's impact on privacy, and the effect of usability on security. The book also unveils the impact of digital currency and the dark web on the IoT-security economy. It's both informative and entertaining. "Filled with practical and relevant examples based on years of experience ... with lively discussions and storytelling related to IoT security design flaws and architectural issues."— Dr. James F. Ransome, Senior Director of Security Development Lifecycle (SOL) Engineering, Intel "There is an absolute treasure trove of information within this book that will benefit anyone, not just the engineering community. This book has earned a permanent spot on my office bookshelf."— Erv Comer, Fellow of Engineering, Office of Chief Architect Zebra Technologies "The importance of this work goes well beyond the engineer and architect. The IoT Architect's Guide to Attainable Security & Privacy is a crucial resource for every executive who delivers connected products to the market or uses connected products to run their business."— Kurt Lee, VP Sales and Strategic Alliances at PWNIE Express "If we collectively fail to follow the advice described here regarding IoT security and Privacy, we will continue to add to our mounting pile of exploitable computing devices. The attackers are having a field day. Read this book, now."— Brook S.E. Schoenfield, Director of Advisory Services at IOActive, previously Master Security Architect at McAfee, and author of Securing Systems With the increasing worldwide trend in population migration into urban centers, we are beginning to see the emergence of the kinds of mega-cities which were once the stuff of science fiction. It is clear to most urban planners and developers that accommodating the needs of the tens of millions of inhabitants of those megalopolises in an orderly and uninterrupted manner will require the seamless integration of and real-time monitoring and response services for public utilities and transportation systems. Part speculative look into the future of the world's urban centers, part technical blueprint, this visionary book helps lay the groundwork for the communication networks and services on which tomorrow's "smart cities" will run. Written by a uniquely well-qualified author team, this book provides detailed insights into the technical requirements for the wireless sensor and actuator networks required to make smart cities a reality.

Over 50 recipes to drive IoT innovation with Microsoft Azure About This Book Build secure and scalable IoT solutions with Azure IoT platform Learn techniques to build end to end IoT solutions leveraging the Azure IoT platform Filled with practical recipes to help you increase connectivity and automation across IoT devices Who This Book Is For If you are an application developer and want to build robust and secure IoT solution for your organization using Azure IoT, then this book is for you. What You Will Learn Build IoT Solutions using Azure IoT & Services Learn device configuration and communication protocols Understand IoT Suite and Pre-configured solutions Manage Secure Device communications Understand Device management, alerts Introduction with IoT Analytics, reference IoT Architectures Reference Architectures from Industry Pre-Configured IoT Suite solutions In Detail Microsoft's end-to-end IoT platform is the most complete IoT offering, empowering enterprises to build and realize value from IoT solutions efficiently. It is important to develop robust and reliable solutions for your organization to leverage IoT services. This book focuses on how to start building custom solutions using the IoT hub or the preconfigured solution of Azure IoT suite. As a developer, you will be taught how to connect multiple devices to the Azure IoT hub, develop, manage the IoT hub service and integrate the hub with cloud. We will be covering REST APIs along with HTTP, MQTT and AMQP protocols. It also helps you learn Pre-Configured IoT Suite solution. Moving ahead we will be covering topics like:-Process device-to-cloud messages and cloud-to-device messages using .Net-Direct methods and device management-Query Language, Azure IoT SDK for .Net-Creating and managing, Securing IoT hub, IoT Suite and many more. We will be using windows 10 IoT core, Visual Studio, universal Windows platform. At the end, we will take you through IoT analytics and provide a demo of connecting real device with Azure IoT. Style and approach A set of exciting recipes of using Microsoft Azure IoT more effectively.

The book features research papers presented at the International Conference on Emerging Technologies in Data Mining and Information Security (IEMIS 2018) held at the University of Engineering & Management, Kolkata, India, on February 23–25, 2018. It comprises high-quality research by academics and industrial experts in the field of computing and communication, including full-length papers, research-in-progress papers, case studies related to all the areas of data mining, machine learning, IoT and information security.

This book highlights original research and recent advances in various fields related to smart cities and their applications. It gathers papers presented at the Fourth International Conference on Smart City Applications (SCA19), held on October 2–4, 2019, in Casablanca, Morocco. Bringing together contributions by prominent researchers from around the globe, the book offers an invaluable instructional and research tool for courses on computer science, electrical engineering, and urban sciences. It is also an excellent reference guide for professionals, researchers, and academics in the field of smart cities. This book covers topics including: • Smart Citizenship • Smart Education • Digital Business and Smart Governance • Smart Health Care • New Generation of Networks and Systems for Smart Cities • Smart Grids and Electrical Engineering • Smart Mobility • Smart Security • Sustainable Building • Sustainable Environment Manage and control Internet-connected devices from Windows and Raspberry Pi. Master the Windows IoT Core application programming interface and feature set to develop Internet of Things applications on the Raspberry Pi using your Windows and .NET programming skills. Windows 10 for the Internet of Things presents a set of example projects covering a wide range of techniques designed specifically to jump start your own Internet of Things creativity. You'll learn everything you need to know about Windows IoT Core in order to develop Windows and IoT applications that run on the Pi. Microsoft's release of Windows IoT Core is groundbreaking in how it makes the Raspberry Pi and Internet of Things programming accessible to Windows

developers. Now it's possible to develop for the Raspberry Pi using native Windows and all the related programming skills that Windows programmers have learned from developing desktop and mobile applications. Windows 10 becomes a gateway by which many can experience hardware and Internet of Things development who may never have had the opportunity otherwise. However, even savvy Windows programmers require help to get started with hardware development. This book, Windows 10 for the Internet of Things, provides just the help you need to get started in putting your Windows skills to use in a burgeoning new world of development for small devices that are ubiquitously connected to the Internet. What You Will Learn Learn Windows 10 on the Raspberry Pi Read sensor data and control actuators Connect to and transmit data into the cloud Remotely control your devices from any web browser Develop IOT applications under Windows using C# and Python Store your IOT data in a database for later analysis Who This Book Is For Developers and enthusiasts wanting to take their skills in Windows development and jump on board one of the largest and fastest growing trends to hit the technology world in years – that of connecting everyday devices to the Internet. This book shows how to develop for Microsoft's operating-system for devices, Windows 10 IoT Core. Readers learn to develop in C# and Python using Visual Studio, for deployment on devices such as the Raspberry Pi and the Arduino.

Introduction to Internet of Things: Basic Concept, challenges, security issues, applications and architecture will provide strong back ground knowledge about IoT and its application. The literature regarding IoT has been reviewed thoroughly and the concepts are presented. This book is about IoT and applications. Its objective is to present as clearly and completely as possible, the nature and characteristics of IoT devices. The book will help beginners and graduate students to gain the important concepts and ideas about IoT.

This book provides readers with a 360-degree perspective on the Internet of Things (IoT) design and M2M communication process. It is intended to be used as a design guide for the development of IoT solutions, covering architecture, design, and development methods. This book examines applications such as industry automation for Industry 4.0, Internet of Medical Things (IoMT), and Internet of Services (IoS) as it is unfolding. Discussions on engineering fundamentals are limited to what is required for the realization of IoT solutions. Internet of Things and M2M Communication Technologies: Architecture and Practical Design Approach to IoT in Industry 4.0 is written by an industry veteran with more than 30 years of hands-on experience. It is an invaluable guide for electrical, electronic, computer science, and information science engineers who aspire to be IoT designers and an authoritative reference for practicing designers working on IoT device development. Provides complete design approach to develop IoT solutions; Includes reference designs and guidance on relevant standards compliance; Addresses design for manufacturability and business models.

Design, build, and justify an optimal Microsoft IoT footprint to meet your project needs. This book describes common Internet of Things components and architecture and then focuses on Microsoft's Azure components relevant in deploying these solutions. Microsoft-specific topics addressed include: deploying edge devices and pushing intelligence to the edge; connecting IoT devices to Azure and landing data there, applying Azure Machine Learning, analytics, and Cognitive Services; roles for Microsoft solution accelerators and managed solutions; and integration of the Azure footprint with legacy infrastructure. The book concludes with a discussion of best practices in defining and developing solutions and creating a plan for success. What You Will Learn Design the right IoT architecture to deliver solutions for a variety of project needs Connect IoT devices to Azure for data collection and delivery of services Use Azure Machine Learning and Cognitive Services to deliver intelligence in cloud-based solutions and at the edge Understand the benefits and tradeoffs of Microsoft's solution accelerators and managed solutions Investigate new use cases that are described and apply best practices in deployment strategies Integrate cutting-edge Azure deployments with existing legacy data sources Who This Book Is For Developers and architects new to IoT projects or new to Microsoft Azure IoT components as well as readers interested in best practices used in architecting IoT solutions that utilize the Azure platform

Build your own digital twin in no time! Key Features Build and design simple to complex dDigital Ttwins solutions Create end-to-end solutions with Azure Digital Twins Integrate the Azure Digital Twins service with other Azure services to provide even richer solutions Book Description In today's world, clients are using more and more IoT sensors to monitor their business processes and assets. Think about collecting information like pressure from an engine to the temperature and light switch being turned on or off in a room. The data collected can be used to create smart solutions for predicting future trends, creating simulations, and drawing insights using visualization. This makes it beneficial for organizations to make digital twins, which are digital replicas of the real environment, to support these smart solutions. This book will help you understand the concept of a digital twin and how this can be implemented using an Azure service called Azure Digital Twins. Starting with the requirements and installation of the Azure Digital Twins service, the book will explain the definition language used for modeling digital twins. From there, you'll go through each step of building digital twins using Azure Digital Twins and learn about the different SDKs and APIs and how to use them with several Azure services. Finally, you'll understand how digital twins can be used in practice with the help of several real-world scenarios. By the end of this digital twin book, you'll be confident in building and designing digital twins and integrating them with various Azure services. What you will learn Understand the concept and architecture of Azure Digital Twins Get to grips with installing and configuring the service and required tools Understand the Digital Twin Definition Language (DTDL) and digital twin models Explore the APIs and SDKs available to access the Azure Digital Twins services Monitor, troubleshoot, and secure Digital Twins Discover how to build, design, and integrate applications with various Azure services Explore real-life scenarios of the applicability of Azure Digital Twins Who This Book Is For This book is for Azure developers, Azure architects, and anyone who wants to learn more about how to implement IoT solutions using Azure Digital Twins and additional Azure services. Prior experience using the Azure Portal and a clear understanding of building applications using .NET would be helpful. Table of Contents About Digital Twins Requirements and installation Digital Twin Definition Model Understanding Models Model Elements Creating Relationships between Azure Digital Twin Models Query Digital Twins Building Models Using Ontologies APIs and SDKs Building a Digital Twin Pipeline Updating the Model Data Egress Setting Up Azure Maps Monitor and Troubleshoot Security and Continuity Smart Building Insights of a Facility Simulation

This volume contains the technical papers presented in the workshops, PhD Symposium and EU Projects Track which took place at the 8th European Conference on Service-Oriented and Cloud Computing, ESOC 2020, held in Heraklion, Crete, Greece, in September 2020: 1st International Workshop on Edge Adoption and Migration, EdgeWays 2020, 16th International

Workshop on Engineering Service-Oriented Applications and Cloud Services, WESOACS 2020, ESOC 2020 PhD Symposium, ESOC 2020 EU Projects Track. Due to the COVID-19 pandemic the conference and workshops were held in a virtual format. The 17 full papers and 2 short papers were reviewed and selected from 22 submissions. The papers focus on specific topics in service-oriented and cloud computing domains such as limits and/or advantages of existing cloud solutions, future internet technologies, efficient and adaptive deployment and management of service-based applications across multiple clouds, novel cloud service migration practices and solutions, digitization of enterprises in the cloud computing era, federated cloud networking services.

Take a deep dive into the concepts of machine learning as they apply to contemporary business and management. You will learn how machine learning techniques are used to solve fundamental and complex problems in society and industry. Machine Learning for Decision Makers serves as an excellent resource for establishing the relationship of machine learning with IoT, big data, and cognitive and cloud computing to give you an overview of how these modern areas of computing relate to each other. This book introduces a collection of the most important concepts of machine learning and sets them in context with other vital technologies that decision makers need to know about. These concepts span the process from envisioning the problem to applying machine-learning techniques to your particular situation. This discussion also provides an insight to help deploy the results to improve decision-making. The book uses case studies and jargon busting to help you grasp the theory of machine learning quickly. You'll soon gain the big picture of machine learning and how it fits with other cutting-edge IT services. This knowledge will give you confidence in your decisions for the future of your business. What You Will Learn Discover the machine learning, big data, and cloud and cognitive computing technology stack Gain insights into machine learning concepts and practices Understand business and enterprise decision-making using machine learning Absorb machine-learning best practices Who This Book Is For Managers tasked with making key decisions who want to learn how and when machine learning and related technologies can help them.

The rate of cybercrimes is increasing because of the fast-paced advancements in computer and internet technology. Crimes employing mobile devices, data embedding/mining systems, computers, network communications, or any malware impose a huge threat to data security. Countering Cyber Attacks and Preserving the Integrity and Availability of Critical Systems addresses current problems and issues emerging in cyber forensics and investigations and proposes new solutions that can be adopted and implemented to counter security breaches within various organizations. The publication examines a variety of topics such as advanced techniques for forensic developments in computer and communication-link environments and legal perspectives including procedures for cyber investigations, standards, and policies. It is designed for policymakers, forensic analysts, technology developers, security administrators, academicians, researchers, and students.

This book constitutes revised and selected papers from the Second International Congress on High-Performance Computing and Big Data Analysis, TopHPC 2019, held in Tehran, Iran, in April 2019. The 37 full papers and 2 short papers presented in this volume were carefully reviewed and selected from a total of 103 submissions. The papers in the volume are organized according to the following topical headings: deep learning; big data analytics; Internet of Things.- data mining, neural network and genetic algorithms; performance issues and quantum computing.

This book gathers the state-of-the-art for industrial application of scientific and practical research in the Cloud and IoT paradigms to benefit society. The book first aims to discuss and outline various aspects of tackling climate change. The authors then discuss how Cloud and IoT can help for digital health and learning from industrial aspects. The next part of book discusses technical improvements in the fields of security and privacy. The book also covers Smart Homes and IoT in agriculture. The book is targeted towards advancing undergraduate, graduate, and post graduate students, researchers, academicians, policymakers, various government officials, NGOs, and industry research professionals who are currently working in the field of science and technology either directly or indirectly to benefit common masses.

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.

This book provides a comprehensive guide to Industry 4.0 applications, not only introducing implementation aspects but also proposing a conceptual framework with respect to the design principles. In addition, it discusses the effects of Industry 4.0, which are reflected in new business models and workforce transformation. The book then examines the key technological advances that form the pillars of Industry 4.0 and explores their potential technical and economic benefits using examples of real-world applications. The changing dynamics of global production, such as more complex and automated processes, high-level competitiveness and emerging technologies, have paved the way for a new generation of goods, products and services. Moreover, manufacturers are increasingly realizing the value of the data that their processes and products generate. Such trends are transforming manufacturing industry to the next generation, namely Industry 4.0, which is based on the integration of information and communication technologies and industrial technology. The book provides a conceptual framework and roadmap for decision-makers for this transformation

This study guide includes all the topics that are still relevant from the previous 70-534 exam, updated with the latest features like Artificial Intelligence, IoT, and architecture styles. This guide will help Azure Architects, Developers or anyone interested in designing and implementing effective Cloud architecture strategies.

Cognitive Models for Sustainable Environment reviews the fundamental concepts of gathering, processing and analyzing data from batch processes, along with a review of intelligent and cognitive tools that can be used. The book is centered on evolving novel intelligent/cognitive models and algorithms to develop sustainable solutions for the mitigation of environmental pollution. It unveils intelligent and cognitive models to address issues related to the effective monitoring of environmental pollution and sustainable environmental design. As such, the book focuses on the overall well-being of the global environment for better sustenance and livelihood. The book covers novel cognitive models for effective environmental pollution data management at par with the standards laid down by the World Health Organization. Every chapter is supported by real-life case studies, illustrative examples and video demonstrations that enlighten readers. Explores the development and application of science, engineering and technology in achieving a sustainable lifestyle for humanity Provides tools, connections and proactive solutions to take sustainability programs to the next level Offers perspectives for design, development and commissioning of intelligent applications Provides reviews on the latest intelligent technologies and algorithms related to state-of-the-art methodologies of monitoring and mitigation of environmental pollution Quickly learn to program for microcontrollers and IoT devices without a lot of study and expense. MicroPython and controllers that support it eliminate the need for programming in a C-like language, making

the creation of IoT applications and devices easier and more accessible than ever. MicroPython for the Internet of Things is ideal for readers new to electronics and the world of IoT. Specific examples are provided covering a range of supported devices, sensors, and MicroPython boards such as Pycom's WiPy modules and MicroPython's pyboard. Never has programming for microcontrollers been easier. The book takes a practical and hands-on approach without a lot of detours into the depths of theory. The book: Shows a faster and easier way to program microcontrollers and IoT devices Teaches MicroPython, a variant of one of the most widely used scripting languages Is friendly and accessible to those new to electronics, with fun example projects What You'll Learn Program in MicroPython Understand sensors and basic electronics Develop your own IoT projects Build applications for popular boards such as WiPy and pyboard Load MicroPython on the ESP8266 and similar boards Interface with hardware breakout boards Connect hardware to software through MicroPython Explore the easy-to-use Adafruit IO connecting your microcontroller to the cloud Who This Book Is For Anyone interested in building IoT solutions without the heavy burden of programming in C++ or C. The book also appeals to those wanting an easier way to work with hardware than is provided by the Arduino and the Raspberry Pi platforms.

AI, Edge, and IoT Smart Agriculture integrates applications of IoT, edge computing, and data analytics for sustainable agricultural development and introduces Edge of Thing-based data analytics and IoT for predictability of crop, soil, and plant disease occurrence for improved sustainability and increased profitability. The book also addresses precision irrigation, precision horticulture, greenhouse IoT, livestock monitoring, IoT ecosystem for agriculture, mobile robot for precision agriculture, energy monitoring, storage management, and smart farming. The book provides an overarching focus on sustainable environment and sustainable economic development through smart and e-agriculture. Providing a medium for the exchange of expertise and inspiration, contributions from both smart agriculture and data mining researchers around the world provide foundational insights. The book provides practical application opportunities for the resolution of real-world problems, including contributions from the data mining, data analytics, Edge of Things, and cloud research communities working in the farming production sector. The book offers broad coverage of the concepts, themes, and instruments of this important and evolving area of IOT-based agriculture, Edge of Things and cloud-based farming, Greenhouse IOT, mobile agriculture, sustainable agriculture, and big data analytics in agriculture toward smart farming. Integrates sustainable agriculture, Greenhouse IOT, precision agriculture, crops monitoring, crops controlling to prediction, livestock monitoring, and farm management Presents data mining techniques for precision agriculture, including weather prediction, plant disease prediction, and decision support for crop and soil selection Promotes the importance and uses in managing the agro ecosystem for food security Emphasizes low energy usage options for low cost and environmental sustainability

Blockchain, Internet of Things, and Artificial Intelligence provides an integrated overview and technical description of the fundamental concepts of blockchain, IoT, and AI technologies. State-of-the-art techniques are explored in depth to discuss the challenges in each domain. The convergence of these revolutionized technologies has leveraged several areas that receive attention from academicians and industry professionals, which in turn promotes the book's accessibility more extensively. Discussions about an integrated perspective on the influence of blockchain, IoT, and AI for smart cities, healthcare, and other business sectors illuminate the benefits and opportunities in the ecosystems worldwide. The contributors have focused on real-world examples and applications and highlighted the significance of the strengths of blockchain to transform the readers' thinking toward finding potential solutions. The faster maturity and stability of blockchain is the key differentiator in artificial intelligence and the Internet of Things. This book discusses their potent combination in realizing intelligent systems, services, and environments. The contributors present their technical evaluations and comparisons with existing technologies. Theoretical explanations and experimental case studies related to real-time scenarios are also discussed. FEATURES Discusses the potential of blockchain to significantly increase data while boosting accuracy and integrity in IoT-generated data and AI-processed information Elucidates definitions, concepts, theories, and assumptions involved in smart contracts and distributed ledgers related to IoT systems and AI approaches Offers real-world uses of blockchain technologies in different IoT systems and further studies its influence in supply chains and logistics, the automotive industry, smart homes, the pharmaceutical industry, agriculture, and other areas Presents readers with ways of employing blockchain in IoT and AI, helping them to understand what they can and cannot do with blockchain Provides readers with an awareness of how industry can avoid some of the pitfalls of traditional data-sharing strategies This book is suitable for graduates, academics, researchers, IT professionals, and industry experts.

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