

# Hands On Internet Of Things With Mqtt Build Conne

THANK YOU CATEGORICALLY MUCH FOR DOWNLOADING **HANDS ON INTERNET OF THINGS WITH MQTT BUILD CONNE**. MAYBE YOU HAVE KNOWLEDGE THAT, PEOPLE HAVE LOOK NUMEROUS TIME FOR THEIR FAVORITE BOOKS WITH THIS HANDS ON INTERNET OF THINGS WITH MQTT BUILD CONNE, BUT END TAKING PLACE IN HARMFUL DOWNLOADS.

RATHER THAN ENJOYING A FINE PDF BEARING IN MIND A MUG OF COFFEE IN THE AFTERNOON, OTHERWISE THEY JUGGLED TAKING INTO CONSIDERATION SOME HARMFUL VIRUS INSIDE THEIR COMPUTER. **HANDS ON INTERNET OF THINGS WITH MQTT BUILD CONNE** IS EASY TO USE IN OUR DIGITAL LIBRARY AN ONLINE ADMISSION TO IT IS SET AS PUBLIC THEREFORE YOU CAN DOWNLOAD IT INSTANTLY. OUR DIGITAL LIBRARY SAVES IN MULTIPART COUNTRIES, ALLOWING YOU TO GET THE MOST LESS LATENCY EPOCH TO DOWNLOAD ANY OF OUR BOOKS WHEN THIS ONE. MERELY SAID, THE HANDS ON INTERNET OF THINGS WITH MQTT BUILD CONNE IS UNIVERSALLY COMPATIBLE SIMILAR TO ANY DEVICES TO READ.

ORCHESTRATING AND AUTOMATING SECURITY FOR THE INTERNET OF THINGS - ANTHONY SABELLA 2018-06-04  
MASTER POWERFUL TECHNIQUES AND APPROACHES FOR SECURING IoT SYSTEMS OF ALL KINDS—CURRENT AND EMERGING INTERNET OF THINGS (IoT) TECHNOLOGY ADOPTION IS ACCELERATING, BUT IoT PRESENTS COMPLEX NEW SECURITY CHALLENGES. FORTUNATELY, IoT STANDARDS AND

STANDARDIZED ARCHITECTURES ARE EMERGING TO HELP TECHNICAL PROFESSIONALS SYSTEMATICALLY HARDEN THEIR IoT ENVIRONMENTS. IN ORCHESTRATING AND AUTOMATING SECURITY FOR THE INTERNET OF THINGS, THREE CISCO EXPERTS SHOW HOW TO SAFEGUARD CURRENT AND FUTURE IoT SYSTEMS BY DELIVERING SECURITY THROUGH NEW NFV AND SDN ARCHITECTURES AND RELATED IoT SECURITY

STANDARDS. THE AUTHORS FIRST REVIEW THE CURRENT STATE OF IoT NETWORKS AND ARCHITECTURES, IDENTIFYING KEY SECURITY RISKS ASSOCIATED WITH NONSTANDARDIZED EARLY DEPLOYMENTS AND SHOWING HOW EARLY ADOPTERS HAVE ATTEMPTED TO RESPOND. NEXT, THEY INTRODUCE MORE MATURE ARCHITECTURES BUILT AROUND NFV AND SDN. YOU'LL DISCOVER WHY THESE LEND THEMSELVES WELL TO IoT AND IoT SECURITY, AND MASTER ADVANCED APPROACHES FOR PROTECTING THEM. FINALLY, THE AUTHORS PREVIEW FUTURE APPROACHES TO IMPROVING IoT SECURITY AND PRESENT REAL-WORLD USE CASE EXAMPLES. THIS IS AN INDISPENSABLE RESOURCE FOR ALL TECHNICAL AND SECURITY PROFESSIONALS, BUSINESS SECURITY AND RISK MANAGERS, AND CONSULTANTS WHO ARE RESPONSIBLE FOR SYSTEMS THAT INCORPORATE OR UTILIZE IoT DEVICES, OR EXPECT TO BE RESPONSIBLE FOR THEM. • UNDERSTAND THE CHALLENGES INVOLVED IN SECURING CURRENT IoT NETWORKS AND ARCHITECTURES • MASTER IoT SECURITY FUNDAMENTALS, STANDARDS, AND MODERN BEST PRACTICES • SYSTEMATICALLY PLAN FOR IoT SECURITY • LEVERAGE SOFTWARE-DEFINED NETWORKING (SDN) AND NETWORK FUNCTION VIRTUALIZATION (NFV) TO HARDEN IoT NETWORKS • DEPLOY THE ADVANCED IoT PLATFORM, AND USE MANO TO MANAGE AND ORCHESTRATE VIRTUALIZED NETWORK FUNCTIONS • IMPLEMENT PLATFORM SECURITY SERVICES INCLUDING IDENTITY, AUTHENTICATION,

AUTHORIZATION, AND ACCOUNTING • DETECT THREATS AND PROTECT DATA IN IoT ENVIRONMENTS • SECURE IoT IN THE CONTEXT OF REMOTE ACCESS AND VPNs • SAFEGUARD THE IoT PLATFORM ITSELF • EXPLORE USE CASES RANGING FROM SMART CITIES AND ADVANCED ENERGY SYSTEMS TO THE CONNECTED CAR • PREVIEW EVOLVING CONCEPTS THAT WILL SHAPE THE FUTURE OF IoT SECURITY

**BUILDING THE WEB OF THINGS** - DOMINIQUE DOM GUINARD  
2016-06-06

SUMMARY A HANDS-ON GUIDE THAT WILL TEACH HOW TO DESIGN AND IMPLEMENT SCALABLE, FLEXIBLE, AND OPEN IoT SOLUTIONS USING WEB TECHNOLOGIES. THIS BOOK FOCUSES ON PROVIDING THE RIGHT BALANCE OF THEORY, CODE SAMPLES, AND PRACTICAL EXAMPLES TO ENABLE YOU TO SUCCESSFULLY CONNECT ALL SORTS OF DEVICES TO THE WEB AND TO EXPOSE THEIR SERVICES AND DATA OVER REST APIS. PURCHASE OF THE PRINT BOOK INCLUDES A FREE eBook IN PDF, KINDLE, AND EPUB FORMATS FROM MANNING PUBLICATIONS. ABOUT THE TECHNOLOGY BECAUSE THE INTERNET OF THINGS IS STILL NEW, THERE IS NO UNIVERSAL APPLICATION PROTOCOL. FORTUNATELY, THE IoT CAN TAKE ADVANTAGE OF THE WEB, WHERE IoT PROTOCOLS CONNECT APPLICATIONS THANKS TO UNIVERSAL AND OPEN APIS. ABOUT THE BOOK BUILDING THE WEB OF THINGS IS A GUIDE TO USING CUTTING-EDGE WEB TECHNOLOGIES TO BUILD THE IoT. THIS STEP-BY-STEP BOOK TEACHES YOU HOW TO USE

WEB PROTOCOLS TO CONNECT REAL-WORLD DEVICES TO THE WEB, INCLUDING THE SEMANTIC AND SOCIAL WEBS. ALONG THE WAY YOU'LL GAIN VITAL CONCEPTS AS YOU FOLLOW INSTRUCTIONS FOR MAKING WEB OF THINGS DEVICES. BY THE END, YOU'LL HAVE THE PRACTICAL SKILLS YOU NEED TO IMPLEMENT YOUR OWN WEB-CONNECTED PRODUCTS AND SERVICES. WHAT'S INSIDE INTRODUCTION TO IoT PROTOCOLS AND DEVICES CONNECT ELECTRONIC ACTUATORS AND SENSORS (GPIO) TO A RASPBERRY PI IMPLEMENT STANDARD REST AND PUB/SUB APIs WITH NODE.JS ON EMBEDDED SYSTEMS LEARN ABOUT IoT PROTOCOLS LIKE MQTT AND CoAP AND INTEGRATE THEM TO THE WEB OF THINGS USE THE SEMANTIC WEB (JSON-LD, RDFa, ETC.) TO DISCOVER AND FIND WEB THINGS SHARE THINGS VIA SOCIAL NETWORKS TO CREATE THE SOCIAL WEB OF THINGS BUILD A WEB-BASED SMART HOME WITH HTTP AND WEBSOCKET COMPOSE PHYSICAL MASHUPS WITH EVERYTHING, NODE-RED, AND IFTTT ABOUT THE READER FOR BOTH SEASONED PROGRAMMERS AND THOSE WITH ONLY BASIC PROGRAMMING SKILLS. ABOUT THE AUTHORS DOMINIQUE GUINARD AND VLAD TRIFA PIONEERED THE WEB OF THINGS AND COFOUNDED EVERYTHING, A LARGE-SCALE IoT CLOUD POWERING BILLIONS OF WEB THINGS. TABLE OF CONTENTS PART 1 BASICS OF THE IOT AND THE WOT FROM THE INTERNET OF THINGS TO THE WEB OF THINGS HELLO, WORLD WIDE WEB OF THINGS NODE.JS FOR

THE WEB OF THINGS GETTING STARTED WITH EMBEDDED SYSTEMS BUILDING NETWORKS OF THINGS PART 2 BUILDING THE WOT ACCESS: WEB APIs FOR THINGS IMPLEMENTING WEB THINGS FIND: DESCRIBE AND DISCOVER WEB THINGS SHARE: SECURING AND SHARING WEB THINGS **BUILDING ARDUINO PROJECTS FOR THE INTERNET OF THINGS - ADEEL JAVED 2016-06-11** GAIN A STRONG FOUNDATION OF ARDUINO-BASED DEVICE DEVELOPMENT, FROM WHICH YOU CAN GO IN ANY DIRECTION ACCORDING TO YOUR SPECIFIC DEVELOPMENT NEEDS AND DESIRES. YOU'LL BUILD ARDUINO-POWERED DEVICES FOR EVERYDAY USE, AND THEN CONNECT THOSE DEVICES TO THE INTERNET. YOU'LL BE INTRODUCED TO THE BUILDING BLOCKS OF IoT, AND THEN DEPLOY THOSE PRINCIPLES TO BY BUILDING A VARIETY OF USEFUL PROJECTS. PROJECTS IN THE BOOKS GRADUALLY INTRODUCE THE READER TO KEY TOPICS SUCH AS INTERNET CONNECTIVITY WITH ARDUINO, COMMON IoT PROTOCOLS, CUSTOM WEB VISUALIZATION, AND ANDROID APPS THAT RECEIVE SENSOR DATA ON-DEMAND AND IN REALTIME. IoT DEVICE ENTHUSIASTS OF ALL AGES WILL WANT THIS BOOK BY THEIR SIDE WHEN DEVELOPING ANDROID-BASED DEVICES. IF YOU'RE ONE OF THE MANY WHO HAVE DECIDED TO BUILD YOUR OWN ARDUINO-POWERED DEVICES FOR IoT APPLICATIONS, THEN BUILDING ARDUINO PROJECTS FOR THE INTERNET OF THINGS IS EXACTLY WHAT YOU NEED. THIS BOOK IS YOUR SINGLE RESOURCE--A GUIDEBOOK FOR THE

EAGER-TO-LEARN ARDUINO ENTHUSIAST--THAT TEACHES LOGICALLY, METHODICALLY, AND PRACTICALLY HOW THE ARDUINO WORKS AND WHAT YOU CAN BUILD WITH IT. WRITTEN BY A SOFTWARE DEVELOPER AND SOLUTION ARCHITECT WHO GOT TIRED OF HUNTING AND GATHERING VARIOUS LESSONS FOR ARDUINO DEVELOPMENT AS HE TAUGHT HIMSELF ALL ABOUT THE TOPIC. FOR ARDUINO ENTHUSIASTS, THIS BOOK NOT ONLY OPENS UP THE WORLD OF IoT APPLICATIONS, YOU WILL ALSO LEARN MANY TECHNIQUES THAT LIKELY WOULD NOT BE OBVIOUS IF NOT FOR EXPERIENCE WITH SUCH A DIVERSE GROUP OF APPLICATIONS WHAT YOU'LL LEARN CREATE AN ARDUINO CIRCUIT THAT SENSES TEMPERATURE PUBLISH DATA COLLECTED FROM AN ARDUINO TO A SERVER AND TO AN MQTT BROKER SET UP CHANNELS IN XIVELY USING NODE-RED TO DEFINE COMPLEX FLOWS PUBLISH DATA VISUALIZATION IN A WEB APP REPORT MOTION-SENSOR DATA THROUGH A MOBILE APP CREATE A REMOTE CONTROL FOR HOUSE LIGHTS SET UP AN APP IN IBM BLUEMATRIX WHO THIS BOOK IS FOR IoT DEVICE ENTHUSIASTS OF ALL AGES WILL WANT THIS BOOK BY THEIR SIDE WHEN DEVELOPING ANDROID-BASED DEVICES.

INTERNET OF THINGS, SMART SPACES, AND NEXT GENERATION NETWORKS AND SYSTEMS - SERGEY BALANDIN  
2014-08-01

THIS BOOK CONSTITUTES THE JOINT REFEREED PROCEEDINGS OF

THE 14TH INTERNATIONAL CONFERENCE ON NEXT GENERATION WIRED/WIRELESS ADVANCED NETWORKS AND SYSTEMS, NEW2AN 2014, AND THE 7TH CONFERENCE ON INTERNET OF THINGS AND SMART SPACES, RUSMART 2014, HELD IN ST. PETERSBURG, RUSSIA, IN AUGUST 2014. THE TOTAL OF 67 PAPERS WAS CAREFULLY REVIEWED AND SELECTED FOR INCLUSION IN THIS BOOK. THE 15 PAPERS SELECTED FROM RUSMART ARE ORGANIZED IN TOPICAL SECTIONS NAMED: SMART SPACES CORE TECHNOLOGIES, SMART SPACES FOR GEO-LOCATION AND E-TOURISM APPS, SMART SPACE SUPPORTING TECHNOLOGIES, AND VIDEO SOLUTIONS FOR SMART SPACES. THE 52 PAPERS FROM NEW2AN DEAL WITH THE FOLLOWING TOPICS: ADVANCES IN WIRELESS NETWORKING, AD HOC NETWORKS AND ENHANCED SERVICES, SENSOR- AND MACHINE-TYPE COMMUNICATION, NETWORKING ARCHITECTURES AND THEIR MODELING, TRAFFIC ANALYSIS AND PREDICTION, ANALYTICAL METHODS FOR PERFORMANCE EVALUATION, MATERIALS FOR FUTURE COMMUNICATIONS, GENERATION AND ANALYSIS OF SIGNALS, BUSINESS ASPECTS OF NETWORKING, PROGRESS ON UPPER LAYERS AND IMPLEMENTATIONS, MODELING METHODS AND TOOLS, TECHNIQUES, ALGORITHMS, AND CONTROL PROBLEMS, PHOTONICS AND OPTICS, AND SIGNALS AND THEIR PROCESSING. *PRACTICAL NODE-RED PROGRAMMING* - TAJI HAGINO  
2021-03-22

USE A LOW-CODE PROGRAMMING APPROACH TO CREATE

EVENT-DRIVEN APPLICATIONS FROM SCRATCH BY WIRING TOGETHER HARDWARE DEVICES, APIs, AND ONLINE SERVICES  
KEY FEATURES  
DISCOVER HOW YOU CAN AUTOMATE THE INTERNET OF THINGS (IoT) WITHOUT WRITING HUGE BLOCKS OF CODE  
LEARN HOW TO WIRE TOGETHER FLOWS USING A BROWSER-BASED VISUAL EDITOR  
HANDLE IoT DATA WITH LITTLE TO NO CODING KNOWLEDGE  
BOOK DESCRIPTION  
NODE-RED IS A FREE AND OPEN SOURCE FLOW-BASED PROGRAMMING TOOL USED TO HANDLE IoT DATA THAT ALLOWS PROGRAMMERS OF ANY LEVEL TO INTERCONNECT PHYSICAL I/O, CLOUD-BASED SYSTEMS, DATABASES, AND APIs TO BUILD WEB APPLICATIONS WITHOUT CODE.  
PRACTICAL NODE-RED PROGRAMMING IS A COMPREHENSIVE INTRODUCTION FOR ANYONE LOOKING TO GET UP TO SPEED WITH THE NODE-RED ECOSYSTEM IN NO TIME. COMPLETE WITH HANDS-ON TUTORIALS, PROJECTS, AND SELF-ASSESSMENT QUESTIONS, THIS EASY-TO-FOLLOW GUIDE WILL HELP YOU TO BECOME WELL VERSED IN THE FOUNDATIONS OF NODE-RED. YOU'LL LEARN HOW TO USE NODE-RED TO HANDLE IoT DATA AND BUILD WEB APPLICATIONS WITHOUT HAVING TO WRITE COMPLEX CODE. ONCE YOU'VE COVERED THE BASICS, YOU'LL EXPLORE VARIOUS VISUAL PROGRAMMING TECHNIQUES AND FIND OUT HOW TO MAKE SAMPLE FLOWS AS YOU COVER WEB DEVELOPMENT, IoT DEVELOPMENT, AND CLOUD SERVICE CONNECTIONS, AND FINALLY BUILD USEFUL REAL-WORLD APPLICATIONS. BY THE END OF THIS BOOK, YOU'LL HAVE

LEARNED HOW TO USE NODE-RED TO DEVELOP A REAL-WORLD APPLICATION FROM SCRATCH, WHICH CAN THEN BE IMPLEMENTED IN YOUR BUSINESS. WHAT YOU WILL LEARN  
UNDERSTAND THE HISTORY OF NODE-RED AND WHY YOU NEED TO LEARN A FLOW-BASED PROGRAMMING TOOL  
USE NODE-RED TO BUILD NODE.JS-BASED APPLICATIONS  
HANDLE DATA FOR IoT DEVICES USING NODE-RED FLOWS  
EXPLORE ADVANCED NODE-RED FEATURES SUCH AS CONNECTING REPOSITORIES AND CUSTOMIZING THE FLOW EDITOR  
FIND OUT WHAT THE MQTT PROTOCOL IS AND HOW IT RELATES TO NODE-RED  
CREATE AND PUBLISH YOUR OWN NODES AND FLOWS USING THE NODE-RED LIBRARY  
WHO THIS BOOK IS FOR  
THIS NODE-RED BOOK IS FOR WEB DEVELOPERS AND IoT ENGINEERS WITH SOME BACKGROUND IN JAVASCRIPT AND NODE.JS. ALTHOUGH NOT NECESSARY, FAMILIARITY WITH THE CONCEPTS OF ELECTRONICS WILL HELP YOU TO MAKE THE MOST OUT OF THIS BOOK.

**INTERNET OF THINGS A TO Z** - QUSAY F. HASSAN  
2018-05-09

A COMPREHENSIVE OVERVIEW OF THE INTERNET OF THINGS' CORE CONCEPTS, TECHNOLOGIES, AND APPLICATIONS  
INTERNET OF THINGS A TO Z OFFERS A HOLISTIC APPROACH TO THE INTERNET OF THINGS (IoT) MODEL. THE INTERNET OF THINGS REFERS TO UNIQUELY IDENTIFIABLE OBJECTS AND THEIR VIRTUAL REPRESENTATIONS IN AN INTERNET-LIKE STRUCTURE. RECENTLY, THERE HAS BEEN A RAPID GROWTH IN RESEARCH ON

IoT COMMUNICATIONS AND NETWORKS, THAT CONFIRMS THE SCALABILITY AND BROAD REACH OF THE CORE CONCEPTS. WITH CONTRIBUTIONS FROM A PANEL OF INTERNATIONAL EXPERTS, THE TEXT OFFERS INSIGHT INTO THE IDEAS, TECHNOLOGIES, AND APPLICATIONS OF THIS SUBJECT. THE AUTHORS DISCUSS RECENT DEVELOPMENTS IN THE FIELD AND THE MOST CURRENT AND EMERGING TRENDS IN IoT. IN ADDITION, THE TEXT IS FILLED WITH EXAMPLES OF INNOVATIVE APPLICATIONS AND REAL-WORLD CASE STUDIES. INTERNET OF THINGS A TO Z FILLS THE NEED FOR AN UP-TO-DATE VOLUME ON THE TOPIC. THIS IMPORTANT BOOK: COVERS IN GREAT DETAIL THE CORE CONCEPTS, ENABLING TECHNOLOGIES, AND IMPLICATIONS OF THE INTERNET OF THINGS ADDRESSES THE BUSINESS, SOCIAL, AND LEGAL ASPECTS OF THE INTERNET OF THINGS EXPLORES THE CRITICAL TOPIC OF SECURITY AND PRIVACY CHALLENGES FOR BOTH INDIVIDUALS AND ORGANIZATIONS INCLUDES A DISCUSSION OF ADVANCED TOPICS SUCH AS THE NEED FOR STANDARDS AND INTEROPERABILITY CONTAINS CONTRIBUTIONS FROM AN INTERNATIONAL GROUP OF EXPERTS IN ACADEMIA, INDUSTRY, AND RESEARCH WRITTEN FOR ICT RESEARCHERS, INDUSTRY PROFESSIONALS, AND LIFETIME IT LEARNERS AS WELL AS ACADEMICS AND STUDENTS, INTERNET OF THINGS A TO Z PROVIDES A MUCH-NEEDED AND COMPREHENSIVE RESOURCE TO THIS BURGEONING FIELD. *HANDS-ON MQTT PROGRAMMING WITH PYTHON* - GASTON

C. HILLAR 2018-05-22  
EXPLORE THE FEATURES INCLUDED IN THE LATEST VERSIONS OF MQTT FOR IoT AND M2M COMMUNICATIONS AND USE THEM WITH MODERN PYTHON 3. KEY FEATURES MAKE YOUR CONNECTED DEVICES LESS PRONE TO ATTACKERS BY UNDERSTANDING SECURITY MECHANISMS TAKE ADVANTAGE OF MQTT FEATURES FOR IoT AND MACHINE-TO-MACHINE COMMUNICATIONS THE ONLY BOOK THAT COVERS MQTT WITH A SINGLE LANGUAGE, PYTHON BOOK DESCRIPTION MQTT IS A LIGHTWEIGHT MESSAGING PROTOCOL FOR SMALL SENSORS AND MOBILE DEVICES. THIS BOOK EXPLORES THE FEATURES OF THE LATEST VERSIONS OF MQTT FOR IoT AND M2M COMMUNICATIONS, HOW TO USE THEM WITH PYTHON 3, AND ALLOW YOU TO INTERACT WITH SENSORS AND ACTUATORS USING PYTHON. THE BOOK BEGINS WITH THE SPECIFIC VOCABULARY OF MQTT AND ITS WORKING MODES, FOLLOWED BY INSTALLING A MOSQUITTO MQTT BROKER. YOU WILL USE DIFFERENT UTILITIES AND DIAGRAMS TO UNDERSTAND THE MOST IMPORTANT CONCEPTS RELATED TO MQTT. YOU WILL LEARN TO MAKE ALL THE NECESSARY CONFIGURATION TO WORK WITH DIGITAL CERTIFICATES FOR ENCRYPTING ALL DATA SENT BETWEEN THE MQTT CLIENTS AND THE SERVER. YOU WILL ALSO WORK WITH THE DIFFERENT QUALITY OF SERVICE LEVELS AND LATER ANALYZE AND COMPARE THEIR OVERHEADS. YOU WILL WRITE PYTHON 3.X CODE TO CONTROL A VEHICLE WITH MQTT MESSAGES

DELIVERED THROUGH ENCRYPTED CONNECTIONS (TLS 1.2), AND LEARN HOW LEVERAGE YOUR KNOWLEDGE OF THE MQTT PROTOCOL TO BUILD A SOLUTION BASED ON REQUIREMENTS. TOWARDS THE END, YOU WILL WRITE PYTHON CODE TO USE THE PUBNUB CLOUD-BASED REAL-TIME MQTT PROVIDER TO MONITOR A SURFING COMPETITION. IN THE END, YOU WILL HAVE A SOLUTION THAT WAS BUILT FROM SCRATCH BY ANALYZING THE REQUIREMENTS AND THEN WRITE PYTHON CODE THAT WILL RUN ON WATER-PROOF IoT BOARDS CONNECTED TO MULTIPLE SENSORS IN SURFBOARDS. WHAT YOU WILL LEARN LEARN HOW MQTT AND ITS LIGHTWEIGHT MESSAGING SYSTEM WORK UNDERSTAND THE MQTT PUZZLE: CLIENTS, SERVERS (FORMERLY KNOWN AS BROKERS), AND CONNECTIONS EXPLORE THE FEATURES INCLUDED IN THE LATEST VERSIONS OF MQTT FOR IoT AND M2M COMMUNICATIONS PUBLISH AND RECEIVE MQTT MESSAGES WITH PYTHON LEARN THE DIFFERENCE BETWEEN BLOCKING AND THREADED NETWORK LOOPS TAKE ADVANTAGE OF THE LAST WILL AND TESTAMENT FEATURE WORK WITH CLOUD-BASED MQTT INTERFACES IN PYTHON WHO THIS BOOK IS FOR THIS BOOK IS FOR DEVELOPERS WHO WANT TO LEARN ABOUT THE MQTT PROTOCOL FOR THEIR IoT PROJECTS. PRIOR KNOWLEDGE OF WORKING WITH IoT AND PYTHON WILL BE HELPFUL.

HANDS-ON ARTIFICIAL INTELLIGENCE FOR IoT - AMITA KAPOOR 2019-01-31

BUILD SMARTER SYSTEMS BY COMBINING ARTIFICIAL INTELLIGENCE AND THE INTERNET OF THINGS—TWO OF THE MOST TALKED ABOUT TOPICS TODAY KEY FEATURES LEVERAGE THE POWER OF PYTHON LIBRARIES SUCH AS TENSORFLOW AND KERAS TO WORK WITH REAL-TIME IoT DATA PROCESS IoT DATA AND PREDICT OUTCOMES IN REAL TIME TO BUILD SMART IoT MODELS COVER PRACTICAL CASE STUDIES ON INDUSTRIAL IoT, SMART CITIES, AND HOME AUTOMATION BOOK DESCRIPTION THERE ARE MANY APPLICATIONS THAT USE DATA SCIENCE AND ANALYTICS TO GAIN INSIGHTS FROM TERABYTES OF DATA. THESE APPS, HOWEVER, DO NOT ADDRESS THE CHALLENGE OF CONTINUALLY DISCOVERING PATTERNS FOR IoT DATA. IN HANDS-ON ARTIFICIAL INTELLIGENCE FOR IoT, WE COVER VARIOUS ASPECTS OF ARTIFICIAL INTELLIGENCE (AI) AND ITS IMPLEMENTATION TO MAKE YOUR IoT SOLUTIONS SMARTER. THIS BOOK STARTS BY COVERING THE PROCESS OF GATHERING AND PREPROCESSING IoT DATA GATHERED FROM DISTRIBUTED SOURCES. YOU WILL LEARN DIFFERENT AI TECHNIQUES SUCH AS MACHINE LEARNING, DEEP LEARNING, REINFORCEMENT LEARNING, AND NATURAL LANGUAGE PROCESSING TO BUILD SMART IoT SYSTEMS. YOU WILL ALSO LEVERAGE THE POWER OF AI TO HANDLE REAL-TIME DATA COMING FROM WEARABLE DEVICES. AS YOU PROGRESS THROUGH THE BOOK, TECHNIQUES FOR BUILDING MODELS THAT WORK WITH DIFFERENT KINDS OF DATA GENERATED AND CONSUMED BY IoT

DEVICES SUCH AS TIME SERIES, IMAGES, AND AUDIO WILL BE COVERED. USEFUL CASE STUDIES ON FOUR MAJOR APPLICATION AREAS OF IoT SOLUTIONS ARE A KEY FOCAL POINT OF THIS BOOK. IN THE CONCLUDING CHAPTERS, YOU WILL LEVERAGE THE POWER OF WIDELY USED PYTHON LIBRARIES, TENSORFLOW AND KERAS, TO BUILD DIFFERENT KINDS OF SMART AI MODELS. BY THE END OF THIS BOOK, YOU WILL BE ABLE TO BUILD SMART AI-POWERED IoT APPS WITH CONFIDENCE. WHAT YOU WILL LEARN APPLY DIFFERENT AI TECHNIQUES INCLUDING MACHINE LEARNING AND DEEP LEARNING USING TENSORFLOW AND KERAS ACCESS AND PROCESS DATA FROM VARIOUS DISTRIBUTED SOURCES PERFORM SUPERVISED AND UNSUPERVISED MACHINE LEARNING FOR IoT DATA IMPLEMENT DISTRIBUTED PROCESSING OF IoT DATA OVER APACHE SPARK USING THE MLLIB AND H2O.AI PLATFORMS FORECAST TIME-SERIES DATA USING DEEP LEARNING METHODS IMPLEMENTING AI FROM CASE STUDIES IN PERSONAL IoT, INDUSTRIAL IoT, AND SMART CITIES GAIN UNIQUE INSIGHTS FROM DATA OBTAINED FROM WEARABLE DEVICES AND SMART DEVICES WHO THIS BOOK IS FOR IF YOU ARE A DATA SCIENCE PROFESSIONAL OR A MACHINE LEARNING DEVELOPER LOOKING TO BUILD SMART SYSTEMS FOR IoT, HANDS-ON ARTIFICIAL INTELLIGENCE FOR IoT IS FOR YOU. IF YOU WANT TO LEARN HOW POPULAR ARTIFICIAL INTELLIGENCE (AI) TECHNIQUES CAN BE USED IN THE INTERNET OF THINGS DOMAIN, THIS BOOK WILL ALSO BE OF BENEFIT. A BASIC

UNDERSTANDING OF MACHINE LEARNING CONCEPTS WILL BE REQUIRED TO GET THE BEST OUT OF THIS BOOK.

PROGRAMMING THE INTERNET OF THINGS - ANDY KING  
2021-08-17

LEARN HOW TO PROGRAM THE INTERNET OF THINGS WITH THIS HANDS-ON GUIDE. BY BREAKING DOWN IoT PROGRAMMING COMPLEXITIES IN STEP-BY-STEP, BUILDING-BLOCK FASHION, AUTHOR AND EDUCATOR ANDY KING SHOWS YOU HOW TO DESIGN AND BUILD YOUR OWN FULL STACK, END-TO-END IoT SOLUTION--FROM DEVICE TO CLOUD. THIS PRACTICAL BOOK WALKS YOU THROUGH TOOLING, DEVELOPMENT ENVIRONMENT SETUP, SOLUTION DESIGN, AND IMPLEMENTATION. YOU'LL LEARN HOW A TYPICAL IoT ECOSYSTEM WORKS, AS WELL AS HOW TO TACKLE INTEGRATION CHALLENGES THAT CROP UP WHEN IMPLEMENTING YOUR OWN IoT SOLUTION. WHETHER YOU'RE AN ENGINEERING STUDENT LEARNING THE BASICS OF THE IoT, A TECH-SAVVY EXECUTIVE WITH A COMPANY EMBARKING ON AN IoT JOURNEY, OR A PROGRAMMER BUILDING YOUR OWN SMART HOUSE SOLUTION, THIS PRACTICAL BOOK WILL HELP YOU GET STARTED. DESIGN AN END-TO-END SOLUTION THAT IMPLEMENTS AN IoT USE CASE SET UP AN IoT-CENTRIC DEVELOPMENT AND TESTING ENVIRONMENT ORGANIZE YOUR SOFTWARE DESIGN BY CREATING ABSTRACTIONS IN PYTHON AND JAVA USE MQTT, CoAP, AND OTHER PROTOCOLS TO CONNECT IoT DEVICES AND SERVICES CREATE A CUSTOM JSON-BASED DATA FORMAT



THAT'S CONSUMABLE ACROSS A RANGE OF PLATFORMS AND SERVICES USE CLOUD SERVICES TO SUPPORT YOUR IoT ECOSYSTEM AND PROVIDE BUSINESS VALUE FOR STAKEHOLDERS

INTERNET OF THINGS PROGRAMMING PROJECTS - COLIN DOW  
2018-10-31

A PRACTICAL PROJECT-BASED GUIDE TO HELP YOU BUILD AND CONTROL YOUR IoT PROJECTS KEY FEATURES LEVERAGE THE FULL POTENTIAL OF IoT WITH THE COMBINATION OF RASPBERRY PI 3 AND PYTHON BUILD COMPLEX PYTHON-BASED APPLICATIONS WITH IoT WORK ON VARIOUS IoT PROJECTS AND UNDERSTAND THE BASICS OF ELECTRONICS BOOK DESCRIPTION THE INTERNET OF THINGS (IoT) HAS MANAGED TO ATTRACT THE ATTENTION OF RESEARCHERS AND TECH ENTHUSIASTS, SINCE IT POWERFULLY COMBINES CLASSICAL NETWORKS WITH INSTRUMENTS AND DEVICES. IN INTERNET OF THINGS PROGRAMMING PROJECTS, WE UNLEASH THE POWER OF RASPBERRY PI AND PYTHON TO CREATE ENGAGING PROJECTS. IN THE FIRST PART OF THE BOOK, YOU'LL BE INTRODUCED TO THE RASPBERRY PI, LEARN HOW TO SET IT UP, AND THEN JUMP RIGHT INTO PYTHON PROGRAMMING. THEN, YOU'LL DIVE INTO REAL-WORLD COMPUTING BY CREATING A "HELLO WORLD" APP USING FLASH LEDs. AS YOU MAKE YOUR WAY THROUGH THE CHAPTERS, YOU'LL GO BACK TO AN AGE WHEN ANALOG NEEDLE METERS RULED THE WORLD OF DATA DISPLAY. YOU'LL LEARN TO RETRIEVE WEATHER DATA FROM A WEB SERVICE AND

DISPLAY IT ON AN ANALOG NEEDLE METER, AND BUILD A HOME SECURITY SYSTEM USING THE RASPBERRY PI. THE NEXT PROJECT HAS A MODERN TWIST, WHERE WE EMPLOY THE RASPBERRY PI TO SEND A SIGNAL TO A WEB SERVICE THAT WILL SEND YOU A TEXT WHEN SOMEONE IS AT THE DOOR. IN THE FINAL PROJECT, YOU TAKE WHAT YOU'VE LEARNED FROM THE PREVIOUS TWO PROJECTS AND CREATE AN IoT ROBOT CAR THAT YOU CAN USE TO MONITOR WHAT YOUR PETS ARE UP TO WHEN YOU ARE AWAY. BY THE END OF THIS BOOK, YOU WILL BE WELL VERSED IN ALMOST EVERY POSSIBLE WAY TO MAKE YOUR IoT PROJECTS STAND OUT. WHAT YOU WILL LEARN INSTALL AND SET UP A RASPBERRY PI FOR IoT DEVELOPMENT LEARN HOW TO USE A SERVO MOTOR AS AN ANALOG NEEDLE METER TO READ DATA BUILD A HOME SECURITY DASHBOARD USING AN INFRARED MOTION DETECTOR COMMUNICATE WITH A WEB SERVICE THAT SENDS YOU A MESSAGE WHEN THE DOORBELL RINGS RECEIVE DATA AND DISPLAY IT WITH AN ACTUATOR CONNECTED TO THE RASPBERRY PI BUILD AN IoT ROBOT CAR THAT IS CONTROLLED THROUGH THE INTERNET WHO THIS BOOK IS FOR INTERNET OF THINGS PROGRAMMING PROJECTS IS FOR PYTHON DEVELOPERS AND PROGRAMMERS WHO ARE INTERESTED IN BUILDING THEIR OWN IoT APPLICATIONS AND IoT-BASED PROJECTS. IT IS ALSO TARGETED AT IoT PROGRAMMERS AND DEVELOPERS WHO ARE LOOKING TO BUILD EXCITING PROJECTS WITH PYTHON.

## **HANDS-ON EMBEDDED PROGRAMMING WITH QT - JOHN WERNER 2019-07-12**

A COMPREHENSIVE GUIDE THAT WILL GET YOU UP AND RUNNING WITH EMBEDDED SOFTWARE DEVELOPMENT USING QT5 KEY FEATURES LEARN TO CREATE FLUID, CROSS-PLATFORM APPLICATIONS FOR EMBEDDED DEVICES ACHIEVE OPTIMUM PERFORMANCE IN YOUR APPLICATIONS WITH QT LITE PROJECT EXPLORE THE IMPLEMENTATION OF QT WITH IoT USING QTMQTT, QTKNX, AND QTWEBSOCKETS BOOK DESCRIPTION QT IS AN OPEN-SOURCE TOOLKIT SUITABLE FOR CROSS-PLATFORM AND EMBEDDED APPLICATION DEVELOPMENT. THIS BOOK USES INDUCTIVE TEACHING TO HELP YOU LEARN HOW TO CREATE APPLICATIONS FOR EMBEDDED AND INTERNET OF THINGS (IoT) DEVICES WITH QT 5. YOU'LL START BY LEARNING TO DEVELOP YOUR VERY FIRST APPLICATION WITH QT. NEXT, YOU'LL BUILD ON THE FIRST APPLICATION BY UNDERSTANDING NEW CONCEPTS THROUGH HANDS-ON PROJECTS AND WRITTEN TEXT. EACH PROJECT WILL INTRODUCE NEW FEATURES THAT WILL HELP YOU TRANSFORM YOUR BASIC FIRST PROJECT INTO A CONNECTED IoT APPLICATION RUNNING ON EMBEDDED HARDWARE. IN ADDITION TO PRACTICAL EXPERIENCE IN DEVELOPING AN EMBEDDED QT PROJECT, YOU WILL ALSO GAIN VALUABLE INSIGHTS INTO BEST PRACTICES FOR QT DEVELOPMENT, ALONG WITH EXPLORING ADVANCED TECHNIQUES FOR TESTING, DEBUGGING, AND MONITORING THE PERFORMANCE OF QT APPLICATIONS.

**4724485-Hands-On-Internet-Of-Things-With-Mqtt-Build-Conne**

THROUGH THE COURSE OF THE BOOK, THE EXAMPLES AND PROJECTS ARE DEMONSTRATED IN A WAY SO THAT THEY CAN BE RUN BOTH LOCALLY AND ON AN EMBEDDED PLATFORM. BY THE END OF THIS BOOK, YOU WILL HAVE THE SKILLS YOU NEED TO USE QT 5 TO CONFIDENTLY DEVELOP MODERN EMBEDDED APPLICATIONS. WHAT YOU WILL LEARN UNDERSTAND HOW TO DEVELOP QT APPLICATIONS USING QT CREATOR UNDER LINUX EXPLORE VARIOUS QT GUI TECHNOLOGIES TO BUILD RESOURCEFUL AND INTERACTIVE APPLICATIONS UNDERSTAND QT'S THREADING MODEL TO MAINTAIN A RESPONSIVE UI GET TO GRIPS WITH REMOTE TARGET LOAD AND DEBUG UNDER QT CREATOR BECOME ADEPT AT WRITING IoT CODE USING QT LEARN A VARIETY OF SOFTWARE BEST PRACTICES TO ENSURE THAT YOUR CODE IS EFFICIENT WHO THIS BOOK IS FOR THIS BOOK IS FOR SOFTWARE AND HARDWARE PROFESSIONALS WITH EXPERIENCE IN DIFFERENT DOMAINS WHO ARE SEEKING NEW CAREER OPPORTUNITIES IN EMBEDDED SYSTEMS AND IoT. WORKING KNOWLEDGE OF THE C++ LINUX COMMAND LINE WILL BE USEFUL TO GET THE MOST OUT OF THIS BOOK.

## **SOCIETY WITH FUTURE: SMART AND LIVEABLE CITIES - PAULO PEREIRA 2020-04-03**

THIS BOOK CONSTITUTES THE REFEREED POST-CONFERENCE PROCEEDINGS OF THE FIRST INTERNATIONAL CONFERENCE ON SOCIETY WITH FUTURE: SMART AND LIVEABLE CITIES, SC4LIFE 2019, WHICH TOOK PLACE IN BRAGA, PORTUGAL,

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**10/32**

IN DECEMBER 2019. THE 13 REVISED FULL PAPERS WERE CAREFULLY REVIEWED AND SELECTED FROM 19 SUBMISSIONS. THE CONFERENCE HAS BROUGHT RESEARCHERS, DEVELOPERS, AND PRACTITIONERS WHO ARE LEVERAGING AND DEVELOPING NEW KNOWLEDGE ON THE TOPIC OF SMART CITIES, OFFERING MORE EFFICIENCY TO MAIN INFRASTRUCTURES, UTILITIES AND SERVICES, CREATING A SUSTAINABLE URBAN ENVIRONMENT THAT IMPROVES THE QUALITY OF LIFE FOR ITS CITIZENS AND ENHANCES ECONOMIC DEVELOPMENT.

**BUILDING SMARTER PLANET SOLUTIONS WITH MQTT AND IBM WEBSHERE MQ TELEMETRY** - VALERIE LAMPKIN  
2012-09-07

MQ TELEMETRY TRANSPORT (MQTT) IS A MESSAGING PROTOCOL THAT IS LIGHTWEIGHT ENOUGH TO BE SUPPORTED BY THE SMALLEST DEVICES, YET ROBUST ENOUGH TO ENSURE THAT IMPORTANT MESSAGES GET TO THEIR DESTINATIONS EVERY TIME. WITH MQTT DEVICES SUCH AS SMART ENERGY METERS, CARS, TRAINS, SATELLITE RECEIVERS, AND PERSONAL HEALTH CARE DEVICES CAN COMMUNICATE WITH EACH OTHER AND WITH OTHER SYSTEMS OR APPLICATIONS. THIS IBM® REDBOOKS® PUBLICATION INTRODUCES MQTT AND TAKES A SCENARIO-BASED APPROACH TO DEMONSTRATE ITS CAPABILITIES. IT PROVIDES A QUICK GUIDE TO GETTING STARTED AND THEN SHOWS HOW TO GROW TO AN ENTERPRISE SCALE MQTT SERVER USING IBM WEBSHERE® MQ TELEMETRY. SCENARIOS DEMONSTRATE HOW TO

INTEGRATE MQTT WITH OTHER IBM PRODUCTS, INCLUDING WEBSHERE MESSAGE BROKER. THIS BOOK ALSO PROVIDES TYPICAL USAGE PATTERNS AND GUIDANCE ON SCALING A SOLUTION. THE INTENDED AUDIENCE FOR THIS BOOK RANGES FROM NEW USERS OF MQTT AND TELEMETRY TO THOSE READERS WHO ARE LOOKING FOR IN-DEPTH KNOWLEDGE AND ADVANCED TOPICS.

**BUILDING THE WEB OF THINGS** - DOMINIQUE GUINARD  
2016-06-18

SUMMARY A HANDS-ON GUIDE THAT WILL TEACH HOW TO DESIGN AND IMPLEMENT SCALABLE, FLEXIBLE, AND OPEN IoT SOLUTIONS USING WEB TECHNOLOGIES. THIS BOOK FOCUSES ON PROVIDING THE RIGHT BALANCE OF THEORY, CODE SAMPLES, AND PRACTICAL EXAMPLES TO ENABLE YOU TO SUCCESSFULLY CONNECT ALL SORTS OF DEVICES TO THE WEB AND TO EXPOSE THEIR SERVICES AND DATA OVER REST APIs. PURCHASE OF THE PRINT BOOK INCLUDES A FREE eBook IN PDF, KINDLE, AND EPUB FORMATS FROM MANNING PUBLICATIONS. ABOUT THE TECHNOLOGY BECAUSE THE INTERNET OF THINGS IS STILL NEW, THERE IS NO UNIVERSAL APPLICATION PROTOCOL. FORTUNATELY, THE IoT CAN TAKE ADVANTAGE OF THE WEB, WHERE IoT PROTOCOLS CONNECT APPLICATIONS THANKS TO UNIVERSAL AND OPEN APIs. ABOUT THE BOOK BUILDING THE WEB OF THINGS IS A GUIDE TO USING CUTTING-EDGE WEB TECHNOLOGIES TO BUILD THE IoT. THIS STEP-BY-STEP BOOK TEACHES YOU HOW TO USE

WEB PROTOCOLS TO CONNECT REAL-WORLD DEVICES TO THE WEB, INCLUDING THE SEMANTIC AND SOCIAL WEBS. ALONG THE WAY YOU'LL GAIN VITAL CONCEPTS AS YOU FOLLOW INSTRUCTIONS FOR MAKING WEB OF THINGS DEVICES. BY THE END, YOU'LL HAVE THE PRACTICAL SKILLS YOU NEED TO IMPLEMENT YOUR OWN WEB-CONNECTED PRODUCTS AND SERVICES. WHAT'S INSIDE INTRODUCTION TO IoT PROTOCOLS AND DEVICES CONNECT ELECTRONIC ACTUATORS AND SENSORS (GPIO) TO A RASPBERRY PI IMPLEMENT STANDARD REST AND PUB/SUB APIs WITH NODE.JS ON EMBEDDED SYSTEMS LEARN ABOUT IoT PROTOCOLS LIKE MQTT AND CoAP AND INTEGRATE THEM TO THE WEB OF THINGS USE THE SEMANTIC WEB (JSON-LD, RDFa, ETC.) TO DISCOVER AND FIND WEB THINGS SHARE THINGS VIA SOCIAL NETWORKS TO CREATE THE SOCIAL WEB OF THINGS BUILD A WEB-BASED SMART HOME WITH HTTP AND WEBSOCKET COMPOSE PHYSICAL MASHUPS WITH EVERYTHING, NODE-RED, AND IFTTT ABOUT THE READER FOR BOTH SEASONED PROGRAMMERS AND THOSE WITH ONLY BASIC PROGRAMMING SKILLS. ABOUT THE AUTHORS DOMINIQUE GUINARD AND VLAD TRIFA PIONEERED THE WEB OF THINGS AND COFOUNDED EVERYTHING, A LARGE-SCALE IoT CLOUD POWERING BILLIONS OF WEB THINGS. TABLE OF CONTENTS PART 1 BASICS OF THE IOT AND THE WOT FROM THE INTERNET OF THINGS TO THE WEB OF THINGS HELLO, WORLD WIDE WEB OF THINGS NODE.JS FOR

THE WEB OF THINGS GETTING STARTED WITH EMBEDDED SYSTEMS BUILDING NETWORKS OF THINGS PART 2 BUILDING THE WOT ACCESS: WEB APIs FOR THINGS IMPLEMENTING WEB THINGS FIND: DESCRIBE AND DISCOVER WEB THINGS SHARE: SECURING AND SHARING WEB THINGS **INTERNET OF THINGS** - NITIN GOYAL 2021-11-03 THIS REFERENCE TEXT DISCUSSES INTELLIGENT ROBOTIC AND DRONE TECHNOLOGY WITH EMBEDDED INTERNET OF THINGS (IoT) FOR SMART APPLICATIONS. THE TEXT DISCUSSES FUTURE DIRECTIONS OF OPTIMIZATION METHODS WITH VARIOUS ENGINEERING AND SCIENCE FUNDAMENTALS USED IN ROBOTICS AND DRONE-BASED APPLICATIONS. ITS EMPHASIS IS ON COVERING DEEP LEARNING AND SIMILAR MODELS OF NEURAL NETWORK-BASED LEARNING TECHNIQUES EMPLOYED IN SOLVING OPTIMIZATION PROBLEMS OF DIFFERENT ENGINEERING AND SCIENCE APPLICATIONS. IT COVERS IMPORTANT TOPICS INCLUDING SENSORS AND ACTUATORS IN THE INTERNET OF THINGS (IoT), INTERNET-OF-ROBOTICS-THINGS (IoRT), IoT IN AGRICULTURE AND FOOD PROCESSING, ROUTING CHALLENGES IN FLYING AD-HOC NETWORKS, AND SMART CITIES. THE BOOK WILL SERVE AS A USEFUL TEXT FOR GRADUATE STUDENTS AND PROFESSIONALS IN THE FIELDS OF ELECTRICAL ENGINEERING, ELECTRONICS ENGINEERING, COMPUTER SCIENCE, AND MECHANICAL ENGINEERING. **PROGRAMMING THE INTERNET OF THINGS** - ANDY KING 2021-06-10

LEARN HOW TO PROGRAM THE INTERNET OF THINGS WITH THIS HANDS-ON GUIDE. BY BREAKING DOWN IoT PROGRAMMING COMPLEXITIES IN STEP-BY-STEP, BUILDING-BLOCK FASHION, AUTHOR AND EDUCATOR ANDY KING SHOWS YOU HOW TO DESIGN AND BUILD YOUR OWN FULL-STACK, END-TO-END IoT SOLUTION--FROM DEVICE TO CLOUD. THIS PRACTICAL BOOK WALKS YOU THROUGH TOOLING, DEVELOPMENT ENVIRONMENT SETUP, SOLUTION DESIGN, AND IMPLEMENTATION. YOU'LL LEARN HOW A TYPICAL IoT ECOSYSTEM WORKS, AS WELL AS HOW TO TACKLE INTEGRATION CHALLENGES THAT CROP UP WHEN IMPLEMENTING YOUR OWN IoT SOLUTION. WHETHER YOU'RE AN ENGINEERING STUDENT LEARNING THE BASICS OF THE IoT, A TECH-SAVVY EXECUTIVE LOOKING TO BETTER UNDERSTAND THE NUANCES OF IoT TECHNOLOGY STACKS, OR A PROGRAMMER BUILDING YOUR OWN SMART HOUSE SOLUTION, THIS PRACTICAL BOOK WILL HELP YOU GET STARTED. DESIGN AN END-TO-END SOLUTION THAT IMPLEMENTS AN IoT USE CASE SET UP AN IoT-CENTRIC DEVELOPMENT AND TESTING ENVIRONMENT ORGANIZE YOUR SOFTWARE DESIGN BY CREATING ABSTRACTIONS IN PYTHON AND JAVA Use MQTT, CoAP, AND OTHER PROTOCOLS TO CONNECT IoT DEVICES AND SERVICES CREATE A CUSTOM JSON-BASED DATA FORMAT THAT'S CONSUMABLE ACROSS A RANGE OF PLATFORMS AND SERVICES USE CLOUD SERVICES TO SUPPORT YOUR IoT ECOSYSTEM AND PROVIDE BUSINESS VALUE FOR STAKEHOLDERS

## BUILD YOUR OWN IoT PLATFORM - ANAND TAMBOLI 2019-04-29

DISCOVER HOW EVERY SOLUTION THAT IS IN SOME WAY RELATED TO THE IoT NEEDS A PLATFORM AND HOW TO CREATE THAT PLATFORM. THIS BOOK IS ABOUT BEING AGILE AND REDUCING YOUR TIME TO MARKET WITHOUT BREAKING THE BANK. IT IS ABOUT DESIGNING SOMETHING THAT YOU CAN SCALE INCREMENTALLY WITHOUT A LOT OF REWORK AND POTENTIALLY DISRUPTING THE CURRENT WORK. SO, THE KEY QUESTIONS ARE: WHAT DOES IT TAKE? HOW LONG DOES IT TAKE? AND, HOW MUCH DOES IT TAKE TO BUILD YOUR OWN IoT PLATFORM? THIS BOOK ANSWERS THESE QUESTIONS AND PROVIDES YOU WITH A STEP-BY-STEP GUIDANCE ON HOW TO BUILD YOUR OWN IoT PLATFORM. IN THIS BOOK, THE AUTHOR BURSTS THE BUBBLE AND HIGHLIGHTS HOW THE CORE OF AN IoT PLATFORM LOOKS LIKE. THERE ARE ALWAYS SOME MUST-HAVES AND SOME NICE-TO-HAVES. THIS BOOK WILL DISTINGUISH THE TWO AND FOCUS ON HOW TO BUILD THE MUST-HAVES. BUILDING YOUR IoT PLATFORM IS NOT ONLY THE BIGGEST COST SAVER BUT CAN ALSO BE A SATISFYING LEARNING EXPERIENCE. IN THIS EDITION, WE WILL UNDERTAKE A SAMPLE PROJECT TO FURTHER CLARIFY THE CONCEPTS WE LEARN; ADDITIONAL CHAPTERS WOULD SHOW YOU THE HARDWARE INTERFACE. WHAT YOU WILL LEARN: • LEARN HOW TO ARCHITECT AN INTERCONNECTED SYSTEM. • LEARN HOW TO DEVELOP FLEXIBLE ARCHITECTURE. • LEARN TO

PRIORITIZE SYSTEM REQUIREMENTS WITH A BOTTOM-UP APPROACH. • BE ABLE TO CREATE A REDUNDANT COMMUNICATIONS PLATFORM. • BE ABLE TO CREATE AN END-TO-END APPLICATION USING THE GUIDELINES IN THIS BOOK. WHO IS THIS BOOK FOR IoT DEVELOPERS WITH BASIC-TO-INTERMEDIATE PROGRAMMING SKILLS WOULD BENEFIT FROM THIS BOOK.

*HANDS-ON ROBOTICS WITH JAVASCRIPT* - KASSANDRA PERCH 2018-08-31

LEVERAGE RASPBERRY PI 3 AND DIFFERENT JAVASCRIPT PLATFORMS TO BUILD EXCITING ROBOTICS PROJECTS KEY FEATURES BUILD ROBOTS THAT LIGHT UP AND MAKE NOISE LEARN TO WORK WITH RASPBERRY PI 3 AND JAVASCRIPT CONNECT YOUR JOHNNY-FIVE PROJECTS TO EXTERNAL APIS AND CREATE YOUR OWN IoT BOOK DESCRIPTION THERE HAS BEEN A RAPID INCREASE IN THE USE OF JAVASCRIPT IN HARDWARE AND EMBEDDED DEVICE PROGRAMMING. JAVASCRIPT HAS AN EFFECTIVE SET OF FRAMEWORKS AND LIBRARIES THAT SUPPORT THE ROBOTICS ECOSYSTEM. HANDS-ON ROBOTICS WITH JAVASCRIPT STARTS WITH SETTING UP AN ENVIRONMENT TO PROGRAM ROBOTS IN JAVASCRIPT. THEN, YOU WILL DIVE INTO BUILDING BASIC-LEVEL PROJECTS SUCH AS A LINE-FOLLOWING ROBOT. YOU WILL WALK THROUGH A SERIES OF PROJECTS THAT WILL TEACH YOU ABOUT THE JOHNNY-FIVE LIBRARY, AND DEVELOP YOUR SKILLS WITH EACH PROJECT. AS YOU MAKE YOUR WAY THROUGH THE CHAPTERS,

YOU'LL WORK ON CREATING A BLINKING LED, BEFORE MOVING ON TO SENSORS AND OTHER MORE ADVANCED CONCEPTS. YOU WILL THEN PROGRESS TO BUILDING AN ADVANCED-LEVEL AI-ENABLED ROBOT, CONNECT THEIR NODEBOTS TO THE INTERNET, CREATE A NODEBOTS SWARM, AND EXPLORE MQTT. BY THE END OF THIS BOOK, YOU WILL HAVE GAINED HANDS-ON EXPERIENCE IN BUILDING ROBOTS USING JAVASCRIPT WHAT YOU WILL LEARN INSTALL AND RUN NODEJS AND JOHNNY-FIVE ON RASPBERRY PI ASSEMBLE, CODE, AND RUN AN LED PROJECT LEVERAGE JAVASCRIPT LIBRARIES TO BUILD EXCITING ROBOTS USE SENSORS TO COLLECT DATA FROM THE WORLD AROUND YOU EMPLOY SERVOS AND MOTORS TO MAKE YOUR PROJECT MOVE ADD INTERNET CAPABILITIES TO YOUR JOHNNY-FIVE PROJECT WHO THIS BOOK IS FOR HANDS-ON ROBOTICS WITH JAVASCRIPT IS FOR INDIVIDUALS WHO HAVE PRIOR EXPERIENCE WITH RASPBERRY PI 3 AND LIKE TO WRITE SKETCHES IN JAVASCRIPT. BASIC KNOWLEDGE OF JAVASCRIPT AND NODEJS WILL HELP YOU GET THE MOST OUT OF THIS BOOK.

*INTERNET OF THINGS: A HANDS-ON APPROACH* - ARSHDEEP BAHGA 2014-08-09

INTERNET OF THINGS (IoT) REFERS TO PHYSICAL AND VIRTUAL OBJECTS THAT HAVE UNIQUE IDENTITIES AND ARE CONNECTED TO THE INTERNET TO FACILITATE INTELLIGENT APPLICATIONS THAT MAKE ENERGY, LOGISTICS, INDUSTRIAL CONTROL, RETAIL, AGRICULTURE AND MANY OTHER DOMAINS

"SMARTER". INTERNET OF THINGS IS A NEW REVOLUTION OF THE INTERNET THAT IS RAPIDLY GATHERING MOMENTUM DRIVEN BY THE ADVANCEMENTS IN SENSOR NETWORKS, MOBILE DEVICES, WIRELESS COMMUNICATIONS, NETWORKING AND CLOUD TECHNOLOGIES. EXPERTS FORECAST THAT BY THE YEAR 2020 THERE WILL BE A TOTAL OF 50 BILLION DEVICES/THINGS CONNECTED TO THE INTERNET. THIS BOOK IS WRITTEN AS A TEXTBOOK ON INTERNET OF THINGS FOR EDUCATIONAL PROGRAMS AT COLLEGES AND UNIVERSITIES, AND ALSO FOR IoT VENDORS AND SERVICE PROVIDERS WHO MAY BE INTERESTED IN OFFERING A BROADER PERSPECTIVE OF INTERNET OF THINGS TO ACCOMPANY THEIR OWN CUSTOMER AND DEVELOPER TRAINING PROGRAMS. THE TYPICAL READER IS EXPECTED TO HAVE COMPLETED A COUPLE OF COURSES IN PROGRAMMING USING TRADITIONAL HIGH-LEVEL LANGUAGES AT THE COLLEGE-LEVEL, AND IS EITHER A SENIOR OR A BEGINNING GRADUATE STUDENT IN ONE OF THE SCIENCE, TECHNOLOGY, ENGINEERING OR MATHEMATICS (STEM) FIELDS. LIKE OUR COMPANION BOOK ON CLOUD COMPUTING, WE HAVE TRIED TO WRITE A COMPREHENSIVE BOOK THAT TRANSFERS KNOWLEDGE THROUGH AN IMMERSIVE "HANDS ON" APPROACH, WHERE THE READER IS PROVIDED THE NECESSARY GUIDANCE AND KNOWLEDGE TO DEVELOP WORKING CODE FOR REAL-WORLD IoT APPLICATIONS. ADDITIONAL SUPPORT IS AVAILABLE AT THE BOOK'S WEBSITE: [WWW.INTERNET-OF-THINGS-BOOK.COM](http://WWW.INTERNET-OF-THINGS-BOOK.COM) ORGANIZATION THE

BOOK IS ORGANIZED INTO 3 MAIN PARTS, COMPRISING OF A TOTAL OF 11 CHAPTERS. PART I COVERS THE BUILDING BLOCKS OF INTERNET OF THINGS (IOTs) AND THEIR CHARACTERISTICS. A TAXONOMY OF IoT SYSTEMS IS PROPOSED COMPRISING OF VARIOUS IoT LEVELS WITH INCREASING LEVELS OF COMPLEXITY. DOMAIN SPECIFIC INTERNET OF THINGS AND THEIR REAL-WORLD APPLICATIONS ARE DESCRIBED. A GENERIC DESIGN METHODOLOGY FOR IoT IS PROPOSED. AN IoT SYSTEM MANAGEMENT APPROACH USING NETCONF-YANG IS DESCRIBED. PART II INTRODUCES THE READER TO THE PROGRAMMING ASPECTS OF INTERNET OF THINGS WITH A VIEW TOWARDS RAPID PROTOTYPING OF COMPLEX IoT APPLICATIONS. WE CHOSE PYTHON AS THE PRIMARY PROGRAMMING LANGUAGE FOR THIS BOOK, AND AN INTRODUCTION TO PYTHON IS ALSO INCLUDED WITHIN THE TEXT TO BRING READERS TO A COMMON LEVEL OF EXPERTISE. WE DESCRIBE PACKAGES, FRAMEWORKS AND CLOUD SERVICES INCLUDING THE WAMP-AUTOBAHN, XIVELY CLOUD AND AMAZON WEB SERVICES WHICH CAN BE USED FOR DEVELOPING IoT SYSTEMS. WE CHOSE THE RASPBERRY PI DEVICE FOR THE EXAMPLES IN THIS BOOK. REFERENCE ARCHITECTURES FOR DIFFERENT LEVELS OF IoT APPLICATIONS ARE EXAMINED IN DETAIL. CASE STUDIES WITH COMPLETE SOURCE CODE FOR VARIOUS IoT DOMAINS INCLUDING HOME AUTOMATION, SMART ENVIRONMENT, SMART CITIES, LOGISTICS, RETAIL, SMART ENERGY, SMART AGRICULTURE, INDUSTRIAL CONTROL

AND SMART HEALTH, ARE DESCRIBED. PART III INTRODUCES THE READER TO ADVANCED TOPICS ON IoT INCLUDING IoT DATA ANALYTICS AND TOOLS FOR IoT. CASE STUDIES ON COLLECTING AND ANALYZING DATA GENERATED BY INTERNET OF THINGS IN THE CLOUD ARE DESCRIBED.

### **ENERGY AND TECHNICAL BUILDING SYSTEMS - SCIENTIFIC AND TECHNOLOGICAL ADVANCES - JAREK KURNITSKI** 2020-01-31

FUTURE BUILDINGS REQUIRE NOT ONLY ENERGY EFFICIENCY BUT ALSO PROPER BUILDING AUTOMATION AND CONTROL SYSTEM FUNCTIONALITIES IN ORDER TO RESPOND TO THE NEEDS OF OCCUPANTS AND ENERGY GRIDS. THESE DEVELOPMENT PATHS REQUIRE A FOCUS ON OCCUPANT NEEDS SUCH AS GOOD INDOOR CLIMATE, EASY OPERABILITY, AND MONITORING. ANOTHER AREA TO BE TACKLED IS ENERGY FLEXIBILITY, WHICH IS NEEDED TO MAKE BUILDINGS RESPONSIVE TO THE PRICE SIGNALS OF ELECTRICITY GRIDS WITH INCREASING AMOUNTS OF FLUCTUATING RENEWABLE ENERGY GENERATION INSTALLED BOTH IN CENTRAL GRIDS AND AT BUILDING SITES. THIS SPECIAL ISSUE IS DEDICATED TO HVAC SYSTEMS, LOAD SHIFTING, INDOOR CLIMATE, AND ENERGY AND VENTILATION PERFORMANCE ANALYSES IN BUILDINGS. ALL THESE TOPICS ARE IMPORTANT FOR IMPROVING THE ENERGY PERFORMANCE OF NEW AND RENOVATED BUILDINGS WITHIN THE ROADMAP OF LOW ENERGY AND NEARLY ZERO ENERGY BUILDINGS. TO IMPROVE ENERGY PERFORMANCE AND, AT THE SAME TIME, OCCUPANT

COMFORT AND WELLBEING, NEW TECHNICAL SOLUTIONS ARE REQUIRED. OCCUPANCY PATTERNS AND RECOGNITION, INTELLIGENT BUILDING MANAGEMENT, DEMAND RESPONSE AND PERFORMANCE OF HEATING, COOLING AND VENTILATION SYSTEMS ARE SOME COMMON KEYWORDS IN THE ARTICLES OF THIS SPECIAL ISSUE CONTRIBUTING TO FUTURE HIGHLY PERFORMING BUILDINGS WITH RELIABLE OPERATION.

AUGMENTED REALITY, VIRTUAL REALITY, AND COMPUTER GRAPHICS - LUCIO TOMMASO DE PAOLIS 2019-07-27  
THE 2-VOLUME SET LNCS 11613 AND 11614 CONSTITUTES THE REFEREED PROCEEDINGS OF THE 6TH INTERNATIONAL CONFERENCE ON AUGMENTED REALITY, VIRTUAL REALITY, AND COMPUTER GRAPHICS, AVR 2019, HELD IN SANTA MARIA AL BAGNO, ITALY, IN JUNE 2019. THE 32 FULL PAPERS AND 35 SHORT PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM NUMEROUS SUBMISSIONS. THE PAPERS DISCUSS KEY ISSUES, APPROACHES, IDEAS, OPEN PROBLEMS, INNOVATIVE APPLICATIONS AND TRENDS IN VIRTUAL AND AUGMENTED REALITY, 3D VISUALIZATION AND COMPUTER GRAPHICS IN THE AREAS OF MEDICINE, CULTURAL HERITAGE, ARTS, EDUCATION, ENTERTAINMENT, MILITARY AND INDUSTRIAL APPLICATIONS. THEY ARE ORGANIZED IN THE FOLLOWING TOPICAL SECTIONS: VIRTUAL REALITY; MEDICINE; AUGMENTED REALITY; CULTURAL HERITAGE; EDUCATION; AND INDUSTRY.

**LTE CELLULAR NARROWBAND INTERNET OF THINGS (NB-**



IoT) - HOSSAM FATTAH 2021-04-28

NB-IoT IS THE INTERNET OF THINGS (IoT) TECHNOLOGY USED FOR CELLULAR COMMUNICATION. NB-IoT DEVICES DELIVER MUCH BETTER CAPABILITY AND PERFORMANCE, SUCH AS: INCREASED AREA COVERAGE OF UP TO ONE KILOMETER; A MASSIVE NUMBER OF DEVICES—UP TO 200,000—PER A SINGLE BASE-STATION AREA; LONGER BATTERY LIFETIME OF TEN YEARS; AND BETTER INDOOR AND OUTDOOR COVERAGE FOR AREAS WITH WEAK SIGNAL, SUCH AS UNDERGROUND GARAGES. THE CELLULAR NB-IoT TECHNOLOGY IS A CHALLENGING TECHNOLOGY TO USE AND UNDERSTAND. WITH MORE THAN 30 PROJECTS PRESENTED IN THIS BOOK, COVERING MANY USE CASES AND SCENARIOS, THIS BOOK PROVIDES HANDS-ON AND PRACTICAL EXPERIENCE OF HOW TO USE THE CELLULAR NB-IoT FOR SMART APPLICATIONS USING ARDUINO™, AMAZON CLOUD, GOOGLE MAPS, AND CHARTS. THE BOOK STARTS BY EXPLAINING AT COMMANDS USED TO CONFIGURE THE NB-IoT MODEM; DATA SERIALIZATION AND DESERIALIZATION; HOW TO SET UP THE CLOUD FOR CONNECTING NB-IoT DEVICES; SETTING UP RULES, POLICY, SECURITY CERTIFICATES, AND A NoSQL DATABASE ON THE CLOUD; HOW TO STORE AND READ DATA IN THE CLOUD; HOW TO USE GOOGLE MAPS TO VISUALIZE NB-IoT DEVICE GEO-LOCATION; AND HOW TO USE CHARTS TO VISUALIZE SENSOR DATASETS. PROJECTS FOR ARDUINO ARE PRESENTED IN FOUR PARTS. THE FIRST PART EXPLAINS HOW TO CONNECT THE

DEVICE TO THE MOBILE OPERATOR AND CELLULAR NETWORK; PERFORM COMMUNICATION USING DIFFERENT NETWORK PROTOCOLS, SUCH AS TCP, HTTP, SSL, OR MQTT; HOW TO USE GPS FOR GEO-LOCATION APPLICATIONS; AND HOW TO UPGRADE NB-IoT MODEM FIRMWARE OVER THE AIR. THE SECOND PART EXPLAINS THE MICROCONTROLLER UNIT AND HOW TO BUILD AND RUN PROJECTS, SUCH AS A 7-SEGMENT DISPLAY OR A REAL-TIME CLOCK. THE THIRD PART EXPLAINS HOW NB-IoT CAN BE USED WITH SENSOR DEVICES, SUCH AS ULTRASONIC AND ENVIRONMENTAL SENSORS. FINALLY, THE FOURTH PART EXPLAINS HOW NB-IoT CAN BE USED TO CONTROL ACTUATORS, SUCH AS STEPPER MOTORS AND RELAYS. THIS BOOK IS A UNIQUE RESOURCE FOR UNDERSTANDING PRACTICAL USES OF THE NB-IoT TECHNOLOGY AND SERVES AS A HANDBOOK FOR TECHNICAL AND NON-TECHNICAL READERS WHO ARE LOOKING FOR PRACTICING AND EXERCISING THE CELLULAR NB-IoT TECHNOLOGY. THE BOOK CAN BE USED BY ENGINEERS, STUDENTS, RESEARCHERS, SYSTEM INTEGRATORS, MOBILE OPERATORS' TECHNICAL STAFF, AND ELECTRONICS ENTHUSIASTS. TO DOWNLOAD THE SOFTWARE WHICH CAN BE USED WITH THE BOOK, GO TO:

[HTTPS://GITHUB.COM/5GHUB/NB-IoT](https://github.com/5GHUB/NB-IoT) ABOUT THE AUTHOR: HOSSAM FATTAH IS A TECHNOLOGY EXPERT IN 4G/5G WIRELESS SYSTEMS AND NETWORKING. HE RECEIVED HIS PH.D. IN ELECTRICAL AND COMPUTER ENGINEERING FROM UNIVERSITY

OF BRITISH COLUMBIA, VANCOUVER, CANADA IN 2003. HE RECEIVED HIS MASTER OF APPLIED SCIENCE IN ELECTRICAL AND COMPUTER ENGINEERING FROM UNIVERSITY OF VICTORIA, VICTORIA, CANADA IN 2000. HE COMPLETED HIS B.Sc. DEGREE IN COMPUTERS AND SYSTEMS ENGINEERING FROM AL-AZHAR UNIVERSITY, CAIRO, EGYPT IN 1995. BETWEEN 2003 AND 2011, HE WAS IN ACADEMIA AND INDUSTRY, INCLUDING TEXAS A&M UNIVERSITY. BETWEEN 2011 AND 2013, HE WAS WITH SPIRENT COMMUNICATIONS, NJ, USA. SINCE 2013, HE HAS BEEN WITH MICROSOFT, USA. HE IS ALSO AN AFFILIATE ASSOCIATE PROFESSOR AT UNIVERSITY OF WASHINGTON, TACOMA, WA, USA, TEACHING GRADUATE COURSES ON IoT AND DISTRIBUTED SYSTEMS AND COLLABORATING ON 5G RESEARCH AND INNOVATIONS. HE HAS HAD MANY PATENTS AND TECHNICAL PUBLICATIONS IN CONFERENCES AND JOURNALS. HE IS A REGISTERED PROFESSIONAL ENGINEER WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS, BRITISH COLUMBIA, CANADA. HE IS THE AUTHOR OF THE RECENT BOOK 5G LTE NARROWBAND INTERNET OF THINGS (NB-IoT). HIS RESEARCH INTEREST IS IN WIRELESS COMMUNICATIONS AND RADIO NETWORKS AND PROTOCOLS, CELLULAR QUALITY OF SERVICE, RADIO RESOURCE MANAGEMENT, TRAFFIC AND PACKET SCHEDULING, NETWORK ANALYTICS, AND MOBILITY.

*MQTT ESSENTIALS - A LIGHTWEIGHT IoT PROTOCOL -*  
GAST [?] N C. HILLAR 2017-04-14

SEND AND RECEIVE MESSAGES WITH THE MQTT PROTOCOL FOR YOUR IoT SOLUTIONS. ABOUT THIS BOOK MAKE YOUR CONNECTED DEVICES LESS PRONE TO ATTACKERS BY UNDERSTANDING PRACTICAL SECURITY MECHANISMS DIVE DEEP INTO ONE OF IoT'S EXTREMELY LIGHTWEIGHT MACHINES TO ENABLE CONNECTIVITY PROTOCOL WITH SOME REAL-WORLD EXAMPLES LEARN TO TAKE ADVANTAGE OF THE FEATURES INCLUDED IN MQTT FOR IoT AND MACHINE-TO-MACHINE COMMUNICATIONS WITH COMPLETE REAL-LIFE EXAMPLES WHO THIS BOOK IS FOR THIS BOOK IS A GREAT RESOURCE FOR DEVELOPERS WHO WANT TO LEARN MORE ABOUT THE MQTT PROTOCOL TO APPLY IT TO THEIR INDIVIDUAL IoT PROJECTS. PRIOR KNOWLEDGE OF WORKING WITH IoT DEVICES IS ESSENTIAL. WHAT YOU WILL LEARN UNDERSTAND HOW MQTTv3.1 AND v3.1.1 WORKS IN DETAIL INSTALL AND SECURE A MOSQUITTO MQTT BROKER BY FOLLOWING BEST PRACTICES DESIGN AND DEVELOP IoT SOLUTIONS COMBINED WITH MOBILE AND WEB APPS THAT USE MQTT MESSAGES TO COMMUNICATE EXPLORE THE FEATURES INCLUDED IN MQTT FOR IoT AND MACHINE-TO-MACHINE COMMUNICATIONS PUBLISH AND RECEIVE MQTT MESSAGES WITH PYTHON, JAVA, SWIFT, JAVASCRIPT, AND NODEJS IMPLEMENT THE SECURITY BEST PRACTICES WHILE SETTING UP THE MQTT MOSQUITTO BROKER IN DETAIL THIS STEP-BY-STEP GUIDE WILL HELP YOU GAIN A DEEP UNDERSTANDING OF THE LIGHTWEIGHT MQTT PROTOCOL. WE'LL BEGIN WITH THE

SPECIFIC VOCABULARY OF MQTT AND ITS WORKING MODES, FOLLOWED BY INSTALLING A MOSQUITTO MQTT BROKER. THEN, YOU WILL USE BEST PRACTICES TO SECURE THE MQTT MOSQUITTO BROKER TO ENSURE THAT ONLY AUTHORIZED CLIENTS ARE ABLE TO PUBLISH AND RECEIVE MESSAGES. ONCE YOU HAVE SECURED THE BROKER WITH THE APPROPRIATE CONFIGURATION, YOU WILL DEVELOP A SOLUTION THAT CONTROLS A DRONE WITH PYTHON. FURTHER ON, YOU WILL USE PYTHON ON A RASPBERRY PI 3 BOARD TO PROCESS COMMANDS AND PYTHON ON INTEL BOARDS (Joule, Edison and Galileo). YOU WILL THEN CONNECT TO THE MQTT BROKER, SUBSCRIBE TO TOPICS, SEND MESSAGES, AND RECEIVE MESSAGES IN PYTHON. YOU WILL ALSO DEVELOP A SOLUTION THAT INTERACTS WITH SENSORS IN JAVA BY WORKING WITH MQTT MESSAGES. MOVING FORWARD, YOU WILL WORK WITH AN ASYNCHRONOUS API WITH CALLBACKS TO MAKE THE SENSORS INTERACT WITH MQTT MESSAGES. FOLLOWING THE SAME PROCESS, YOU WILL DEVELOP AN iOS APP WITH SWIFT 3, BUILD A WEBSITE THAT USES WEBSOCKETS TO CONNECT TO THE MQTT BROKER, AND CONTROL HOME AUTOMATION DEVICES WITH HTML5, JAVASCRIPT CODE, NODEJS AND MQTT MESSAGES STYLE AND APPROACH THIS STEP-BY-STEP GUIDE DESCRIBES THE MQTT PROTOCOL FOR YOUR IoT PROJECTS

BUILDING THE WEB OF THINGS - DOMINIQUE GUINARD  
2016-06-18

SUMMARY A HANDS-ON GUIDE THAT WILL TEACH HOW TO DESIGN AND IMPLEMENT SCALABLE, FLEXIBLE, AND OPEN IoT SOLUTIONS USING WEB TECHNOLOGIES. THIS BOOK FOCUSES ON PROVIDING THE RIGHT BALANCE OF THEORY, CODE SAMPLES, AND PRACTICAL EXAMPLES TO ENABLE YOU TO SUCCESSFULLY CONNECT ALL SORTS OF DEVICES TO THE WEB AND TO EXPOSE THEIR SERVICES AND DATA OVER REST APIs. PURCHASE OF THE PRINT BOOK INCLUDES A FREE eBook IN PDF, KINDLE, AND EPUB FORMATS FROM MANNING PUBLICATIONS. ABOUT THE TECHNOLOGY BECAUSE THE INTERNET OF THINGS IS STILL NEW, THERE IS NO UNIVERSAL APPLICATION PROTOCOL. FORTUNATELY, THE IoT CAN TAKE ADVANTAGE OF THE WEB, WHERE IoT PROTOCOLS CONNECT APPLICATIONS THANKS TO UNIVERSAL AND OPEN APIs. ABOUT THE BOOK BUILDING THE WEB OF THINGS IS A GUIDE TO USING CUTTING-EDGE WEB TECHNOLOGIES TO BUILD THE IoT. THIS STEP-BY-STEP BOOK TEACHES YOU HOW TO USE WEB PROTOCOLS TO CONNECT REAL-WORLD DEVICES TO THE WEB, INCLUDING THE SEMANTIC AND SOCIAL WEBS. ALONG THE WAY YOU'LL GAIN VITAL CONCEPTS AS YOU FOLLOW INSTRUCTIONS FOR MAKING WEB OF THINGS DEVICES. BY THE END, YOU'LL HAVE THE PRACTICAL SKILLS YOU NEED TO IMPLEMENT YOUR OWN WEB-CONNECTED PRODUCTS AND SERVICES. WHAT'S INSIDE INTRODUCTION TO IoT PROTOCOLS AND DEVICES CONNECT ELECTRONIC ACTUATORS AND SENSORS (GPIO) TO A RASPBERRY PI IMPLEMENT

STANDARD REST AND PUB/SUB APIs WITH NODEJS ON EMBEDDED SYSTEMS LEARN ABOUT IoT PROTOCOLS LIKE MQTT AND CoAP AND INTEGRATE THEM TO THE WEB OF THINGS USE THE SEMANTIC WEB (JSON-LD, RDFa, ETC.) TO DISCOVER AND FIND WEB THINGS SHARE THINGS VIA SOCIAL NETWORKS TO CREATE THE SOCIAL WEB OF THINGS BUILD A WEB-BASED SMART HOME WITH HTTP AND WEBSOCKET COMPOSE PHYSICAL MASHUPS WITH EVERYTHING, NODE-RED, AND IFTTT ABOUT THE READER FOR BOTH SEASONED PROGRAMMERS AND THOSE WITH ONLY BASIC PROGRAMMING SKILLS. ABOUT THE AUTHORS DOMINIQUE GUINARD AND VLAD TRIFA PIONEERED THE WEB OF THINGS AND COFOUNDED EVERYTHING, A LARGE-SCALE IoT CLOUD POWERING BILLIONS OF WEB THINGS. TABLE OF CONTENTS PART 1 BASICS OF THE IOT AND THE WOT FROM THE INTERNET OF THINGS TO THE WEB OF THINGS HELLO, WORLD WIDE WEB OF THINGS NODEJS FOR THE WEB OF THINGS GETTING STARTED WITH EMBEDDED SYSTEMS BUILDING NETWORKS OF THINGS PART 2 BUILDING THE WOT ACCESS: WEB APIs FOR THINGS IMPLEMENTING WEB THINGS FIND: DESCRIBE AND DISCOVER WEB THINGS SHARE: SECURING AND SHARING WEB THINGS [A REFERENCE GUIDE TO THE INTERNET OF THINGS](#) - GREG DUNKO 2017-03 THIS RESOURCE WILL HELP YOU MAKE EDUCATED DECISIONS FOR YOUR IoT PROJECT, WHETHER BUILDING FROM SCRATCH

OR ASSEMBLING READY TO DEPLOY COMPONENTS. BRIDGERA PROVIDES INSIGHT ON WHAT TO CONSIDER THROUGHOUT THE ENTIRE PROCESS, FROM PLANNING AND DESIGN OF EACH COMPONENT TO THE DEPLOYMENT AND MONITORING OF YOUR IoT SYSTEM. OUR GOAL IS TO HELP YOU NAVIGATE THE MANY OPTIONS AVAILABLE WHEN CONSTRUCTING AN IoT SYSTEM. WE OUTLINE THE ADVANTAGES AND DISADVANTAGES OF THE VARIOUS TECHNOLOGIES AVAILABLE TO HELP YOU DECIDE WHICH OPTIONS BEST SUIT YOUR IoT PROJECT'S NEEDS.

### **DEVELOPING IoT PROJECTS WITH ESP32** - VEDAT OZAN ONER 2021-09-13

MASTER THE TECHNIQUE OF USING ESP32 AS AN EDGE DEVICE IN ANY IoT APPLICATION WHERE WIRELESS COMMUNICATION CAN MAKE LIFE EASIER KEY FEATURES GAIN PRACTICAL EXPERIENCE IN WORKING WITH ESP32 LEARN TO INTERFACE VARIOUS ELECTRONIC DEVICES SUCH AS SENSORS, INTEGRATED CIRCUITS (ICs), AND DISPLAYS APPLY YOUR KNOWLEDGE TO BUILD REAL-WORLD AUTOMATION PROJECTS BOOK DESCRIPTION DEVELOPING IoT PROJECTS WITH ESP32 PROVIDES END-TO-END COVERAGE OF SECURE DATA COMMUNICATION TECHNIQUES FROM SENSORS TO CLOUD PLATFORMS THAT WILL HELP YOU TO DEVELOP PRODUCTION-GRADE IoT SOLUTIONS BY USING THE ESP32 SoC. YOU'LL LEARN HOW TO EMPLOY ESP32 IN YOUR IoT PROJECTS BY INTERFACING WITH DIFFERENT SENSORS AND

ACTUATORS USING DIFFERENT TYPES OF SERIAL PROTOCOLS. THIS BOOK WILL SHOW YOU HOW SOME PROJECTS REQUIRE IMMEDIATE OUTPUT FOR END-USERS, AND COVER DIFFERENT DISPLAY TECHNOLOGIES AS WELL AS EXAMPLES OF DRIVING DIFFERENT TYPES OF DISPLAYS. THE BOOK FEATURES A DEDICATED CHAPTER ON CYBERSECURITY PACKED WITH HANDS-ON EXAMPLES. AS YOU PROGRESS, YOU'LL GET TO GRIPS WITH BLE TECHNOLOGIES AND BLE MESH NETWORKING AND WORK ON A COMPLETE SMART HOME PROJECT WHERE ALL NODES COMMUNICATE OVER A BLE MESH. LATER CHAPTERS WILL SHOW YOU HOW IoT REQUIRES CLOUD CONNECTIVITY MOST OF THE TIME AND REMOTE ACCESS TO SMART DEVICES. YOU'LL ALSO SEE HOW CLOUD PLATFORMS AND THIRD-PARTY INTEGRATIONS ENABLE ENDLESS POSSIBILITIES FOR YOUR END-USERS, SUCH AS INSIGHTS WITH BIG DATA ANALYTICS AND PREDICTIVE MAINTENANCE TO MINIMIZE COSTS. BY THE END OF THIS BOOK, YOU'LL HAVE DEVELOPED THE SKILLS YOU NEED TO START USING ESP32 IN YOUR NEXT WIRELESS IoT PROJECT AND MEET THE PROJECT'S REQUIREMENTS BY BUILDING EFFECTIVE, EFFICIENT, AND SECURE SOLUTIONS. WHAT YOU WILL LEARN EXPLORE ADVANCED USE CASES LIKE UART COMMUNICATION, SOUND AND CAMERA FEATURES, LOW-ENERGY SCENARIOS, AND SCHEDULING WITH AN RTOS ADD DIFFERENT TYPES OF DISPLAYS IN YOUR PROJECTS WHERE IMMEDIATE OUTPUT TO USERS IS REQUIRED CONNECT TO WI-FI AND BLUETOOTH FOR LOCAL

NETWORK COMMUNICATION CONNECT CLOUD PLATFORMS THROUGH DIFFERENT IoT MESSAGING PROTOCOLS INTEGRATE ESP32 WITH THIRD-PARTY SERVICES SUCH AS VOICE ASSISTANTS AND IFTTT DISCOVER BEST PRACTICES FOR IMPLEMENTING IoT SECURITY FEATURES IN A PRODUCTION- GRADE SOLUTION WHO THIS BOOK IS FOR IF YOU ARE AN EMBEDDED SOFTWARE DEVELOPER, AN IoT SOFTWARE ARCHITECT OR DEVELOPER, A TECHNOLOGIST, OR ANYONE WHO WANTS TO LEARN HOW TO USE ESP32 AND ITS APPLICATIONS, THIS BOOK IS FOR YOU. A BASIC UNDERSTANDING OF EMBEDDED SYSTEMS, PROGRAMMING, NETWORKING, AND CLOUD COMPUTING CONCEPTS IS NECESSARY TO GET STARTED WITH THE BOOK.

**ENTERPRISE INTERNET OF THINGS HANDBOOK** - ARVIND RAVULAVARU 2018-04-30

GET FAMILIAR WITH THE BUILDING BLOCKS OF IoT SOLUTIONS USING OFF-THE-SHELF IoT PLATFORMS. KEY FEATURES WORK WITH VARIOUS TRENDING IoT PLATFORMS SUCH AS AWS IoT, AZURE IoT, GOOGLE IoT, IBM WATSON IoT, AND KAA IoT GAIN HANDS-ON KNOWLEDGE WORKING WITH CLOUD-BASED IoT PLATFORMS, IoT ANALYTICS, AND SO ON. A PRACTICAL GUIDE THAT WILL HELP YOU BUILD IoT STRATEGIES FOR YOUR ORGANIZATION BOOK DESCRIPTION THERE IS A LOT OF WORK THAT IS BEING DONE IN THE IoT DOMAIN AND ACCORDING TO FORBES THE GLOBAL IoT MARKET WILL GROW FROM \$157B IN 2016 TO \$457B BY 2020.

THIS IS AN AMAZING MARKET BOTH IN TERMS TECHNOLOGY ADVANCEMENT AS WELL AS MONEY. IN THIS BOOK, WE WILL BE COVERING FIVE POPULAR IoT PLATFORMS, NAMELY, AWS IoT, MICROSOFT AZURE IoT, GOOGLE IoT CORE, IBM WATSON IoT, AND KAA IoT MIDDLEWARE. YOU ARE GOING TO BUILD SOLUTIONS THAT WILL USE A RASPBERRY PI 3, A DHT11 TEMPERATURE AND HUMIDITY SENSOR, AND A DASHBOARD TO VISUALIZE THE SENSOR DATA IN REAL-TIME. FURTHERMORE, YOU WILL ALSO EXPLORE VARIOUS COMPONENTS OF EACH OF THE PLATFORMS THAT ARE NEEDED TO ACHIEVE THE DESIRED SOLUTION. BESIDES BUILDING SOLUTIONS, YOU WILL LOOK AT HOW MACHINE LEARNING AND IoT GO HAND IN HAND AND LATER DESIGN A SIMPLE PREDICTIVE WEB SERVICE BASED ON THIS CONCEPT. BY THE END OF THIS BOOK, YOU WILL BE IN A POSITION TO IMPLEMENT AN IoT STRATEGY BEST-FIT FOR YOUR ORGANIZATION WHAT YOU WILL LEARN CONNECT A TEMPERATURE AND HUMIDITY SENSOR AND SEE HOW THESE TWO CAN BE MANAGED FROM VARIOUS PLATFORMS EXPLORE THE CORE COMPONENTS OF AWS IoT SUCH AS AWS KINESIS AND AWS IoT RULES ENGINE BUILD A SIMPLE ANALYSIS DASHBOARD USING AZURE IoT AND POWER BI UNDERSTAND THE FUNDAMENTALS OF GOOGLE IoT AND USE GOOGLE CORE APIs TO BUILD YOUR OWN DASHBOARD GET STARTED AND WORK WITH THE IBM WATSON IoT PLATFORM INTEGRATE CASSANDRA AND ZEPPELIN WITH KAA IoT DASHBOARD REVIEW SOME MACHINE

LEARNING AND AI AND GET TO KNOW MORE ABOUT THEIR IMPLEMENTATION IN THE IoT DOMAIN. WHO THIS BOOK IS FOR THIS BOOK IS TARGETED AT IoT ARCHITECTS AND ENGINEERS, OR ANY STAKEHOLDERS WORKING WITH IoT SOLUTIONS IN AN ORGANIZATION. THIS BOOK WILL ALSO HELP DECISION MAKERS AND PROFESSIONALS FROM SMALL- AND MEDIUM-SIZED ENTERPRISES BUILD AN IoT STRATEGY FOR THEIR VENTURE. NETWORK OF THINGS ENGINEERING (NoTE) LAB - ADMELA JUKAN 2023-04-21

THIS BOOK PROVIDES A HANDS-ON EXPERIENCE IN SOFTWARE AND HARDWARE ENGINEERING OF IoT DEVICES IN EDGE AND CLOUD COMPUTING SYSTEMS, BY PUTTING IN PRACTICE STATE-OF-THE-ART CONCEPTS OF HARDWARE DEVICES, NETWORKING AND COMPUTING SOFTWARE. IT PROPOSES A NETWORK OF THINGS ENGINEERING (NoTE) LAB, WITH SEVEN HANDS-ON LAB MODULES COVERING TOPICS RANGING FROM “INTERFACING SENSORS AND ACTUATORS” AND “CONNECTING IoT AND EDGE WITH MQTT” TO “DATA PIPELINING IN CLOUD COMPUTING”. ALL TOOLS AND SOFTWARE USED IN THE NoTE LAB ARE FREE AND OPEN SOURCE, AND AVAILABLE TO THE READERS. SPECIFICALLY, ARDUINO-BASED BOARDS THAT SUPPORT A VARIETY OF LOW-COST SENSORS AND ACTUATORS ARE USED IN IoT CONTEXT. IN EDGE COMPUTING, NoTE LAB IMPLEMENTS OFF-THE-SHELF SINGLE BOARD COMPUTERS, RASPBERRY PIS WITH CORRESPONDING SOFTWARE AND HARDWARE. FOR CLOUD, WELL-KNOWN AND

WIDELY USED CLOUD COMPUTING OPEN-SOURCE TOOLS (E.G., KUBERNETES) ARE DEPLOYED, WHERE READERS CAN LEARN THE BASICS OF MONITORING AND MANAGING CONTAINERS IN CLOUD COMPUTING. THREE COMMUNICATION PROTOCOLS ARE USED IN THE END-TO-END SETUP, INCLUDING MQTT, AMQP AND HTTP. THIS LAB BOOK IS A "MUST EXPERIMENT WITH" FOR ANYBODY IN ACADEMIA AND INDUSTRY PARTICIPATING IN THE FASCINATING IoT-EDGE-CLOUD CONTINUUM DEVELOPMENT.

### **DIGITAL CONVERSION ON THE WAY TO INDUSTRY 4.0 -**

NUMAN M. DURAKBASA 2020-10-25

THIS BOOK PRESENTS THE PROCEEDINGS FROM THE INTERNATIONAL SYMPOSIUM FOR PRODUCTION RESEARCH 2020. THE CROSS-DISCIPLINARY PAPERS PRESENTED DRAW ON RESEARCH FROM ACADEMICS AND PRACTITIONERS FROM INDUSTRIAL ENGINEERING, MANAGEMENT ENGINEERING, OPERATIONAL RESEARCH, AND PRODUCTION/OPERATIONAL MANAGEMENT. IT EXPLORES TOPICS INCLUDING: \* COMPUTER-AIDED MANUFACTURING; INDUSTRY 4.0 APPLICATIONS; SIMULATION AND MODELING BIG DATA AND ANALYTICS; FLEXIBLE MANUFACTURING SYSTEMS; DECISION ANALYSIS QUALITY MANAGEMENT INDUSTRIAL ROBOTICS IN PRODUCTION SYSTEMS INFORMATION TECHNOLOGIES IN PRODUCTION MANAGEMENT; AND OPTIMIZATION TECHNIQUES. PRESENTING REAL-LIFE APPLICATIONS, CASE STUDIES, AND MATHEMATICAL MODELS, THIS BOOK IS OF INTEREST TO RESEARCHERS, ACADEMICS, AND PRACTITIONERS IN THE FIELD OF PRODUCTION

AND OPERATION ENGINEERING.

*EMERGING TRENDS IN IoT AND INTEGRATION WITH DATA SCIENCE, CLOUD COMPUTING, AND BIG DATA ANALYTICS -* TASER, PELIN YILDIRIM 2021-11-05

THE INTERNET OF THINGS (IoT) HAS EMERGED TO ADDRESS THE NEED FOR CONNECTIVITY AND SEAMLESS INTEGRATION WITH OTHER DEVICES AS WELL AS BIG DATA PLATFORMS FOR ANALYTICS. HOWEVER, THERE ARE CHALLENGES THAT IoT-BASED APPLICATIONS FACE INCLUDING DESIGN AND IMPLEMENTATION ISSUES; CONNECTIVITY PROBLEMS; DATA GATHERING, STORING, AND ANALYZING IN CLOUD-BASED ENVIRONMENTS; AND IoT SECURITY AND PRIVACY ISSUES. *EMERGING TRENDS IN IoT AND INTEGRATION WITH DATA SCIENCE, CLOUD COMPUTING, AND BIG DATA ANALYTICS* IS A CRITICAL REFERENCE SOURCE THAT PROVIDES THEORETICAL FRAMEWORKS AND RESEARCH FINDINGS ON IoT AND BIG DATA INTEGRATION. HIGHLIGHTING TOPICS THAT INCLUDE WEARABLE SENSORS, MACHINE LEARNING, MACHINE INTELLIGENCE, AND MOBILE COMPUTING, THIS BOOK SERVES PROFESSIONALS WHO WANT TO IMPROVE THEIR UNDERSTANDING OF THE STRATEGIC ROLE OF TRUST AT DIFFERENT LEVELS OF THE INFORMATION AND KNOWLEDGE SOCIETY. IT IS THEREFORE OF MOST VALUE TO DATA SCIENTISTS, COMPUTER SCIENTISTS, DATA ANALYSTS, IT SPECIALISTS, ACADEMICIANS, PROFESSIONALS, RESEARCHERS, AND STUDENTS WORKING IN THE FIELD OF INFORMATION AND KNOWLEDGE MANAGEMENT IN VARIOUS

DISCIPLINES THAT INCLUDE BUT ARE NOT LIMITED TO INFORMATION AND COMMUNICATION SCIENCES, ADMINISTRATIVE SCIENCES AND MANAGEMENT, EDUCATION, SOCIOLOGY, COMPUTER SCIENCE, ETC. MOREOVER, THE BOOK PROVIDES INSIGHTS AND SUPPORTS EXECUTIVES CONCERNED WITH THE MANAGEMENT OF EXPERTISE, KNOWLEDGE, INFORMATION, AND ORGANIZATIONAL DEVELOPMENT IN DIFFERENT TYPES OF WORK COMMUNITIES AND ENVIRONMENTS.

*FLOW ARCHITECTURES* - JAMES URQUHART 2021-01-06

SOFTWARE DEVELOPMENT TODAY IS EMBRACING EVENTS AND STREAMING DATA, WHICH OPTIMIZES NOT ONLY HOW TECHNOLOGY INTERACTS BUT ALSO HOW BUSINESSES INTEGRATE WITH ONE ANOTHER TO MEET CUSTOMER NEEDS. THIS PHENOMENON, CALLED FLOW, CONSISTS OF PATTERNS AND STANDARDS THAT DETERMINE WHICH ACTIVITY AND RELATED DATA IS COMMUNICATED BETWEEN PARTIES OVER THE INTERNET. THIS BOOK EXPLORES CRITICAL IMPLICATIONS OF THAT EVOLUTION: WHAT HAPPENS WHEN EVENTS AND DATA STREAMS HELP YOU DISCOVER NEW ACTIVITY SOURCES TO ENHANCE EXISTING BUSINESSES OR DRIVE NEW MARKETS? WHAT TECHNOLOGIES AND ARCHITECTURAL PATTERNS CAN POSITION YOUR COMPANY FOR OPPORTUNITIES ENABLED BY FLOW? JAMES URQUHART, GLOBAL FIELD CTO AT VMWARE, GUIDES ENTERPRISE ARCHITECTS, SOFTWARE DEVELOPERS, AND PRODUCT MANAGERS THROUGH THE PROCESS. LEARN THE BENEFITS OF FLOW DYNAMICS WHEN BUSINESSES,

GOVERNMENTS, AND OTHER INSTITUTIONS INTEGRATE VIA EVENTS AND DATA STREAMS UNDERSTAND THE VALUE CHAIN FOR FLOW INTEGRATION THROUGH WARDLEY MAPPING VISUALIZATION AND PROMISE THEORY MODELING WALK THROUGH BASIC CONCEPTS BEHIND TODAY'S EVENT-DRIVEN SYSTEMS MARKETPLACE LEARN HOW TODAY'S INTEGRATION PATTERNS WILL INFLUENCE THE REAL-TIME EVENTS FLOW IN THE FUTURE EXPLORE WHY COMPANIES SHOULD ARCHITECT AND BUILD SOFTWARE TODAY TO TAKE ADVANTAGE OF FLOW IN COMING YEARS

**MASTERING INTERNET OF THINGS** - PETER WAHER  
2018-03-28

AUGMENT YOUR IoT SKILLS WITH THE HELP OF ENGAGING AND ENLIGHTENING TUTORIALS DESIGNED FOR RASPBERRY Pi 3 KEY FEATURES DESIGN AND IMPLEMENT STATE-OF-THE-ART SOLUTIONS FOR THE INTERNET OF THINGS BUILD COMPLEX PROJECTS USING MOTIONS DETECTORS, CONTROLLERS, SENSORS, AND RASPBERRY Pi 3 A HANDS-ON GUIDE THAT PROVIDES INTEROPERABLE SOLUTIONS FOR SENSORS, ACTUATORS, AND CONTROLLERS BOOK DESCRIPTION THE INTERNET OF THINGS (IoT) IS THE FASTEST GROWING TECHNOLOGY MARKET. INDUSTRIES ARE EMBRACING IoT TECHNOLOGIES TO IMPROVE OPERATIONAL EXPENSES, PRODUCT LIFE, AND PEOPLE'S WELL-BEING. MASTERING INTERNET OF THINGS STARTS BY PRESENTING IoT FUNDAMENTALS AND THE SMART CITY. YOU WILL LEARN THE



IMPORTANT TECHNOLOGIES AND PROTOCOLS THAT ARE USED FOR THE INTERNET OF THINGS, THEIR FEATURES, CORRESPONDING SECURITY IMPLICATIONS, AND PRACTICAL EXAMPLES ON HOW TO USE THEM. THIS BOOK FOCUSES ON CREATING APPLICATIONS AND SERVICES FOR THE INTERNET OF THINGS. FURTHER, YOU WILL LEARN TO CREATE APPLICATIONS AND SERVICES FOR THE INTERNET OF THINGS. YOU WILL BE DISCOVER VARIOUS INTERESTING PROJECTS AND UNDERSTAND HOW TO PUBLISH SENSOR DATA, CONTROL DEVICES, AND REACT TO ASYNCHRONOUS EVENTS USING THE XMPP PROTOCOL. THE BOOK ALSO INTRODUCES CHAT, TO INTERACT WITH YOUR DEVICES. YOU WILL LEARN HOW TO AUTOMATE YOUR TASKS BY USING INTERNET OF THINGS SERVICE PLATFORMS AS THE BASE FOR AN APPLICATION. YOU WILL UNDERSTAND THE SUBJECT OF PRIVACY, REQUIREMENTS THEY SHOULD BE FAMILIAR WITH, AND HOW TO AVOID VIOLATING ANY OF THE IMPORTANT NEW REGULATIONS BEING INTRODUCED. AT THE END OF THE BOOK, YOU WILL HAVE MASTERED CREATING OPEN, INTEROPERABLE AND SECURE NETWORKS OF THINGS, PROTECTING THE PRIVACY AND INTEGRITY OF YOUR USERS AND THEIR INFORMATION. WHAT YOU WILL LEARN CREATE YOUR OWN PROJECT, RUN AND DEBUG IT MASTER DIFFERENT COMMUNICATION PATTERNS USING THE MQTT, HTTP, CoAP, LWM2M AND XMPP PROTOCOLS BUILD TRUST-BASED AS HOC NETWORKS FOR OPEN, SECURE AND INTEROPERABLE COMMUNICATION EXPLORE

THE IoT SERVICE PLATFORM MANAGE THE ENTIRE PRODUCT LIFE CYCLE OF DEVICES UNDERSTAND AND SET UP THE SECURITY AND PRIVACY FEATURES REQUIRED FOR YOUR SYSTEM MASTER INTEROPERABILITY, AND HOW IT IS SOLVED IN THE REALMS OF HTTP, CoAP, LWM2M AND XMPP WHO THIS BOOK IS FOR If YOU'RE A DEVELOPER OR ELECTRONIC ENGINEER AND ARE CURIOUS ABOUT THE INTERNET OF THINGS, THIS IS THE BOOK FOR YOU. WITH ONLY A RUDIMENTARY UNDERSTANDING OF ELECTRONICS AND RASPBERRY Pi 3, AND SOME PROGRAMMING EXPERIENCE USING MANAGED CODE, SUCH AS C# OR JAVA, YOU WILL BE TAUGHT TO DEVELOP STATE-OF-THE-ART SOLUTIONS FOR THE INTERNET OF THINGS.

**SUSTAINABLE SMART CITIES AND TERRITORIES** - JUAN M. CORCHADO 2021-07-30

THIS BOOK CONSTITUTES THE PROCEEDINGS OF THIS YEAR'S SUSTAINABLE SMART CITIES AND TERRITORIES INTERNATIONAL CONFERENCE (SSCT 2021), HELD IN DOHA, QATAR, FROM THE 27TH TO THE 29TH OF APRIL 2021. THE SSCT 2021 IS AN OPEN SYMPOSIUM THAT BRINGS TOGETHER RESEARCHERS AND DEVELOPERS FROM ACADEMIA AND INDUSTRY TO PRESENT AND DISCUSS THE LATEST SCIENTIFIC AND TECHNICAL ADVANCES IN THE FIELDS OF SMART CITIES AND SMART TERRITORIES. IT PROMOTES AN ENVIRONMENT FOR DISCUSSION ON HOW TECHNIQUES, METHODS, AND TOOLS HELP SYSTEM DESIGNERS ACCOMPLISH THE TRANSITION FROM THE CURRENT CITIES TOWARDS THOSE

WE NEED IN A CHANGING WORLD. THE PROGRAM INCLUDES KEYNOTE ABSTRACTS, A MAIN TECHNICAL TRACK, TWO WORKSHOPS, AND A DOCTORAL CONSORTIUM. THE SYMPOSIUM IS ORGANIZED BY THE TEXAS A&M UNIVERSITY AT QATAR. WE WOULD LIKE TO THANK ALL THE CONTRIBUTING AUTHORS, THE MEMBERS OF THE LOCAL COMMITTEE, SCIENTIFIC COMMITTEE, ORGANIZING COMMITTEE, AND THE SPONSORS (TEXAS A&M UNIVERSITY OF QATAR, AIR INSTITUTE AND THE IoT DIGITAL INNOVATION HUB) FOR THEIR HARD WORK AND DEDICATION.

*HANDS-ON EDGE ANALYTICS WITH AZURE IoT - COLIN DOW*  
2020-05-21

DESIGN, SECURE, AND PROTECT THE PRIVACY OF EDGE ANALYTICS APPLICATIONS USING PLATFORMS AND TOOLS SUCH AS MICROSOFT'S AZURE IoT EDGE, MICROPYTHON, AND OPEN SOURCE COMPUTER VISION (OPENCV) KEY FEATURES BECOME WELL-VERSED WITH BEST PRACTICES FOR IMPLEMENTING AUTOMATED ANALYTICAL COMPUTATIONS DISCOVER REAL-WORLD EXAMPLES TO EXTEND CLOUD INTELLIGENCE DEVELOP YOUR SKILLS BY UNDERSTANDING EDGE ANALYTICS AND APPLYING IT TO RESEARCH ACTIVITIES

**BOOK DESCRIPTION** EDGE ANALYTICS HAS GAINED ATTENTION AS THE IoT MODEL FOR CONNECTED DEVICES RISES IN POPULARITY. THIS GUIDE WILL GIVE YOU INSIGHTS INTO EDGE ANALYTICS AS A DATA ANALYSIS MODEL, AND HELP YOU UNDERSTAND WHY IT'S GAINING MOMENTUM.

YOU'LL BEGIN WITH THE KEY CONCEPTS AND COMPONENTS USED IN AN EDGE ANALYTICS APP. MOVING AHEAD, YOU'LL DELVE INTO COMMUNICATION PROTOCOLS TO UNDERSTAND HOW SENSORS SEND THEIR DATA TO COMPUTERS OR MICROCONTROLLERS. NEXT, THE BOOK WILL DEMONSTRATE HOW TO DESIGN MODERN EDGE ANALYTICS APPS THAT TAKE ADVANTAGE OF THE PROCESSING POWER OF MODERN SINGLE-BOARD COMPUTERS AND MICROCONTROLLERS. LATER, YOU'LL EXPLORE MICROSOFT AZURE IoT EDGE, MICROPYTHON, AND THE OPENCV VISUAL RECOGNITION LIBRARY. AS YOU PROGRESS, YOU'LL COVER TECHNIQUES FOR PROCESSING AI FUNCTIONALITIES FROM THE SERVER SIDE TO THE SENSORY SIDE OF IoT. YOU'LL EVEN GET HANDS-ON WITH DESIGNING A SMART DOORBELL SYSTEM USING THE TECHNOLOGIES YOU'VE LEARNED. TO REMOVE VULNERABILITIES IN THE OVERALL EDGE ANALYTICS ARCHITECTURE, YOU'LL DISCOVER WAYS TO OVERCOME SECURITY AND PRIVACY CHALLENGES. FINALLY, YOU'LL USE TOOLS TO AUDIT AND PERFORM REAL-TIME MONITORING OF INCOMING DATA AND GENERATE ALERTS FOR THE INFRASTRUCTURE. BY THE END OF THIS BOOK, YOU'LL HAVE LEARNED HOW TO USE EDGE ANALYTICS PROGRAMMING TECHNIQUES AND BE ABLE TO IMPLEMENT AUTOMATED ANALYTICAL COMPUTATIONS. WHAT YOU WILL LEARN

**DISCOVER THE KEY CONCEPTS AND ARCHITECTURES USED WITH EDGE ANALYTICS UNDERSTAND HOW TO USE LONG-DISTANCE COMMUNICATION PROTOCOLS FOR EDGE**

ANALYTICS DEPLOY MICROSOFT AZURE IoT EDGE TO A RASPBERRY PI CREATE NODE-RED DASHBOARDS WITH MQTT AND TEXT TO SPEECH (TTS) USE MICROPYTHON FOR DEVELOPING EDGE ANALYTICS APPS EXPLORE VARIOUS MACHINE LEARNING TECHNIQUES AND DISCOVER HOW MACHINE LEARNING IS RELATED TO EDGE ANALYTICS USE CAMERA AND VISION RECOGNITION ALGORITHMS ON THE SENSORY SIDE TO DESIGN AN EDGE ANALYTICS APP MONITOR AND AUDIT EDGE ANALYTICS APPS WHO THIS BOOK IS FOR IF YOU ARE A DATA ANALYST, DATA ARCHITECT, OR DATA SCIENTIST WHO IS INTERESTED IN LEARNING AND PRACTICING ADVANCED AUTOMATED ANALYTICAL COMPUTATIONS, THEN THIS BOOK IS FOR YOU. YOU WILL ALSO FIND THIS BOOK USEFUL IF YOU'RE LOOKING TO LEARN EDGE ANALYTICS FROM SCRATCH. BASIC KNOWLEDGE OF DATA ANALYTICS CONCEPTS IS ASSUMED TO GET THE MOST OUT OF THIS BOOK.

**HANDS-ON INTERNET OF THINGS WITH MQTT** - TIM PULVER  
2019-10-04

DEVELOP A VARIETY OF PROJECTS AND CONNECT THEM TO MICROCONTROLLERS AND WEB SERVERS USING THE LIGHTWEIGHT MESSAGING PROTOCOL MQTT KEY FEATURES LEVERAGE THE POWER OF MQTT TO BUILD A PET FOOD DISPENSER, E-INK TO-DO LIST, AND A PRODUCTIVITY CUBE LEARN ABOUT TECHNOLOGIES LIKE LASER CUTTING, 3D PRINTING, AND PCB PRODUCTION FOR BUILDING ROBUST PROTOTYPES EXPLORE PRACTICAL USES CASES TO GAIN AN

IN-DEPTH UNDERSTANDING OF MQTT BOOK DESCRIPTION MQTT TELEMETRY TRANSPORT (MQTT) IS A LIGHTWEIGHT MESSAGING PROTOCOL FOR SMART DEVICES THAT CAN BE USED TO BUILD EXCITING, HIGHLY SCALABLE INTERNET OF THINGS (IoT) PROJECTS. THIS BOOK WILL GET YOU STARTED WITH A QUICK INTRODUCTION TO THE CONCEPTS OF IoT AND MQTT AND EXPLAIN HOW THE LATTER CAN HELP YOU BUILD YOUR OWN INTERNET-CONNECTED PROTOTYPES. AS YOU ADVANCE, YOU'LL GAIN INSIGHTS INTO HOW MICROCONTROLLERS COMMUNICATE, AND YOU'LL GET TO GRIPS WITH THE DIFFERENT MESSAGING PROTOCOLS AND TECHNIQUES INVOLVED. ONCE YOU ARE WELL-VERSED WITH THE ESSENTIAL CONCEPTS, YOU'LL BE ABLE TO PUT WHAT YOU'VE LEARNED INTO PRACTICE BY BUILDING THREE PROJECTS FROM SCRATCH, INCLUDING AN AUTOMATIC PET FOOD DISPENSER AND A SMART E-INK TO-DO DISPLAY. YOU'LL ALSO DISCOVER HOW TO PRESENT YOUR OWN PROTOTYPES PROFESSIONALLY. IN ADDITION TO THIS, YOU'LL LEARN HOW TO USE TECHNOLOGIES FROM THIRD-PARTY WEB SERVICE PROVIDERS, ALONG WITH OTHER RAPID PROTOTYPING TECHNOLOGIES, SUCH AS LASER CUTTING, 3D PRINTING, AND PCB PRODUCTION. BY THE END OF THIS BOOK, YOU'LL HAVE GAINED HANDS-ON EXPERIENCE IN USING MQTT TO BUILD YOUR OWN IoT PROTOTYPES. WHAT YOU WILL LEARN EXPLORE MQTT PROGRAMMING WITH ARDUINO DISCOVER HOW TO MAKE YOUR PROTOTYPES TALK

TO EACH OTHER SEND MQTT MESSAGES FROM YOUR SMARTPHONE TO YOUR PROTOTYPES DISCOVER HOW YOU CAN MAKE WEBSITES INTERACT WITH YOUR PROTOTYPES LEARN ABOUT MQTT SERVERS, LIBRARIES, AND APPS EXPLORE TOOLS SUCH AS LASER CUTTING AND 3D PRINTING IN ORDER TO BUILD ROBUST PROTOTYPE CASES WHO THIS BOOK IS FOR IF YOU ARE AN IoT DEVELOPER OR ENTHUSIAST WHO WANTS TO START BUILDING IoT PROTOTYPES USING MQTT, THIS BOOK IS FOR YOU. BASIC KNOWLEDGE OF PROGRAMMING WITH ARDUINO WILL BE USEFUL.

**HANDS-ON INDUSTRIAL INTERNET OF THINGS** - GIACOMO VENERI 2018-11-29

BUILD A STRONG AND EFFICIENT IoT INFRASTRUCTURE AT INDUSTRIAL AND ENTERPRISE LEVEL BY MASTERING INDUSTRIAL IoT NETWORK KEY FEATURES GAIN HANDS-ON EXPERIENCE WORKING WITH INDUSTRIAL ARCHITECTURE EXPLORE THE POTENTIAL OF CLOUD-BASED INDUSTRIAL IoT PLATFORMS, ANALYTICS, AND PROTOCOLS IMPROVE BUSINESS MODELS AND TRANSFORM YOUR WORKFORCE WITH INDUSTRY 4.0 BOOK DESCRIPTION WE LIVE IN AN ERA WHERE ADVANCED AUTOMATION IS USED TO ACHIEVE ACCURATE RESULTS. TO SET UP AN AUTOMATION ENVIRONMENT, YOU NEED TO FIRST CONFIGURE A NETWORK THAT CAN BE ACCESSED ANYWHERE AND BY ANY DEVICE. THIS BOOK IS A PRACTICAL GUIDE THAT HELPS YOU DISCOVER THE TECHNOLOGIES AND USE CASES FOR

INDUSTRIAL INTERNET OF THINGS (IIOT). HANDS-ON INDUSTRIAL INTERNET OF THINGS TAKES YOU THROUGH THE IMPLEMENTATION OF INDUSTRIAL PROCESSES AND SPECIALIZED CONTROL DEVICES AND PROTOCOLS. YOU'LL STUDY THE PROCESS OF IDENTIFYING AND CONNECTING TO DIFFERENT INDUSTRIAL DATA SOURCES GATHERED FROM DIFFERENT SENSORS. FURTHERMORE, YOU'LL BE ABLE TO CONNECT THESE SENSORS TO CLOUD NETWORK, SUCH AS AWS IoT, AZURE IoT, GOOGLE IoT, AND OEM IoT PLATFORMS, AND EXTRACT DATA FROM THE CLOUD TO YOUR DEVICES. AS YOU PROGRESS THROUGH THE CHAPTERS, YOU'LL GAIN HANDS-ON EXPERIENCE IN USING OPEN SOURCE NODE-RED, KAFKA, CASSANDRA, AND PYTHON. YOU WILL ALSO LEARN HOW TO DEVELOP STREAMING AND BATCH-BASED MACHINE LEARNING ALGORITHMS. BY THE END OF THIS BOOK, YOU WILL HAVE MASTERED THE FEATURES OF INDUSTRY 4.0 AND BE ABLE TO BUILD STRONGER, FASTER, AND MORE RELIABLE IoT INFRASTRUCTURE IN YOUR INDUSTRY. WHAT YOU WILL LEARN EXPLORE INDUSTRIAL PROCESSES, DEVICES, AND PROTOCOLS DESIGN AND IMPLEMENT THE IIoT NETWORK FLOW GATHER AND TRANSFER INDUSTRIAL DATA IN A SECURE WAY GET TO GRIPS WITH POPULAR CLOUD-BASED PLATFORMS UNDERSTAND DIAGNOSTIC ANALYTICS TO ANSWER CRITICAL WORKFORCE QUESTIONS DISCOVER THE EDGE DEVICE AND UNDERSTAND EDGE AND FOG COMPUTING IMPLEMENT EQUIPMENT AND PROCESS MANAGEMENT TO ACHIEVE BUSINESS-

SPECIFIC GOALS WHO THIS BOOK IS FOR IF YOU'RE AN IoT ARCHITECT, DEVELOPER, OR STAKEHOLDER WORKING WITH ARCHITECTURAL ASPECTS OF INDUSTRIAL INTERNET OF THINGS, THIS BOOK IS FOR YOU.

RASPBERRY PI AND MQTT ESSENTIALS - DHAIRYA PARIKH  
2022-09-16

GET FAMILIAR WITH ALL THE CONCEPTS RELATED TO RASPBERRY PI AND MQTT, BUILD INNOVATIVE IoT PROJECTS, AND DISCOVER HOW TO SCALE THESE PROJECTS TO THE NEXT LEVEL KEY FEATURES LEARN SOME OF THE MOST POPULAR TOOLS USED IN IoT - RASPBERRY PI, MQTT, ESP8266 AND MORE BUILD EXCITING PROJECTS SUCH AS AN IoT WEATHER STATION AND A SMART SWITCH BOARD DISCOVER THE ADVANTAGES OF TAKING YOUR MQTT BROKER GLOBAL BOOK DESCRIPTION THE FUTURE OF IoT HAS THE POTENTIAL TO BE LIMITLESS. WOULDN'T IT BE GREAT IF YOU COULD ADD IT TO YOUR OWN TECHNOLOGICAL STACKS? BUT WHERE TO START? WITH THE BASICS, OF COURSE. IN THIS BOOK, YOU WILL START BY LEARNING ABOUT THE MOST POPULAR HARDWARE AND COMMUNICATION PROTOCOL, RASPBERRY PI AND MQTT. YOU WILL SEE HOW TO USE THEM TOGETHER BY SETTING UP YOUR OWN MQTT SERVER ON RASPBERRY PI AND UNDERSTAND HOW IT WORKS. THIS BOOK EXPLORES MQTT IN DETAIL, INCLUDING THE CLIENTS AND DEVICES THAT YOU CAN CONNECT TO YOUR SERVER. YOU WILL DISCOVER TWO VERY POPULAR IoT DEVELOPMENT

BOARDS AMONG PROJECT DEVELOPERS: THE ESP8266 AND ESP32 DEVELOPMENT BOARDS. THEN, YOU WILL LEARN HOW TO BUILD INTERACTIVE DASHBOARDS ON YOUR PI AND MONITOR YOUR CLIENT DEVICES. THE BOOK ALSO SHOWS YOU HOW TO BUILD A DASHBOARD USING ANOTHER POPULAR SOFTWARE - NODE-RED. YOU WILL BE ABLE TO PUT YOUR SKILLS TO THE TEST BY CREATING TWO FULL-SCALE PROJECTS. THAT'S NOT ALL: YOU WILL ALSO LEARN HOW TO HOST YOUR OWN MQTT SERVER ON A VIRTUAL CLOUD SERVICE. FINALLY, YOU WILL BE GUIDED ON HOW TO MOVE FORWARD FROM HERE, WHAT TECHNOLOGIES TO LEARN, AND SOME PROJECT RECOMMENDATIONS TO POLISH OR TEST YOUR KNOWLEDGE. BY THE END OF THIS BOOK, YOU WILL BE ABLE TO BUILD MEANINGFUL PROJECTS USING RASPBERRY PI AND MQTT AND CREATE DASHBOARDS FOR YOUR PROJECTS ON NODE-RED. WHAT YOU WILL LEARN CONFIGURE AND USE A RASPBERRY PI FOR IoT PROJECTS IMPLEMENT THE MQTT COMMUNICATION PROTOCOL FOR PROJECTS UNDERSTAND HOW TO SET UP THE NODEMCU AND ESP32 BOARDS AS MQTT CLIENTS CONTROL A NODEMCU BOARD THROUGH A NODE-RED DASHBOARD HOSTED ON RASPBERRY PI GET LAMP SERVER, HOME ASSISTANT, AND MARIA DB ON THE RASPBERRY PI SET UP AN ONLINE MQTT BROKER ON A CLOUD SERVICE OR ENTERPRISE SERVICE PROVIDER PLATFORM BUILD FULL-SCALE, END-TO-END PROTOTYPE PROJECTS WHO THIS BOOK IS FOR THIS BOOK IS FOR STUDENTS WHO ARE INTERESTED IN IoT

AND WANT TO BUILD PROJECTS USING THE AVAILABLE DEVELOPER HARDWARE. EDUCATORS WHO WANT TO INTRODUCE A COURSE ON IoT INTO THEIR CURRICULUM, TECHNOLOGY ENTHUSIASTS, AND IoT DEVELOPERS WHO ARE JUST GETTING STARTED WILL ALSO BENEFIT FROM THIS BOOK. NO PRIOR KNOWLEDGE ABOUT THE TWO MAIN TOPICS THAT THE BOOK COVERS IS REQUIRED - RASPBERRY PI AND MQTT. A BASIC UNDERSTANDING OF WHAT IoT IS WILL ALSO BE USEFUL BUT NOT MANDATORY.

*DESIGNING THE INTERNET OF THINGS - ADRIAN McEWEN*  
2013-11-07

TAKE YOUR IDEA FROM CONCEPT TO PRODUCTION WITH THIS UNIQUE GUIDE WHETHER IT'S CALLED PHYSICAL COMPUTING, UBIQUITOUS COMPUTING, OR THE INTERNET OF THINGS, IT'S A HOT TOPIC IN TECHNOLOGY: HOW TO CHANNEL YOUR INNER STEVE JOBS AND SUCCESSFULLY COMBINE HARDWARE, EMBEDDED SOFTWARE, WEB SERVICES, ELECTRONICS, AND COOL DESIGN TO CREATE CUTTING-EDGE DEVICES THAT ARE FUN, INTERACTIVE, AND PRACTICAL. IF YOU'D LIKE TO CREATE THE NEXT MUST-HAVE PRODUCT, THIS UNIQUE BOOK IS THE PERFECT PLACE TO START. BOTH A CREATIVE AND PRACTICAL PRIMER, IT EXPLORES THE PLATFORMS YOU CAN USE TO DEVELOP HARDWARE OR SOFTWARE, DISCUSSES DESIGN CONCEPTS THAT WILL MAKE YOUR PRODUCTS EYE-CATCHING AND APPEALING, AND SHOWS YOU WAYS TO SCALE UP FROM A SINGLE PROTOTYPE TO MASS PRODUCTION. HELPS

SOFTWARE ENGINEERS, WEB DESIGNERS, PRODUCT DESIGNERS, AND ELECTRONICS ENGINEERS START DESIGNING PRODUCTS USING THE INTERNET-OF-THINGS APPROACH EXPLAINS HOW TO COMBINE SENSORS, SERVOS, ROBOTICS, ARDUINO CHIPS, AND MORE WITH VARIOUS NETWORKS OR THE INTERNET, TO CREATE INTERACTIVE, CUTTING-EDGE DEVICES PROVIDES AN OVERVIEW OF THE NECESSARY STEPS TO TAKE YOUR IDEA FROM CONCEPT THROUGH PRODUCTION IF YOU'D LIKE TO DESIGN FOR THE FUTURE, DESIGNING THE INTERNET OF THINGS IS A GREAT PLACE TO START.

*PRACTICAL PYTHON PROGRAMMING FOR IoT - GARY SMART*  
2020-11-12

LEVERAGE PYTHON AND RASPBERRY PI TO CREATE COMPLEX IoT APPLICATIONS CAPABLE OF CREATING AND DETECTING MOVEMENT AND MEASURING DISTANCE, LIGHT, AND A HOST OF OTHER ENVIRONMENTAL CONDITIONS KEY FEATURES LEARN THE FUNDAMENTALS OF ELECTRONICS AND HOW TO INTEGRATE THEM WITH A RASPBERRY PI UNDERSTAND HOW TO BUILD RESTFUL APIS, WEBSOCKET APIS, AND MQTT-BASED APPLICATIONS EXPLORE ALTERNATIVE APPROACHES TO STRUCTURING IoT APPLICATIONS WITH PYTHON BOOK DESCRIPTION THE AGE OF CONNECTED DEVICES IS HERE, BE IT FITNESS BANDS OR SMART HOMES. IT'S NOW MORE IMPORTANT THAN EVER TO UNDERSTAND HOW HARDWARE COMPONENTS INTERACT WITH THE INTERNET TO COLLECT AND ANALYZE USER DATA. THE INTERNET OF THINGS (IoT), COMBINED WITH

THE POPULAR OPEN SOURCE LANGUAGE PYTHON, CAN BE USED TO BUILD POWERFUL AND INTELLIGENT IoT SYSTEMS WITH INTUITIVE INTERFACES. THIS BOOK CONSISTS OF THREE PARTS, WITH THE FIRST FOCUSING ON THE "INTERNET" COMPONENT OF IoT. YOU'LL GET TO GRIPS WITH END-TO-END IoT APP DEVELOPMENT TO CONTROL AN LED OVER THE INTERNET, BEFORE LEARNING HOW TO BUILD RESTFUL APIs, WEBSOCKET APIs, AND MQTT SERVICES IN PYTHON. THE SECOND PART DELVES INTO THE FUNDAMENTALS BEHIND ELECTRONICS AND GPIO INTERFACING. AS YOU PROGRESS TO THE LAST PART, YOU'LL FOCUS ON THE "THINGS" ASPECT OF IoT, WHERE YOU WILL LEARN HOW TO CONNECT AND CONTROL A RANGE OF ELECTRONIC SENSORS AND ACTUATORS USING PYTHON. YOU'LL ALSO EXPLORE A VARIETY OF TOPICS, SUCH AS MOTOR CONTROL, ULTRASONIC SENSORS, AND TEMPERATURE MEASUREMENT. FINALLY, YOU'LL GET UP TO SPEED WITH ADVANCED IoT PROGRAMMING TECHNIQUES IN PYTHON, INTEGRATE WITH IoT VISUALIZATION AND AUTOMATION PLATFORMS, AND BUILD A COMPREHENSIVE IoT PROJECT. BY THE END OF THIS BOOK, YOU'LL BE WELL-VERSED WITH IoT DEVELOPMENT AND HAVE THE KNOWLEDGE YOU NEED TO BUILD SOPHISTICATED IoT SYSTEMS USING PYTHON. WHAT YOU WILL LEARN UNDERSTAND ELECTRONIC INTERFACING WITH RASPBERRY PI FROM SCRATCH GAIN KNOWLEDGE OF BUILDING SENSOR AND ACTUATOR ELECTRONIC CIRCUITS STRUCTURE YOUR CODE IN PYTHON USING ASYNC

IO, PUB/SUB MODELS, AND MORE AUTOMATE REAL-WORLD IoT PROJECTS USING SENSOR AND ACTUATOR INTEGRATION INTEGRATE ELECTRONICS WITH THINGSPEAK AND IFTTT TO ENABLE AUTOMATION BUILD AND USE RESTFUL APIs, WEBSOCKETS, AND MQTT WITH SENSORS AND ACTUATORS SET UP A RASPBERRY PI AND PYTHON DEVELOPMENT ENVIRONMENT FOR IoT PROJECTS WHO THIS BOOK IS FOR THIS IoT PYTHON BOOK IS FOR APPLICATION DEVELOPERS, IoT PROFESSIONALS, OR ANYONE INTERESTED IN BUILDING IoT APPLICATIONS USING THE PYTHON PROGRAMMING LANGUAGE. IT WILL ALSO BE PARTICULARLY HELPFUL FOR MID TO SENIOR-LEVEL SOFTWARE ENGINEERS WHO ARE EXPERIENCED IN DESKTOP, WEB, AND MOBILE DEVELOPMENT, BUT HAVE LITTLE TO NO EXPERIENCE OF ELECTRONICS, PHYSICAL COMPUTING, AND IoT. ENABLING THE INTERNET OF THINGS - MUHAMMAD AZHAR IQBAL 2020-12-10 LEARN MORE ABOUT FOUNDATIONAL AND ADVANCED TOPICS IN INTERNET OF THINGS TECHNOLOGY WITH THIS ALL-IN-ONE GUIDE ENABLING THE INTERNET OF THINGS: FUNDAMENTALS, DESIGN, AND APPLICATIONS DELIVERS A COMPREHENSIVE STARTING POINT FOR ANYONE HOPING TO UNDERSTAND THE FUNDAMENTALS AND DESIGN OF INTERNET OF THINGS (IoT) SYSTEMS. THE BOOK'S DISTINGUISHED ACADEMICS AND AUTHORS OFFER READERS AN OPPORTUNITY TO UNDERSTAND

IoT CONCEPTS VIA PROGRAMMING IN AN ABSTRACT WAY. READERS WILL LEARN ABOUT IoT FUNDAMENTALS, HARDWARE AND SOFTWARE COMPONENTS, IoT PROTOCOL STACKS, SECURITY, IoT APPLICATIONS AND IMPLEMENTATIONS, AS WELL AS THE CHALLENGES, AND POTENTIAL SOLUTIONS, THAT LIE AHEAD. READERS WILL LEARN ABOUT THE SOCIAL ASPECTS OF IoT SYSTEMS, AS WELL AS RECEIVE AN INTRODUCTION TO THE BLOCKLY PROGRAMMING LANGUAGE, IoT MICROCONTROLLERS, IoT MICROPROCESSORS, SYSTEMS ON A CHIP AND IoT GATEWAY ARCHITECTURE. THE BOOK ALSO PROVIDES IMPLEMENTATION OF SIMPLE CODE EXAMPLES IN PACKET TRACER, INCREASING THE USEFULNESS AND PRACTICALITY OF THE BOOK. ENABLING THE INTERNET OF THINGS EXAMINES A WIDE VARIETY OF OTHER ESSENTIAL TOPICS, INCLUDING: THE FUNDAMENTALS OF IoT, INCLUDING

ITS EVOLUTION, DISTINCTIONS, DEFINITIONS, VISION, ENABLING TECHNOLOGIES, AND BUILDING BLOCKS AN ELABORATION OF THE SENSING PRINCIPLES OF IoT AND THE ESSENTIALS OF WIRELESS SENSOR NETWORKS A DETAILED EXAMINATION OF THE IoT PROTOCOL STACK FOR COMMUNICATIONS AN ANALYSIS OF THE SECURITY CHALLENGES AND THREATS FACED BY USERS OF IoT DEVICES, AS WELL AS THE COUNTERMEASURES THAT CAN BE USED TO FIGHT THEM, FROM THE PERCEPTION LAYER TO THE APPLICATION LAYER PERFECT AS A SUPPLEMENTARY TEXT FOR UNDERGRADUATE STUDENTS TAKING COMPUTER SCIENCE OR ELECTRICAL ENGINEERING COURSES, ENABLING THE INTERNET OF THINGS ALSO BELONGS ON THE BOOKSHELVES OF INDUSTRY PROFESSIONALS AND RESEARCHERS WHO REGULARLY WORK WITH AND ON THE INTERNET OF THINGS AND WHO SEEK A BETTER UNDERSTANDING OF ITS FOUNDATIONAL AND ADVANCED TOPICS.