

Community Experience Distilled

Internat of Things with ESP8266

Build amazing Internet of Things projects using the ESP8266 Wi-Fi chip

Marco Schwartz



Internet of Things with **ESP8266**

Build amazing Internet of Things projects using the ESP8266 Wi-Fi chip

Marco Schwartz

TRUENS DA IS	ec cins	SHEP HANDI
TRUM LAN	Hens	THE THE WEN
02	-	07
Ø	15	15

PACKT Open source & PUBLISHING

BIRMINGHAM - MUMBAI

Internet of Things with ESP8266

Copyright © 2016 Packt Publishing

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, without the prior written permission of the publisher, except in the case of brief quotations embedded in critical articles or reviews.

Every effort has been made in the preparation of this book to ensure the accuracy of the information presented. However, the information contained in this book is sold without warranty, either express or implied. Neither the author(s), nor Packt Publishing, and its dealers and distributors will be held liable for any damages caused or alleged to be caused directly or indirectly by this book.

Packt Publishing has endeavored to provide trademark information about all of the companies and products mentioned in this book by the appropriate use of capitals. However, Packt Publishing cannot guarantee the accuracy of this information.

A RAAMA IN THE TOTAL

First published: July 2016

Production reference: 1260716

Published by Packt Publishing Ltd. Livery Place 35 Livery Street Birmingham B3 2PB, UK.

ISBN 978-1-78646-802-4

www.packtpub.com

Credits

Author Marco Schwartz Project Coordinator Kinjal Bari

Reviewer Catalin Batrinu

Proofreader Safis Editing

Indexer

Commissioning Editor Pratik Shah

Acquisition Editor Prachi Bisht

Content Development Editor Mamta Walkar

Technical Editor Naveenkumar Jain

Copy Editor Sneha Singh Graphics Kirk D'Penha

Pratik Shirodkar

Production Coordinator Shantanu N. Zagade

Cover Work Shantanu N. Zagade

Table of Contents

Preface	V
Chapter 1: Getting Started with the ESP8266	1
How to choose your ESP8266 module	1
Hardware requirements	4
Hardware configuration	7
Installing the Arduino IDE for the ESP8266	10
Connecting your module to your Wi-Fi network	11
Summary	13
Chapter 2: First Projects with the ESP8266	15
Controlling an LED	15
Reading data from a GPIO pin	17
Grabbing the content from a web page	18
Reading data from a digital sensor	20
Summary	24
Chapter 3: Cloud Data Logging with the ESP8266	
Hardware and software requirements	25
Hardware configuration	26
Testing the sensor	28
Logging data to Dweet.io	30
Displaying data using Freeboard.io	31
Summary	35
Chapter 4: Control Devices from Anywhere	
Hardware and software requirements	38
Configuring the ESP8266 module and controlling an LED	39
Controlling the LED from a cloud dashboard	44
Controlling the lamp from anywhere in the world	45
Summary	47

[i]

Chapter 5: Interacting With Web Services	49
Hardware and software requirements	49
Cotting weather data from Yahoo	51
Posting temperature and humidity data to Twitten	56
Creating a new Facebook post from the ESP8266	62
Summary	69
Chapter 6: Machine-to-Machine Communications	71
Hardware and software requirements	71
Simple machine-to-machine communication	73
Building a light-activated relay	82
Summary	87
Chapter 7: Sending Notifications from the ESP8266	89
Hardware and software requirements	89
Hardware configuration	91
Sending an e-mail notification	91
Sending data via text message	99
Receiving alerts via push notifications	103
Summary	107
Chapter 8: Controlling a Door Lock from the Cloud	109
Hardware and software requirements	109
Configuring the hardware	111
Configuring the ESP8266 board	112
Controlling the lock from the cloud	113
Receiving notifications when the lock is opened	114
Summary	119
Chapter 9: Building a Physical Bitcoin Ticker	121
What is Bitcoin?	121
Online Bitcoin services	122
Hardware and software requirements	125
Configuring the hardware	126
Testing the ticker	
Adding alert LEDs to the ticker	
Summary	134

-	-		•		1	~			
1	10	ha i	0	0		0	12	tor	110
-1	14	UЦ	10	U		Con		LC. /	11.5
-			-	- 1					

Chapter 10: Wireless Gardening with the ESP8266	135
Hardware and software requirements	135
Hardware configuration	137
Creating alerts to water your plant	139
Monitoring the temperature and humidity	145
Automating your gardening	147
Summary	149
Chapter 11: Cloud-Based Home Automation System	151
Hardware and software requirements	151
Hardware configuration	152
Controlling your home from a dashboard	154
Creating a cloud alarm system	160
Automating your home	163
Summary	173
Chapter 12: Cloud-Controlled ESP8266 Robot	175
Hardware and software requirements	175
Hardware configuration	180
Testing the motors	182
Connecting the robot to the cloud	185
Controlling the robot from a dashboard	188
Summary	190
Chapter 13: Building Your Own Cloud Platform to Control	
ESP8266 Devices	191
Hardware and software requirements	191
Hardware configuration	192
Creating a cloud server	193
The aREST cloud server code	196
Deploying the server	198
Connecting the ESP8266 board to your cloud server	201
Summary	204
Index	205