

SMALL DEVICES BIG SOLUTIONS

THE IoT PROJECTS

TK
5105.8857
H37
2025
a

ASLINAH MOHD NASIR
MOHD SYAFIQ MISPAN
OR MOHD ARIFF BRAHIN

© Universiti Teknikal Malaysia Melaka

ISBN: 978-629-7784-05-2

FIRST PUBLISHED 2025

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, electronic, mechanical photocopying, recording or otherwise, without the prior permission of the Penerbit UTeM Press, Universiti Teknikal Malaysia Melaka.

Member of the Malaysian Scholarly Publishing Council (MAPIM)

Member of the Malaysian Book Publishers Association (MABOPA)

Member of Clarivate Analytics

Editor and Proof Reader

Izadora Mustaffa

Manuscript Editor

Mohd Hafizuddin Yusof

Book Cover Designer and Typesetter

Ahmad Masmullyadi Mohd Yusof

Published and Printed in Malaysia by

Penerbit UTeM Press

Universiti Teknikal Malaysia Melaka

Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia.

Phone: +606 270 1241 Fax: +606 270 1038



Cataloguing-in-Publication Data

Perpustakaan Negara Malaysia

A catalogue record for this book is available from the National Library of Malaysia

ISBN 978-629-7784-05-2

Universiti Teknikal Malaysia Melaka	
No. Alaman	No. Panggilan
87519200	TK 5105.8857 .437 2025 a n.mn/61025
Tarikh	
22 AUG 2025	

TABLE OF CONTENTS



Preface	vii
Acknowledgement.....	ix
Chapter 1: What is Internet of Things (IoT)?	1
What is a Microcontroller?	5
What Projects are Inside?	7
Chapter 2: Microcontroller Boards	9
Arduino IDE.....	14
Proteus.....	14
Project Planning	15
Chapter 3: Arduino-Based Automatic Portable Sheet Cutter	19
Project Description	20
What you Need	20
Hardware	21
Let's Test it	28
What Can We Conclude?	31
Chapter 4: Efficient Irrigation and Fertigation System	33
What is an Irrigation System?.....	34
Correlation of Evapotranspiration, Temperature and Water.....	38
Let's Start!	39
Potential Evapotranspiration (ET_o) Analysis	43
Our Final Product.....	49
What Can We Conclude?	56
Chapter 5: Fall Detector System	57
Let's Build it!.....	58
The System	58
The Alert System.....	61
The Final Product.....	65
What Can We Conclude?	73

Chapter 6: Smart Home: Fire Safety System	77
What You Need?.....	78
Let's Start.....	81
Let's See Our Final Prototype.....	86
Let's do Some Analysis.....	99
Let's Conclude.....	102
Chapter 7: Smart Parking System	105
What We Need?.....	106
How We Do it?.....	108
Our Prototype.....	111
What We Can Conclude?.....	116
Chapter 8: Smart Reward Dispenser System	119
How We Start?.....	120
What We Need?.....	121
How Does it Works?.....	126
In a Nutshell.....	133
References.....	135
Index.....	137

SMALL DEVICES BIG SOLUTIONS

THE IoT PROJECTS

Technology (FTKEK), Universiti Teknikal Malaysia Melaka (UTeM). From the project design, development, to the prototype testing and analysis, every component are presented to provide significant insight for students to jumpstart their own IoT-based projects. This book is perfect for university students, researchers, and tech enthusiasts alike who are interested in electronics and IoT.



HASLINAH MOHD NASIR (PhD) is currently the Head of Programme for Bachelor of Electronics Engineering with Honours. Her PhD study was on the correlation of event-related potentials and driving alertness. Her expertise is in biomedical engineering, artificial intelligence, and signal processing. Previously, she was a Physical Design Engineer in Intel Microelectronics (M) Sdn. Bhd. She held the position for 5 years before deciding to pursue a career in academics.



MOHD SYAFIQ MISPAÑ (PhD) hails a PhD from University of Southampton. He currently held the position of the Head of Programme for Bachelor of Industrial Electronics Engineering with Honours. Before pursuing his PhD, he was a Component Design Engineer for Intel Corporation (Penang) and a Development Engineer in Infineon Technologies. His expertise is in hardware security, CMOS reliability, VLSI design and electronic systems design.



NOOR MOHD ARIFF BRAHIN is currently works as teaching engineer. His expertise is in artificial intelligence, microelectronics and IC design. Previously, he is working in Intel Microelectronics (M) Sdn. Bhd. for five years as Structural Design Engineer before pursuing his career in academics.



PENERBIT
UTeM
Press

Website : <https://penerbit.utem.edu.my>
Books Online : <https://utembooks.utem.edu.my>
Email : penerbit@utem.edu.my

ISBN 978-629-7784-05-2



04100

9 786297 178405 2