

Selected Readings in
**COMPUTING AND
TELECOMMUNICATIONS**

Editors
Mira Kartiwi
Teddy Surya Gunawan
Aisha Hassan Abdalla Hashim



IIUM Press
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

**SELECTED READINGS IN
COMPUTING AND
TELECOMMUNICATIONS**

Editors

Mira Kartiwi

Teddy Surya Gunawan

Aisha Hassan Abdalla Hashim



IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011
©IIUM Press, IIUM

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without any prior written permission of the publisher.

Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Mira Kartiwi, Teddy Surya Gunawan, Aisha Hassan Abdalla Hashim:
Selected Readings in Computing and Telecommunications

ISBN: 978-967-0225-81-4

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by:
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

TABLE OF CONTENT

PREFACE	X
1. MANUSCRIPT PROCESSES MONITORING SYSTEM FOR RESEARCH MANAGEMENT CENTER	
Aznan Zuhid bin Saidin, Mira Kartiwi and Husam bin Latih @ Abdullatif ..	1
2. IIUM STUDENTS FORUM SYSTEM	
Mira Kartiwi and Waleed Mohamed Ibrahim	9
3. SABA DECORATION FACTORY (SDF) SYSTEM	
Mira Kartiwi and Abdulaziz Omar	17
4. TAKAFUL AGENCY WEB PORTAL	
Mira Kartiwi and Mohd. Hafiz Zairin bin Ayop	27
5. HUMAN CAPITAL BUSINESS PARTNER INFORMATION TECHNOLOGY & NETWORK TECHNOLOGY MAN POWER MODEL	
Akram M. Z. Khedher and Siti Sarah binti Abdul Halim	39
6. DEVELOPMENT OF ENERGY ASSESSMENT TOOLS FOR SINGLE PHASE APPLIANCES	
Musse Mohamud Ahmed and Siti Nor Amiza bt Massere.....	52
7. FINGERPRINT AUTHENTICATION SYSTEM USING MATLAB	
Teddy Surya Gunawan and Mohd. Hanis bin Jenalis	66
8. PERFORMANCE EVALUATION OF LOSSLESS SPEECH AND AUDIO COMPRESSION ALGORITHMS	

9. DESIGN AND IMPLEMENTATION OF VOICE SECURITY SYSTEM IN MATLAB AND JAVA	
Teddy Surya Gunawan and Siti Ruqayah bt. Mohd Akahsah.....	91
10. DESIGN AND DEVELOPMENT OF RFID SECURITY MODEL	
Ahmed Wathik Naji and Fatema-Tuz-Zohra	112
11. RADIO PROPAGATION MEASUREMENT AND CHANNEL MODELLING FOR WIRELESS BODY AREA NETWORK	
Mimi Aminah bt. Wan Nordin and Norsyaidatul Fairuz bt. Fauziz	125
12. FEATURE EXTRACTION FOR AUTOMATIC FETUS AGE ESTIMATION FOR ULTRASOUND IMAGES USING ELLIPSE MODEL	
Teddy Surya Gunawan and Norakmal Abdullah	143
13. NOISE REDUCTION USING KALMAN FILTER	
Teddy Surya Gunawan and Ismail Haji Hassan Dualeh.....	168
14. PARALLEL ALGORITHMS FOR EDGE DETECTION ON CLUSTER COMPUTER	
Teddy Surya Gunawan and Elkabir Ansoya Bacar.....	189
15. PREDICTION OF PROBABILITY OF BIT ERROR RATE IN DIGITAL COMMUNICATION SYSTEM	
Saad Osman Bashir, Abdallah Mohammed Tawfeeq Zyoud and Besir Salah Eldin Mahmoud Sid Ahmed	209
16. COMPARATIVE ANALYSIS OF LOW POWER VLSI CIRCUITS TECHNIQUES	
Anis Nurashikin Nordin and Fatin Alea bt. Talib	219

17. SPHERICAL POV LED DISPLAY USING PIC 16F628	
Teddy Surya Gunawan and Muhammad bin Ahmad	235
18. IMPLEMENTATION OF CAPACITANCE OF VOLTAGE CONVERTER FOR CAPACITIVE TRANSDUCERS	
A.H.M. Zahirul Alam and Nur Fadhila bt. Che Halim	255
19. PROTEIN CODING IDENTIFICATION OF HUMAN DNA SEQUENCE USING WAVELET	
Teddy Surya Gunawan and Norashikin Abdul Wahab	274
20. OPTIMIZATION OF ZAKAT MANAGEMENT SYSTEM IN INDONESIA USING GEOGRAPHIC INFORMATION SYSTEM (GIS)	
Muharman Lubis	292
21. IIUM CAR STICKER RECOGNITION USING PHASE BASED TEMPLATE MATCHING ALGORITHM	
Teddy Surya Gunawan and Siti Aisyah bt. Mohamad	308

16. COMPARATIVE ANALYSIS OF LOW POWER VLSI CIRCUITS TECHNIQUES

Anis Nurashikin Nordin and Fatin Alea bt. Talib

ABSTRACT

The advancement of Very Large Scale Integration (VLSI) microcircuits, power consumption has emerged as one of the most important design and performance parameter in today's electronic industry. The need for low power has caused a major paradigm shift where power dissipation has become as an important consideration besides performance and die space area utilization. This paper reviews four techniques for designing low power system, which are Multi VDD, scaling CMOS technology, clock gating and power gating. In the first part, the paper explains briefly about the important of low power design and literature reviews for state of the arts design techniques. The results from computer simulations were also presented for readers' appreciation.

16.1 INTRODUCTION

In the past, the major concerns of the VLSI designer were area, performance, cost and reliability; however, thing has begun to change. Today, power has emerged as one of the most important design and performance parameters for ICs. With the increasing number of portable applications, which demand of high-speed computation, complex functionality with low power consumption, the requirements for low power circuit designs have become more and more exigent. Up to now, there is several low power techniques has been developed. In this project, we will do a comparative analysis of low power VLSI circuit technique in order to accomplish a low power circuit designs.