

# **Advancements In COMPUTER AND COMMUNICATIONS Engineering**

*Editors*

Othman O. Khalifa

A.H.M. Zahirul Alam

Amir A. Shafie

Wajdi F. Al-Khateeb



**IIUM Press**



First Edition, 2014  
©IIUM Press, IIUM

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

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

Cataloging-in-Publication Data

Advancements in computer and communications engineering /

editors Othman O. Khalifa ... [et al.]

Includes index

ISBN 978-967-418-283-0

1. Computer engineering. 2. Communication in engineering.

I. Othman O. Khalifa.

621.38

Published by:

IIUM Press

International Islamic University Malaysia  
P.O. Box 10, 50728 Kuala Lumpur, Malaysia

Printed in Malaysia by : NAGA Global Print (M) Sdn Bhd  
No.1, Jalan Industri Batu Caves 1/3,  
Taman Perindustrian Batu Caves,  
68100 Batu Caves, Selangor Darul Ehsan.

# Contents

---

Transliteration	ix
Preface	xi
Introduction	xiii

## PART ONE

### Network Architecture and QoS Provisioning

Chapter 1	Evaluation of MIPv6 Approach to Provide Multicast to Mobile Nodes <i>Aisha Hassan Abdalla, Farhat Anwar and Sufyan Al-Irhayim</i>	3
Chapter 2	Hybrid Approach to Support QoS for Mobile Users <i>Sulaiman Syed, Mohammed Alfateh Mudathir, Aisha Hassan Abdalla and Sufyan Al-Irhayim</i>	15
Chapter 3	The Impact of Grid Deployment in EDA Tools <i>Aisha Hassan Abdalla, Fauzila Ahmad Ibrahim, Ibrahim Elimam and Shihab Ahmed</i>	27
Chapter 4	QoS Challenges in Mobile Environment <i>Muhammad AlFateh Mudathir, Sulaiman Syed, Aisha Hassan Abdalla and Farhat Anwar</i>	35
Chapter 5	Recovery Modeling in MPLS Networks <i>Wajdi Al-Khateeb, Sufyan Al-Irhayim and Khalid A. Al-Khateeb</i>	43

## PART TWO

### Microwave Systems and Antennas

Chapter 6	Design and Simulation of Linear Adaptive Antenna Array for Mobile Base Station <i>Md. Rafiqul Islam, Hany E. Abdel-Raouf, Feisal Aden and Fouad Abdillahi Barreh</i>	59
-----------	---	----



Chapter 7	Development of a Software Package for the Design of a Microwave Link <i>Md. Rafiqul Islam, Sheroz Khan, Khomsan Dao, Selman Suvad and Nurfet Becirevic</i>	75
Chapter 8	Development of Terrain Profile Analysis Software for Radio Link Design in Malaysia <i>Md. Rafiqul Islam, Othman O. Khalifa and Khomsan Dao</i>	88
Chapter 9	Direction of Arrival Estimation in Multiple Signal Classification (Music) Using Linear Antenna Array <i>Zuhani Ismail Khan and Md. Rafiqul Islam</i>	99

### PART THREE

#### Performance Analysis of Data Networks

Chapter 10	Performance Analysis of Multicast Ad-hoc On-demand Distance Vector (MAODV) Routing Protocol <i>Zeldi Suryady, Farhat Anwar and Aisha Hassan Abdalla</i>	115
Chapter 11	Performance Evaluation of an Improved Admission Control for Differentiated MPLS-TE Tunnels <i>Omer Mahmoud and Farhat Anwar</i>	131

### PART FOUR

#### Optical Communications and Photonic Devices

Chapter 12	A High Gain EDFA Using Double-Pass Dual-Stage Amplification <i>Khalid A. Al-Khateeb, Ali Sellami and Bouzid Belloui</i>	145
Chapter 13	Electrical Conductivities of Poly-Si Thin Film Solar Cells Deposited on Textured Substrate <i>R. Muhida, AGE Sutjipto, T. Toyama and H. Okamoto</i>	151

## Contents

Chapter 14	The Influence of EDFA's Configurations on the Behavioral Trends of Gain and Noise Figure <i>Ali Sellami, Khalid A. Al-Khateeb and Bouzid Belloui</i>	160
------------	---	-----

Chapter 15	Optical Protection Related in Wavelength Division Multiplexing (WDM) Technique <i>Mohamed El Shebani and Othman O. Khalifa</i>	168
------------	---	-----

### PART FIVE

#### Signal and Image Processing

Chapter 16	Isolated Word Speech Recognition of the Malay Digits <i>Haidawati Mohamad Nasir and Othman O. Khalifa</i>	181
------------	--	-----

Chapter 17	Medical Image Compression Evaluation by JPEG and JPEG 2000 <i>Shariq Haseeb and Othman O. Khalifa</i>	194
------------	--	-----

Chapter 18	Classification of Phonocardiogram Signals Using Discrete Wavelet Analysis <i>Jalel Chebill and Jamal Al-Nabulsi</i>	204
------------	--	-----

Chapter 19	Real Time Vehicle License Plate Recognition <i>Ahmad Suleiman and Othman O. Khalifa</i>	215
------------	--	-----

### PART SIX

#### Neural Networks and Intelligent Systems

Chapter 20	Speech to Sign Language Interpreter System (SSLIS) <i>Khalid Khalil El-Darymli, Othman O. Khalifa and Hassan Enemosah</i>	229
------------	--	-----