

PREMIER REFERENCE SOURCE

Internet and Distributed Computing Advancements

Theoretical Frameworks and Practical Applications



**Jemal H. Abawajy, Mukaddim Pathan,
Mustafizur Rahman, Al-Sakib Khan Pathan & Mustafa Mat Deris**

Internet and Distributed Computing Advancements: Theoretical Frameworks and Practical Applications

Jemal H. Abawajy
Deakin University, Australia

Mukaddim Pathan
CSIRO, Australia

Mustafizur Rahman
IBM, Australia

Al-Sakib Khan Pathan
International Islamic University, Malaysia

Mustafa Mat Deris
Universiti Tun Hussein Onn, Malaysia

Managing Director:	Lindsay Johnston
Senior Editorial Director:	Heather Probst
Book Production Manager:	Sean Woznicki
Development Manager:	Joel Gamon
Development Editor:	Hannah Abelbeck
Acquisitions Editor:	Erika Gallagher
Typesetter:	Russell Spangler
Cover Design:	Nick Newcomer, Lisandro Gonzalez

Published in the United States of America by

Information Science Reference (an imprint of IGI Global)
 701 E. Chocolate Avenue
 Hershey PA 17033
 Tel: 717-533-8845
 Fax: 717-533-8661
 E-mail: cust@igi-global.com
 Web site: <http://www.igi-global.com>

Copyright © 2012 by IGI Global. All rights reserved. No part of this publication may be reproduced, stored or distributed in any form or by any means, electronic or mechanical, including photocopying, without written permission from the publisher. Product or company names used in this set are for identification purposes only. Inclusion of the names of the products or companies does not indicate a claim of ownership by IGI Global of the trademark or registered trademark.

Library of Congress Cataloging-in-Publication Data

Internet and distributed computing advancements: theoretical frameworks and practical applications / Jemal H. Abawajy ... [et al.].

p. cm.

Includes bibliographical references and index.

Summary: "This book is a vital compendium of chapters on the latest research within the field of distributed computing, capturing trends in the design and development of Internet and distributed computing systems that leverage autonomic principles and techniques" -- Provided by publisher.

ISBN 978-1-4666-0161-1 (hardcover) -- ISBN 978-1-4666-0162-8 (ebook) -- ISBN 978-1-4666-0163-5 (print & perpetual access) 1. Electronic data processing--Distributed processing. 2. Internet. 3. Autonomic computing. I. Abawajy, Jemal H., 1982-

QA76.9.D51647 2012

004.67'8--dc23

2011042025

British Cataloguing in Publication Data

A Cataloguing in Publication record for this book is available from the British Library.

All work contributed to this book is new, previously-unpublished material. The views expressed in this book are those of the authors, but not necessarily of the publisher.

Table of Contents

Preface.....	xii
Acknowledgment.....	xiv
Section 1	
Internet and Distributed Computing Systems	
Chapter 1	
TCP for Wireless Internet: Solutions and Challenges.....	1
<i>Alaa Ghaleb-Seddik, Ecole Nationale Supérieure d'Informatique pour l'industrie et l'Entreprise (ENSIIE), France</i>	
<i>Yacine Ghamri-Doudane, Ecole Nationale Supérieure d'Informatique pour l'industrie et l'Entreprise (ENSIIE), France</i>	
<i>Sidi Mohammed Senouci, University of Bourgogne, France</i>	
Chapter 2	
Enhancement of e-Learning Systems and Methodologies through Advancements in Distributed Computing Technologies	45
<i>Luca Caviglione, Institute of Intelligent Systems for Automation (ISSIA), Italy</i>	
<i>Mauro Coccoli, University of Genoa, Italy</i>	
Chapter 3	
An Approach to Faulty Reader Detection in RFID Reader Network	70
<i>Hairulnizam Mahdin, University of Tun Hussein Onn, Malaysia</i>	
<i>Jemal Abawajy, Deakin University, Australia</i>	
Chapter 4	
A Security Framework for Networked RFID.....	85
<i>Harinda Sahadeva Fernando, Deakin University, Australia</i>	
<i>Jemal Abawajy, Deakin University, Australia</i>	

Chapter 5	
A Review of Privacy, Internet Security Threat, and Legislation in Africa: A Case Study of Nigeria, South Africa, Egypt, and Kenya	115
<i>Bellarmine Ezumah, Murray State University, USA</i>	
<i>Suraj Oluwifesi Adekunle, Lagos State University, Nigeria</i>	
Section 2	
Wireless Sensor Networks	
Chapter 6	
A Walk through Sensor Network Programming Models	138
<i>Mukaddim Pathan, Australian National University, Australia & Telstra Corporation Limited, Australia</i>	
<i>Doug Palmer, CSIRO ICT Centre, Australia</i>	
<i>Ali Salehi, CSIRO ICT Centre, Australia</i>	
Chapter 7	
Wireless Sensor Network Security Attacks: A Survey.....	162
<i>Dennis P. Mirante, Hofstra University, USA</i>	
<i>Habib M. Ammari, University of Michigan – Dearborn, USA</i>	
Chapter 8	
Clustering in Wireless Sensor Networks: Context-Aware Approaches	197
<i>Enamul Haque, Bangladesh Agricultural University, Bangladesh</i>	
<i>Norihiko Yoshida, Saitama University, Japan</i>	
Chapter 9	
A Comparative Analysis of Hierarchical Routing Protocols in Wireless Sensor Networks	212
<i>Anar Abdel Hady, Electronics Research Institute, Cairo, Egypt</i>	
<i>Sherine M. Abd El-kader, Electronics Research Institute, Cairo, Egypt</i>	
<i>Hussein S. Eissa, Electronics Research Institute, Cairo, Egypt</i>	
<i>Ashraf Salem, Ain Shams University, Cairo, Egypt</i>	
<i>Hossam M.A. Fahmy, Ain Shams University, Cairo, Egypt</i>	
Chapter 10	
Energy-Efficient MAC Protocols in Distributed Sensor Networks	247
<i>Yupeng Hu, Hunan University, China</i>	
<i>Rui Li, Hunan University, China</i>	

Chapter 11	
Low Loss Energy-Aware Routing Protocol for Data Gathering Applications in Wireless Sensor Network.....	272
<i>Basma M. Mohammad El-Basioni, Electronics Research Institute, Egypt</i>	
<i>Sherine M. Abd El-Kader, Electronics Research Institute, Egypt</i>	
<i>Hussein S. Eissa, Electronics Research Institute, Egypt</i>	
<i>Mohammed M. Zahra, Al-Azhar University, Egypt</i>	
Compilation of References	303
About the Contributors	325
Index.....	332