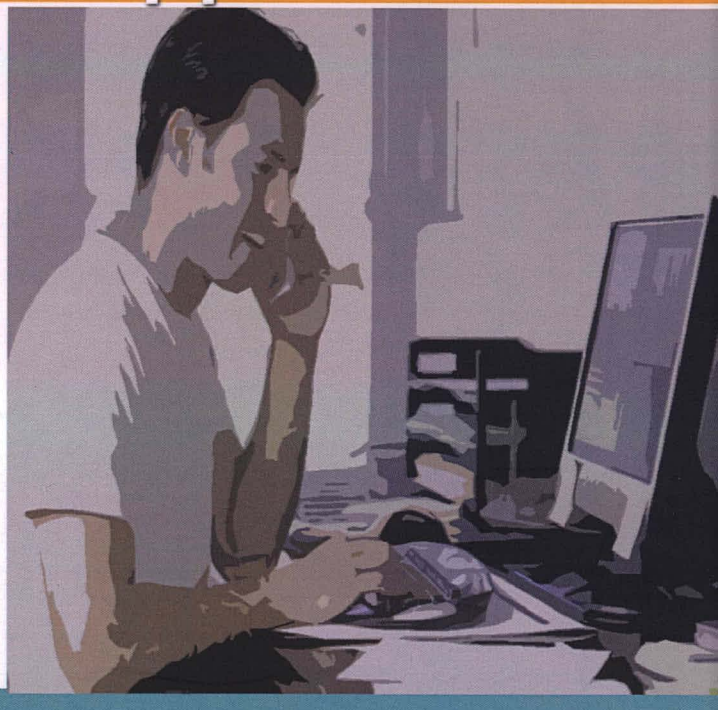
Computer Applications

Theories and Applications

Imad Fakhri Taha Al Shaikhli
Akram M. Zeki
Asadullah Shah



IIUM PRESS
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

Computer Applications: Theories and Applications

Edited By:

Imad Fakhri Taha Al Shaikhli
Akram M. Zeki
Asadullah Shah

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

Imad Fakhri Al Shaikhli, Akram M. Zeki and Asadullah Shah
Computer Applications: Theories and Applications
Imad Fakhri Al Shaikhli, Akram M. Zeki and Asadullah Shah
978-967-418-107-9

ISBN: 978-967-418-107-9

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 CONTENTS

Dedication	i
Preface	vii
Acknowledgement	ix
Introduction	xi - xvi
List of Abbreviations	xvii - xviii
Part I: Genetic Algorithm & Its State-of-the-art Applications	
1. The Use of Genetic Algorithm in Autonomous Robot Navigation - Raini Hassan - Imad Fakhri Taha Al-Shaikhli - Asadullah Shah	3 - 13
2. In-Silico Drug Target Design & Its Approaches - Hassen Mohammed Abduallah Alsafi - Imad Fakhri Taha Al-Shaikhli - Asadullah Shah	15 - 26
3. Implementing DNA Sequence Using Genetic Algorithm - Ahmad Faridi Abdul Fatin - Aqqiela Zuhra - Imad Fakhri Taha Al-Shaikhli - Asadullah Shah	27 - 36

4. Molecular Docking 37 - 44

- Hassen Mohammed Abduallah Alsafi
- Imad Fakhri Taha Al-Shaikhli
- Asadullah Shah

5. The Use of Genetic Algorithm in Improving Medical Image Segmentation Techniques 45 - 55

- Raini Hassan
- Imad Fakhri Taha Al-Shaikhli
- Asadullah Shah

Part II: The Use of Computer Security in Improving the Qur'an Data Security

6. Protection Mechanisms Using MD5 and Base64 59 - 69

- Mohammad A. Ahmad
- Imad Fakhri Taha Al-Shaikhli
- Hanady Mohammad Ahmed
- Asadullah Shah

7. Developed System for Quran Protection Using MD5 and Base64 71 - 84

- Mohammad A. Ahmad
- Imad Fakhri Taha Al-Shaikhli
- Hanady Mohammad Ahmed

8. Protection Mechanisms Using LSB and MD5 85 - 98
- Imad Fakhri Taha Al-Shaikhli
- Mohammad A. Ahmad
- Sondos Alhussainan
- Asadullah Shah

9. Developed System for Quran Protection using LSB Replacement and MD5 99 - 109
- Mohammad A. Ahmad
- Sondos Alhussainan
- Imad Fakhri Taha Al-Shaikhli

Part III: ATM Systems

10. An Overview of ATM Systems Security 113 - 128
- Omarah O. Alharaki
- Mohammed Hweidi
- Akram M. Zeki

11. Security Risk of ATM Systems, Case of Study 129 - 138
- Omarah O. Alharaki
- Mohammed Hweidi
- Akram M. Zeki
- Asadullah Shah

12. Threats and Solutions for ATM Security Systems 139 - 152
- Omarah O. Alharaki
- Mohammed Hweidi
- Akram M. Zeki

Part IV: General Use of ICT

13. Investigating the Student's awareness on Computer Security and Ethics 155 - 177

- Mansur Aliyu
- Nahel A. O. Abdallah
- Nojeem A. Lasisi
- Dahir Diyar
- Ahmed M. Zeki
- Akram M. Zeki

14. Difficulties and Challenges of Recognizing Arabic Text 179 - 191

- Mustafa Ali Abuzaraida
- Akram M. Zeki
- Ahmed M. Zeki

5. The Use of Genetic Algorithm in Improving Medical Image Segmentation Techniques

Raini Hassan, Imad Fakhri Taha Al-Shaikhli, Asadullah Shah

ABSTRACT

The challenge of medical images segmentation is due to the poor image contrast and artifacts that result in missing or diffuse organ or tissue boundaries, and also involves incorporating as much prior information as possible. The manual segmentation is not only tedious and time consuming; most of the time it can be inaccurate as well. Genetic algorithm have been found to be effective in this medical images segmentation domain, as the problems can often be mapped to one of search in a complex and multimodal landscape. Genetic algorithm proven to be effective in coming out of local optima, and additionally at the same time also brings considerable flexibility into the segmentation procedure. In this chapter, the use genetic algorithms in improving medical image segmentation techniques will be highlighted.