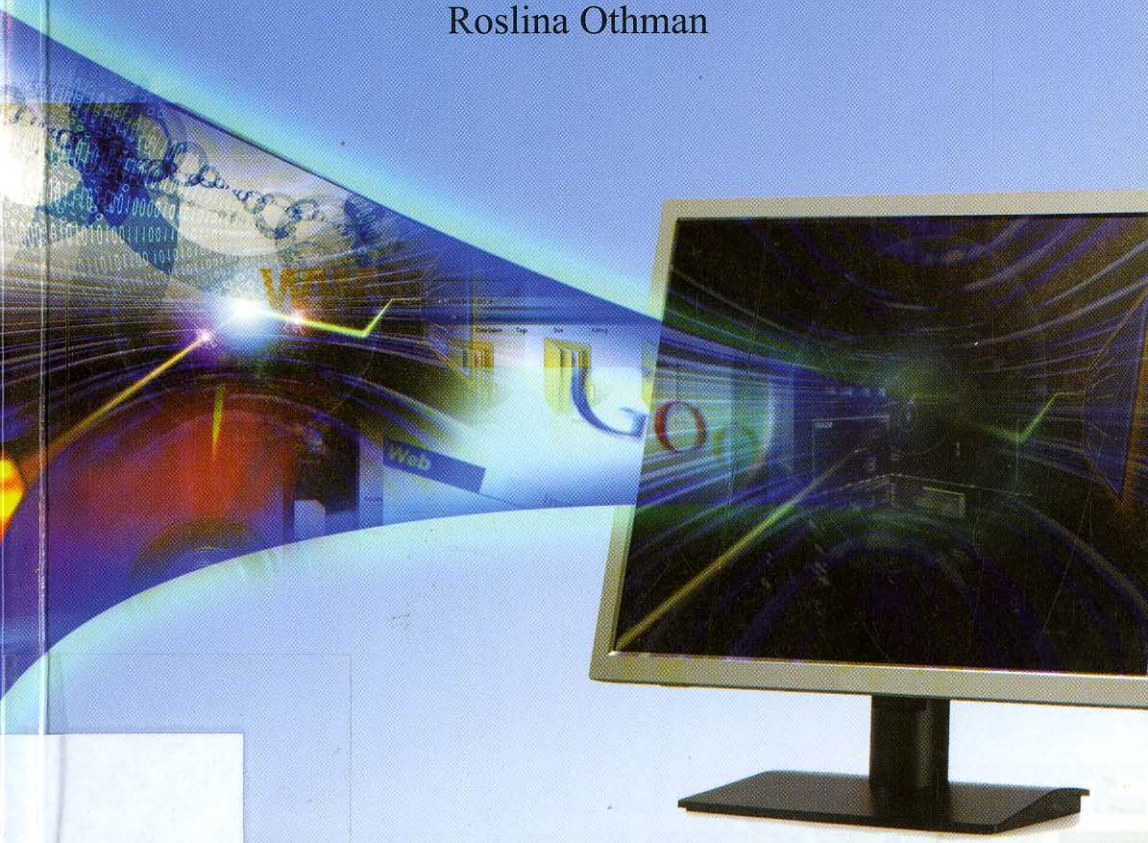
TRENDS in INFORMATION RETRIEVAL SYSTEM

Roslina Othman



IIUM Press

TRENDS IN INFORMATION RETRIEVAL SYSTEMS

Roslina Othman

IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2009
©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

Roslina Othman
trends in information retrieval systems /
Roslina Othman
Bibliography p. 173
Includes index
ISBN 978-967-5272-22-6

ISBN: 978-967-5272-22-6

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

CONTENT

List of Figures
List of Tables
List of Abbreviations
Preface

CHAPTER 1: INTRODUCTION

Definitions of an IR System 2
Data Retrieval versus Information Retrieval 12
Users and Information Needs 14
- Eliciting User's Information Need 15
- User Modeling 16
- User Stereotype and Profiling 17
- Query Expansion 23
- Information Retrieval Models 27
- Boolean Model 28
- Extended Boolean Retrieval 31
- Fuzzy Logic 31
- Vector Model 32
- Latent Semantic Indexing 35
- Neural Network 36
- Probabilistic Model 38

Performance Measures 43
- Relevance-based Measures 44
- Usability 49
- Similarity 50

Evaluation and Testing 51

CHAPTER 2: TEXT-BASED INFORMATION RETRIEVAL SYSTEMS

User Stereotype 56
Boolean Model 58

Phrase 59
Proximity and Term Masking 63
Near, Within and Adjacency 63
Sentence and Paragraph 63
Term Masking 64
Special Commands 64
Thesaurus-Enhanced Search 64
Limit Fields 66
Thesaurus Arrangement and Term Selection 68
Lateral Searching 71
Quality Indicators 74
Other Enhanced Search Features 75

CHAPTER 3: IMAGE AND MULTIMEDIA RETRIEVAL SYSTEM

Image Retrieval 78
Image Retrieval Task and Users 78
Concept-based Image Retrieval 79
Implicit Concept-based Image Retrieval 82
Semantic-based Image Retrieval (SBIR) 83
Ontology-based Image Retrieval 84
Tile-Reweighing Relevant Feedback 84
Concept-based Image Retrieval System 85
Content-based Image Retrieval 87
Image Retrieval by Colour 88
Image Retrieval by Shape 90
Image Retrieval by Texture 91
Content-based Image Retrieval Systems 91
Video Retrieval System 97
Multimedia Retrieval System 98
Audio Retrieval 101
Animation Retrieval 102

CHAPTER 4: WEB RETRIEVAL

User Profiling 106
Information Needs 106
User Model 110

Distributed Web Retrieval 111
Topical, Theme-and Event-based Retrieval 113
Quality Metrics and Authority for Web Retrieval 115
Page Rank 117
Block Level Link Analysia 118
Query Operations 118
Search Engines 122
Google.com 122
Yahoo! 126
Question-Answering Engines 128

CHAPTER 5: ARABIC AND CROSS LANGUAGE RETRIEVAL

Arabic Information Retrieval 131
Morphological Aspects of Arabic Retieval 134
Fuzzy String Matching 135
Question-Answering Systems 138
Sentence Retrieval 139
Topic Tracking 139
Clustering 140
Stemming Parallel Corpus 140
Morphological Analyzer Templates 141
Arabic-English Cross Language IR 142
Cross-Language Information Retrieval 144

CHAPTER 6: *QUR'ĀNIC* TEXTS AND ISLAMIC SOURCES

Kalimah-based and Thematic Thesaurus 149
Thematic-Arrangement 150
Kalimah-based Thesaurus 152
Qur'ānic Texts Retrieval System 158
Qur'ānic Search at *Islamicity.com* 158
Al-Alim 161
Tafsir.com (Tafsīr Ibn Kathīr) 161
Daily Quran Ayah 162

CHAPTER 7: CONCLUSION
Information Quality and Authority 165
Desired Search Results and Interpretation 167
Query Expression 168
Semantics and Meanings to Terms 168
Taxonomy, Ontology and Thesaurus 169
Cognitive and Physical Move 169
Information Visualization 170
Non-English Languages 170
Qur'ānic Texts 170
Closing Remarks 171

BIBLOGRAPHY 173

INDEX 193