

Information Retrieval

Design and Sources

Roslina Othman



IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

INFORMATION RETRIEVAL: DESIGN AND SOURCES

Editor

Roslina Othman



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

Roslina Othman: Information Retrieval: Design and Sources

ISBN: 978-967-418-103-1

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

1. IR MODELS AND APPROACHES: AN OVERVIEW	1
Roslina Othman	
2. SIMILARITY-BASED, RELEVANCE-BASED AND INFERENCE-BASED MODELS	7
Suleiman Shammass Ali and Roslina Othman	
3. COGNITIVE AND BEHAVIORAL APPROACHES IN INFORMATION RETRIEVAL..	13
Zalifah Awang Zakaria and Roslina Othman	
4. ANOMALOUS STATES OF KNOWLEDE IN INFORMATION RETRIEVAL	19
Zalifah Awang Zakaria and Roslina Othman	
5. THE INFLUENCE OF ASK MODEL ON USER-SYSTEM INTERACTION	31
Zalifah Awang Zakaria and Roslina Othman	
6. UNCERTAINTY AND ITS RELATIONSHIP WITH RELEVANCE	37
Zalifah Awang Zakaria and Roslina Othman	
7. THE CURRENT TRENDS AND DEVELOPMENTS IN INFORMATION RETRIEVAL	45
Zalifah Awang Zakaria and Roslina Othman	
8. NATURAL SYMMETRY BETWEEN QUERIES AND DOCUMENTS	51
Suleiman Shammass Ali and Roslina Othman	
9. STRENGTHS AND WEAKNESSES OF IR EVALUATION TESTS	55
Roslina Othman and Zalifah Awang Zakaria	
10. LABORATORY VERSUS OPERATIONAL SYSTEM TEST	61
Suleiman Shammass Ali and Roslina Othman	
11. NON-ENGLISH MONOLINGUAL IR CASES: AN OVERVIEW	67
Roslina Othman	

12. STEMMING FOR DOCUMENT IN NON-ENGLISH DOCUMENTS	73
Roslina Othman and Ouahiba Saoudi	
13. STEMMING FOR DOCUMENT IN ENGLISH LANGUAGE.....	83
Roslina Othman and Ouahiba Saoudi	
14. ADDAALL STEMMER FOR ARABIC NEWS OF AL-JAZEERA	91
Roslina Othman and Ouahiba Saoudi	
15. MORPHOLOGICAL ANALYSIS FOR RETRIEVAL OF DOCUMENTS IN ARABIC LANGUAGE.....	99
Roslina Othman and Ouahiba Saoudi	
16. <i>QURANIC</i> TEXTS IN MULTI-SCRIPT ENVIRONMENT: AN OVERVIEW TO THE REQUIREMENTS	107
Roslina Othman and Fauziah Abdul Wahid	
17. MALAY TRANSLATION OF THE <i>QURANIC</i> TEXTS IN INFORMATION RETRIEVAL	113
Roslina Othman and Fauziah Abdul Wahid	
18. PROCEDURES FOR EVALUATING <i>QURANIC</i> TEXTS IN MULTI-SCRIPT ENVIRONMENT	119
Roslina Othman and Fauziah Abdul Wahid	
19. RETRIEVAL PERFORMANCE OF <i>QURANIC</i> TEXTS IN MULTI-SCRIPT ENVIRONMENT	127
Roslina Othman and Fauziah Abdul Wahid	
20. INDEXING MODELS AND SEARCHING FEATURES: AN OVERVIEW.....	135
Roslina Othman	
21. PRECISION-BASED INDEXING	139
Roslina Othman and Siti Fatimah Mohd Tawil	

22. ONTOLOGY-BASED INDEXING	147
Roslina Othman and Siti Fatimah Mohd Tawil	
23. A REVIEW OF THE PROBABILISTIC INDEXING.....	157
Suleiman Shammash Ali and Roslina Othman	
24. INTERACTIVE TOPIC DETECTION AND TRACKING.....	161
Masnizah Mohd	
25. RETRIEVAL FEATURES OF SCIENCE DIRECT.....	173
Nur Leyni Nilam Putri Junurham, Nurul Hasni Abu Hassan and Roslina Othman	
26. RETRIEVAL FEATURES OF EMERALD.....	179
Roslina Othman, Nor Sa'adah Md. Nor and Nik Roslina Raja Ismail	
27. RETRIEVAL FEATURES OF EBSCO HOST	185
Muhammad Alif Ismail, Mohamad Hafizuddin Mohamed Najid and Roslina Othman	
28. RETRIEVAL FEATURES OF IEEE XPLORE.....	191
Muslim Ismail @ Ahmad, Syafrizal Hj Saulan and Roslina Othman	
29. CLASSIFICATION-BASED NOVELTY SEARCH FOR PATENT APPLICATION IN USPTO.....	197
Noorfatin Muhamad Sharhabil and Roslina Othman	
30. SEARCHING FOR MALAYSIAN GOVERNMENT DOCUMENTS	203
Ruzaimah Mohammed Zain, Wan Ali Wan Mamat and Roslina Othman	
31. BORN-DIGITAL MATERIALS: RETRIEVABLE OR IRRETRIEVABLE?.....	209
Nik Roslina Raja Ismail and Roslina Othman	
32. CORPUS AND SOURCES: AN OVERVIEW	215
Roslina Othman	

33. ISSUES OF CORPUS ON SUFISM	221
Muslim Ismail, Murshaidi Hazlin Mohd, Muhammad Arif Osman and Roslina Othman	
34. Sufism Literature in Online Databases	227
Muslim Ismail, Murshaidi Hazlin Mohd, Muhammad Arif Osman and Roslina Othman	
35. Common Issues of Islamic Manuscripts	231
Ruzaimah Mohammed Zain, Nik Roslina Raja Ismail, Haniza Adnan and Roslina Othman	
36. Possible Corpus for Islamic Manuscripts	237
Ruzaimah Mohammed Zain, Nik Roslina Raja Ismail, Haniza Adnan and Roslina Othman	
37. Online Access to Islamic Manuscripts	243
Ruzaimah Mohammed Zain, Nik Roslina Raja Ismail, Haniza Adnan and Roslina Othman	

22. ONTOLOGY-BASED INDEXING

Roslina Othman and Siti Fatimah Mohd Tawil

ABSTRACT

This chapter reviewed the applications of ontology as the basis for indexing documents with considerations of semantics. Ontology enables the retrieval of documents based on semantics and independent of the language of the query and the documents. Unlike the controlled vocabulary that is often associated with artificial languages, ontology reflects the natural language as used in the domain and yet standardized upon the use within the domain.

22.1 Introduction

Ontology explains a domain in concepts and related instances, be it in the form of association or representation. Concepts are arranged hierarchical based on their semantics, while in some cases, displayed as a map of terms. As reported in the literature, ontology has been used as search terms and index terms, particularly those describing the domain. The map of terms exhibits the relationship in the form of distances built upon meanings.

Ontology as a controlled vocabulary describes objects and their relationships in a formal way (Browne & Jermeý, 2007). As a tool, ontology explains the domain. Gruber (1993) preferred to describe ontology as ‘a formal conceptualization of a knowledge domain expressed in a system of concepts (classes), instances (individuals) and the relations between them’. Ontology defines new types or relations between concepts with additions of rules and axioms (Stock & Stocky,