

543
271

Mining the Web to Support Web Image Retrieval And Image Annotation

by
Liu Qian

Master of Software Engineering

2007



**Faculty of Science and Technology
University of Macau**

Table of Contents

List of Figures	iii
List of Tables	v
List of Abbreviations	vi
1 Introduction	1
1.1 Background	1
1.1.1 Web Image Retrieval	2
1.1.2 Automatic Image Annotation	4
1.2 Research Motivation and Objectives	7
1.3 Overview	9
2 Related Work	10
2.1 Web Image Retrieval	10
2.2 Image Annotation	11
3 Basic Techniques to Mine Web Images	13
3.1 Semantic Extraction of Web Images	14
3.1.1 Semantic Source	14
3.1.2 Semantic Representation	15
3.2 Visual Feature Extraction of Web Images	16

3.2.1	Color Extraction	17
3.2.2	Texture Extraction	19
3.2.3	Dissimilarity Functions	22
4	Web Image Retrieval Refinement by Visual Contents	23
4.1	Integration Models of Visual Content-based Image Retrieval and Text-based Image Retrieval	24
4.1.1	Possible Integration Models	24
4.1.2	Multiplied Refinement Model	26
4.2	Performance Evaluation	27
4.3	Conclusion and Future Work of Web Image Retrieval Refinement	31
5	Automatic Image Annotation by Mining the Web	34
5.1	Methods for Cleaning And Enhancement	37
5.1.1	Entropy Weighting Cleaning	40
5.1.2	Semantic Cleaning	42
5.1.3	Local Relevance Analysis Enhancement	42
5.1.4	Visual Feature Clustering Enhancement	47
5.2	Performance Evaluation	51
5.3	Conclusion and Future Work of Image Annotation	57
6	Conclusion and Future Work of Mining Web Images	60
	Bibliography	62