

Implicit Concept-based Image Indexing and Retrieval for Visual Information Systems

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This thesis is presented in fulfillment of
the requirements for the degree of
Doctor of Philosophy

School of Computer and Mathematical Sciences
Faculty of Health, Engineering and Science

Victoria University

2006

Abstract

This thesis focuses on Implicit Concept-based Image Indexing and Retrieval (ICIIR), and the development of a novel method for the indexing and retrieval of images.

Image indexing and retrieval using a concept-based approach involves extraction, modelling and indexing of image content information. Computer vision offers a variety of techniques for searching images in large collections. We propose a method, which involves the development of techniques to enable components of an image to be categorised on the basis of their relative importance within the image in combination with filtered representations. Our method concentrates on matching subparts of images, defined in a variety of ways, in order to find particular objects.

The storage of images involves an implicit, rather than an explicit, indexing scheme. Retrieval of images will then be achieved by application of an algorithm based on this categorisation, which will allow relevant images to be identified and retrieved accurately and efficiently.

We focus on Implicit Concept-based Image Indexing and Retrieval, using fuzzy expert systems, density measure, supporting factors, weights and other attributes of image components to identify and retrieve images.

Declaration

“I, Ibrahim Ahmed Aref Azzam, declare that the PhD thesis entitled Implicit Concept-Based Image Indexing and Retrieval for Visual Information Systems is no more than 100,000 words in length, exclusive of tables, figures, appendices, references and footnotes. This thesis contains no material that has been submitted previously, in whole or part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.

Signature

Date

A List of External Publications

- [1] I. A. Azzam, C.H.C.Leung, J.F. Horwood, “Implicit Concept- based Image Indexing and Retrieval”, *The 10th International Multimedia Modeling Conference MMM2004*, Jan-2004, Brisbane, pp 354-359.

- [2] I. A. Azzam, A. Charlapally, C.H.C.Leung, J.F. Horwood, “Content-based Image Indexing and Retrieval using XML Representation”, *2004 International Symposium on Intelligent Multimedia, Video & Speech Processing*, October-2004, Hong Kong, pp 181-185.

- [3] I. A. Azzam, C.H.C.Leung, J.F. Horwood, “A Fuzzy Expert System for Concept-based Image Indexing and Retrieval”, *The 11th International Multimedia Modeling Conference MMM2005*, Jan-2005, Melbourne, pp 452-457.

Acknowledgments

I am deeply indebted to my principal supervisor, Professor Clement Leung and my co-supervisor Dr. John Horwood, for their guidance, constant direction, and countless hours of time. I thank both of them for their patience and trust that allowed me perform at full potential. I also appreciate their encouragement and support through the difficult days. I have benefited immeasurably from their tutelage.

I greatly acknowledge Associate Professor Perter Cerone, Head of School of Computer Science and Mathematics and other staff of the School of Computer Science and Mathematics for being supportive and cooperative. I would like to thank my friend, Murad Karrar for his help and advice of technical discussions.

I deeply owe my appreciation to my wife, Laila Aziz Azzam, for her consistent support with trust and love in these years that I was able to do this research. I miss the moments that I could otherwise spend with my children, who understand their father's reason for returning home late.

Last and not least, I praise GOD for leading me to pursue this dream, answering all my prayers, and fulfilling all my needs during this study.

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