FEATURE EXTRACTION AND SIMILARITY MEASURES FOR CONTENT BASED IMAGE RETRIEVAL

A Dissertation

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***By*:**

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Recommendation

I hereby recommend that the dissertation prepared under my supervision by **Mr. Laxman Thapa** entitled **"Feature Extraction And Similarity Measures for Content Based Image Retrieval"** be accepted as fulfilling in part requirements for the degree of masters of science. In my best knowledge this is an original work in computer science.

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We certify that we have read this dissertation work and in our opinion it is satisfactory in the scope and quality as a dissertation in the partial fulfillment for the requirement of Master of Science in Computer Science and Information Technology.

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ABSTRACT

Due to the enormous increase in image database sizes, as well as its vast deployment in various applications, the need for CBIR development arose. This thesis basically analyses the Content-based image retrieval (CBIR) techniques based on texture, shape and color. And implements CBIR based on texture and color as a case study.

In designing the CBIR, feature extraction and Similarity Measures require a great deal for retrieval of Images. The solution initially proposed was to extract the primitive features of a query image and compare them to those of database images. The image features under consideration were colour, texture and shape. Thus, using matching and comparison algorithms, the colour, texture and shape features of one image are compared and matched to the corresponding features of another image. This comparison is performed using colour, texture and shape distance matrices. In the end, these matrices are performed one after another, so as to retrieve database images that match to the query. The similarity between features is to be calculated using algorithms used by well known CBIR systems. For each specific feature there is a specific algorithm for extraction and another for matching. In this thesis, we have used histogram representation for the color extraction, and wavelet feature representation for the texture representation.

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- Laxman Thapa

To my loving parents

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List of Abbreviations

CBIR	Content Based Image Retrieval
TBIR	Text Based Image Retrieval
QBIC	Query By Image Content
IBM	International Business Machine
MARS	Multimedia Analysis and Retrieval System
RGB	Red, Green, Blue
HSV	Hue, Saturation, and Value
SPCA	Shift-invariant Principal Component Analysis
FEM	Finite Element Method
HSB	Hue, Saturation, and Brightness
JPEG	Joint Photographic Experts Group
BMP	Bitmap Picture
GIF	Graphics Interchange Format
CMY	Cyan, Magenta, and Yellow
LCH	Local Colour Histograms
GCH	Global Colour Histograms
CCV	Color Coherence Vectors
SAR	Simultaneous Auto-Regressive
QF	Quadratic Form
KL	Kullback-Leibler
JD	Jeffray Divergence