

AN EVALUATION OF COLOUR AND TEXTURE BASED IMAGE RETRIEVAL TECHNIQUES IN CBIR TO FIND AN EFFECTIVE COMBINATION OF TECHNIQUES

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This study is focused on exploring the various colour and texture based image feature representation techniques used in Content Based Image retrieval and to identify an effective combination of techniques for better retrieval of images for web based image retrieval systems. Technology advances as well as the emergence of large scale multimedia applications and the revolution of the World Wide Web has changed the world into a digital age. Anybody can use their mobile phone to take a photo at any time anywhere and upload that image to an ever growing image databases. Development of effective techniques for visual and multimedia retrieval system is one of the most challenging and important directions of the future research. In this study frequently used colour and texture feature representation techniques are explored. Under colour feature representation, Colour Moments, Colour Coherence Vector and Colour Correlogram techniques are selected. Under texture, Grey Level Co-occurrence Matrix, Tamura features and Gabor filter features techniques were selected.

Precision and Recall were used to evaluate each technique. Then each separate method was first explored in detail and implemented in a common programming environment. Java programming language was used for implementation of the system and each technique was tested by using Corel Image Database which consists of 10800 images categorized to 80 different semantic categories. By comparing precision and recall values the methods that performed best was taken and combined to form a hybrid feature extraction technique. A web based CBIR system was developed as proof of concept and as the final deliverable of the project. Here a web crawler was used to first crawl through Web sites and images found in those sites are downloaded and the combined feature representation technique was used to extract image features. The System can be used to index images in WWW with the combined feature representation schema and to find similar images.

Keywords: Content Based Image Retrieval, Computer Vision, Image Retrieval, Image Processing.