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Using Rough Set Theory To Improve Content Based Image Retrieval System

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In recent years, Content-Based Image Retrieval (CBIR) has become one of research focuses in the image processing and machine vision area. General CBIR systems can automatically index and retrieve images with visual features like colour, texture and shape.

The advancement in computing has produce innumerable digital images, photos and videos. This exponential growth has created a high demand for efficient tools for image searching, browsing and retrieval for use in various domains such as architecture, crime prevention, fashion, medicine, remote sensing, publishing, etc.
What Is The Problem?

- Low retrieval performance
- Semantic gap
- Vague concept in image features
- Many image features

How manage image features?
How Solve This Problems?

Proposed Method

Test Phase

Query Image

Feature Extraction

Trained Classifier

Retrieval Results

Build the Classifier

Semantic Rules

Feature Reduction

Low Level Features Database

Image Dataset

Feature Extraction

Pre Processing

Train Phase
Why Rough Set Theory?

- Semantic rules
- Select significant features
- Handling vague concepts
- Handling incomplete data set
- Handling Uncertainty
- Does not need additional information about data
- Reduce retrieval cost
In summary, this research proposes a new approach to extract important features from image feature vector.

The concept behind this research is that it should be possible to extract image feature relational patterns in an image feature vector database and use these relational patterns for generating rules. This concept can provide good results for an image retrieval system.

This research can open a new way for an image retrieval system to use rough set theory instead of deterministic and crisp methods.