

Research/Implementation project proposal:

Structured Object Recognition for Content-Based Image Retrieval

- **Appropriate Courses:**COMP8780(HCC), COMP8740 (AI), COMP8760 (CSci)
- **Status:** Proposition
- **Student:** Ali Zia, u4475570,
- **Course Enrolling for:** COMP8780(HCC)
- **Supervisors:** Dr. Antonio Robles-Kelly, Dr. Jun Zhou
- **Research Areas:** computer vision, pattern recognition, algorithms, data structure
- **Technical Difficulty Level:** moderate
- **Conceptual Difficulty Level:** moderate

Description

For purposes of content-based image retrieval, a number of methods have been proposed so as to achieve robust and efficient systems. These methods often represent images as a bag of features. A query image is then matched with images in the database by computing the distances between images. As a result, in general, object and image retrieval and classification techniques [1,2,3] are based upon the summarization of the image dataset using a codebook of visual words [4,5,6] , which are used to query the dataset so as to retrieve images that best match the query. When a query image is provided by the user, the features in the image are compared with those on the codebook. Then a measure of similarity between the images in the dataset is computed so as to retrieve the closest match.

As a result, the design of architecture for image retrieval requires both, an image representation suitable for search and a similarity measure that can be employed to rank the images with respect to the relevance to the query [7]. The main challenges in existing algorithms remain efficiency (in terms of speed and memory consumption), accuracy and simplicity. By efficiency we mean how quickly the result can be retrieved and how computationally costly is the image representation used. By accuracy we refer to the correctness of the images retrieved by the system provided a query image. Simplicity applies to the degree of ease of deployment and use of the algorithm.

In this work, we will build on the image representation developed in ENGN8530 and will examine the use of a structured learning approach to the problem. In this manner, we aim at investigating the inclusion of structural and feature information in the image into a representation suitable for content-based image retrieval.

References

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