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**Abstract:** This paper addresses a literature study on research methodologies to digital images for automated annotation. In this paper, they concentrate on various strategies to simplify the process of annotating images as an intermediate phase in the recovery process. The purpose of this paper is to cover the automated image annotation methods from there until the latest research finding. An attempt is made to describe the automated image annotation, which is a mixture of image processing and quantitative learning methods, using the earlier literature reviews and assessment results as guidance.

**Introduction**: The method of modeling the work of a human annotator can be described as automated image annotation since terms are added to images based on their visual features. The combination of image processing and quantitative machine learning methods is the basis of the majority of image annotation systems. There are two major patterns in the method of Recovering pictures. The first one is referred to as content-based Image retrieval (CBIR) is also known as image query. By means of image processing techniques, the query would examine the actual features of the message. The aim of automatic image annotation, given an input image, is to allocate a few appropriate text words to the image that represents its visual content.

**Literature review:** For two major factors, image annotation is a challenging task: first, the well-known issue of pixel-to-predicate or semantic gap, which refers to the fact that it is difficult to extract semantically meaningful objects using only low-level image properties, such as color and texture. An explicit identification of thousands of entities or categories reliably an unanswered issue, the second problem occurs because of the scarcity of connection within in the training data, the keywords and image regions. Lately, methodologies have developed under a hierarchical numerous instances learning model to overcome the communication issue.

**Methods:** In this paper they talk about some methods which are used for automatic image annotation. They discuss about three types of image annotation approaches: manual, automatic and semi -automatic. The manual annotation requires users to enter certain specific words while viewing the picture. Auto annotation automatically recognizes and marks the semantic image content with a set of keywords. Statistical models, especially automated image annotation, are common techniques to image processing. Practically, images are annotated by calculating the mutual likelihood of an image with a collection of words, the frequency of words given to an image or a particular area of the image. Then, according to their possibilities, the words are listed.

**Results:** The most popular methods for comparing CBIR are precision and recall. Considering that there are WH human annotated images in the test collection and the machine annotated w auto for a given semantic descriptor, Wc of which is right. The per-word recall and precision are given by recall=Wc / WH and precision=Wc/w auto, respectively. After that, over the set of terms that exist in the test set, the values of recall and accuracy are multiplied to achieve the average precision per word (P) and average recall per word. Considering the number of non-zero recall (NZR) words (i.e. words with Wc > 0, which shows how many words the machine has learnt successfully.

**Conclusion:** Automatic image annotation is the approach in order to resolve the well-known issue of semantic distance. Similarly, allowing computers understand image information in terms of semantics or high-level principles is a big challenge. To address the semantic difference between the low-level Content and principles of high quality should be implemented by Image evaluation and mathematical learning application approaches or other processes, including grouping.