Introduction

Why Automaic image tagging?

Over the past decade the number of images being captured and shared has grown enormously. There are several factors behind this remarkable trend. In the modern age it is now commonplace for private individuals to own at least one digital camera, either attached to a mobile phone, or as a separate device in its own right. The ease with which digital cameras allow people to capture, edit, store and share high quality images in comparison to the old film cameras. This factor, coupled with the low cost of memory and hard disk drives, has undoubtedly been a key driver behind the growth of personal image archives. Furthermore, the popularity of social networking websites such as Facebook and Myspace, alongside image sharing websites such as Flickr has given users an extra incentive to capture images to share and distribute amongst friends all over the world.

During the past decades images were captured and they are annotated with their own keywords, users search the image collection based on that keywords. Nowadays companies take the tagging of images very seriously indeed, employing teams of people to manually view each image in turn and assign

relevant keywords to describe the contents of the images. Even the search behemoth, Google, has attempted to recruit its own users to tag random images from its index, by re-framing the process as a collaboration between users with those tags matching between users selected as the labels for the images.

For commercial organizations, correct keywording of images has a direct effect on their revenues and efficiency in satisfying the needs of consumers; an incorrectly or insufficiently labelled image is unlikely to be found, particularly within the stringent deadlines commonly experienced within the commercial world, thereby leading to a loss in operational efficiency. At the present time companies such as Behold and Imense Ltd have already entered the CBIR market with their own specialized CBIR Search Engines. Behold specializes in searching just over 1 million high quality images from the Flickr.com website. In the case of the Imense search service, a user can click on professional images and be brought straight to the copyright owner's website, thereby providing the company with advertising revenue in the spirit of Google's business model. Imense Ltd's key insight is to provide a means for users to search large collections of images by means of a specially designed query language built around a large ontology of visual content such as objects, scene features, and properties. The company also offers a standalone Image Auto Tagging tool to organizations to annotate their image libraries.

Aims and Objectives

The main objective of this project is to classify images by assigning appropriate tags and place them into appropriate folders according to the objects present in the images and enable users to search the images using the tag names or object names that are present in the images and retrieve the images. This objectives are refined down into four sub-objectives:

1. Extract a discriminative set of image features from the datasets.

2. Implement an efficient version of the original image tagging algorithm.

3. Extend the algorithm to capture the correlations between keywords.

4. Evaluate image tagging accuracy and image retrieval performance on the standard datasets.

Basic Methods

Basic Methods that we used here are Artificial Neural Networks, feature extraction algorithm etc…

Artificial Neural Networks:-

Artificial neural networks (ANNs) are computational models inspired by the human brain. At their core, they are comprised of a large number of connected

nodes, each of which performs a simple mathematical operation. Each node's output is determined by this operation, as well as a set of parameters that are specific to that node. By connecting these nodes together and carefully setting their parameters, very complex functions can be learned and calculated**.**

Artificial neural networks are responsible for many of the recent advances in artificial intelligence, including voice recognition, image recognition, and robotics. For example, ANNs can perform image recognition on hand drawn digits

Feature extraction:-

In machine learning, pattern recognition and in image processing, feature extraction starts from an initial set of measured data and builds derived values (features) intended to be informative and non-redundant, facilitating the subsequent learning and generalization steps, and in some cases leading to better human interpretations. Feature extraction is related to dimensionality reduction.

When the input data to an algorithm is too large to be processed and it is suspected to be redundant (e.g. the same measurement in both feet and meters, or the repetitiveness of images presented as pixels), then it can be transformed into a reduced set of features (also named a feature vector). Determining a subset of the initial features is called feature selection. The selected features are expected to contain the relevant information from the input data, so that the desired task can be performed by using this reduced representation instead of the complete initial data.