Image Filtering in Social Networks

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Abstract
In the most recent decade, online interpersonal organizations (OSNs) have turned into a well-known intuitive medium to impart, share and spread a lot of data on human life. Every day and persistent correspondence infers the trading of a few kinds of substance, including free content, picture, sound and video information. The point of the this paper is to propose and tentatively assess a mechanized framework, called Filtered Wall (FW), that can sift through undesirable pictures from informal organization client dividers. Picture separating is a strategy that gets to and organize computerized pictures from an extensive gathering of databases by utilizing the pictures highlights.

Keywords: - K-mean, clustering, Content Based Image Retrieval, Feature, Query

Introduction

This paper proposes a system that enforces content-based image retrieval as a key service for Online Social Networks (OSNs). The system allows OSN users to have a direct control on the images posted on their walls. This is achieved through a flexible rule-based system that allows a user to customize the filtering criteria to be applied to their walls. Image filtering is the technique used to filter the images. Image filtering enables automatic extraction of target images according to the objective visual contents of the image itself. Representation of visual features and similarity match are important issues in image filtering. Image filtering method is proposed to retrieve the images based on the visual feature. We use K-mean algorithm to decompose color images into multilevel scale and wavelet coefficients. The features extracted are stored in a database. When a user tries to upload an image, the feature of the image is compared with the features stored in the database. If match occur the image will be blocked. K-means is one of the simplest unsupervised learning algorithms that solve the well-known clustering problem. In contrast, by means of the proposed mechanism, a user can specify what contents should not be displayed on his/her wall, by specifying a set of filtering rules. Filtering rules are very flexible in terms of the filtering requirements they can support, in that they allow to specify filtering conditions based on user profiles, user relationships as well as the output .In addition, the system provides the support for user defined blacklist management. This involves preventing a list of users to post images on a user wall temporarily.

2.0 LITERATURE SURVEY

In [5], "Learning from Negative Example in Relevance Feedback for Content-Based Image Retrieval", a method which is a combination of Relevance Feedback with discriminators are used. Here negative examples are combined with positive example to identify important features to be

used in retrieval process. The Approach is implemented in a set of natural images particularly in Trees. This Approach denies the Partial Information needs of the user and can be extended as a future work. In [8], Navigation-Pattern-based Relevance Feedback (NPRF) Approach is used. This Approach has high efficiency and effectiveness of CBIR in coping with the large-scale image data. Peter Stanchev, et.al. [19] Proposed that several visual descriptors exist for representing the physical content of images. It is found that depending on the specific characteristics of a data set there may be some features which can be more effective than others when performing similarity search. The descriptors based on color representation might be effective with a data set containing mainly gray color images.

3.0 SYSTEM STUDY

i. Existing System

In the existing system content-based preferences are not supported in the online social networks. For instance, it is not possible to prevent political or vulgar images. There is no restriction for sending and receiving images in social network.

The existing system consist of primitive image uploading technologies that allows the user to upload any type of images on the Social Network. There may be images that can affect a person badly.

ii. Disadvantages

- No restriction in uploading images.
- We cannot blacklist the person.
- Primitive uploading technique.
- Cannot block unwanted images spreading in social networks.
- These images can affect a person badly.

iii. Proposed System

The key idea of the proposed system is the support for content based user preferences. We believe that the proposed strategy is a key service for social networks in that in today social networks users have little control on the images displayed on their walls. However, no content-based preferences are supported. For instance, it is not possible to prevent political or vulgar images. In contrast, by means of the proposed mechanism, a user can specify what contents should not be displayed on his/her wall, by specifying a set of filtering rules. Filtering rules are very flexible in terms of the filtering requirements they can support, in that they allow to specify filtering conditions based on user profiles, user relationships as well as the output .In addition, the system provides the support for user defined blacklist management, that is, list of users that are temporarily prevented to post images on a user wall.

Image filtering allows to automatically extracting target images according to objective visual contents of the image itself. Representation of visual features and similarity match are important issues in image filtering. We use K-Mean to decompose colour images into multilevel scale and wavelet coefficients, with which we perform image feature extraction. The features extracted are

stored in a database. When a user tries to upload an image, the feature of the image is compared with the features stored in the database. If match occurs the image will be blocked.

4.0 SYSTEM DESIGN

Our goal is to design an online image filtering system that can filter unwanted images from OSN user wall. The main part of the system is image filtering which discards the unwanted images. Image filtering requires clustering of the large set of images.

Several algorithms have been proposed in the literature for clustering: ISODATA [8, 3], CLARA [8], CLARANS [10], Focusing Techniques [5] P-CLUSTER [7]. DBSCAN [4], Ejcluster [6], BIRCH [14] and GRIDCLUS [12]. The k-means method has been shown to be effective in producing good clustering results for many practical applications. However, a direct algorithm of k-means method requires time proportional to the product of number of patterns and number of clusters per iteration. This is computationally very expensive especially for large datasets. We propose a novel algorithm for implementing the k-means method. Our algorithm produces the same or comparable (due to the round-off errors) clustering results to the direct k-means algorithm. It has significantly superior performance than the direct k-means algorithm in most cases.

i. K-Mean Clustering

K - mean is the one of the simplest un supervised learning algorithms that solve the well-known clustering problem. The procedure follows a simple and easy way to classify a given data set through a certain number of clusters (assume k clusters) fixed apriori. The main idea is to define k centers, one for each cluster. These centers should be placed in a cunning way because of different location causes different result. So, the better choice is to place them as much as possible far away from each other. The next step is to take each point belonging to a given data set and associate it to the nearest center. When no point is pending, the first step is completed and an early group age is done. At this point we need to re-calculate k new centroids as barycenter of the clusters resulting from the previous step. After we have these k new centroids, a new binding has to be done between the same data set points and the nearest new center. A loop has been generated. As a result of this loop we may notice that the k centers change their location step by step until no more changes are done or in other words centers do not move anymore. Finally, this algorithm aims at minimizing an objective function knows as squared error function given by:

$$J(V) = \sum_{i=1}^{c} \sum_{j=1}^{c_i} \left(\left\| x_i - v_j \right\| \right)^2$$

where, *'||xi - vj||'* is the Euclidean distance between *xi* and *vj*.
'ci' is the number of data points in *ith* cluster.
'c' is the number of cluster centers.

ii. Algorithmic steps for k-means clustering

Let X = {x1,x2,x3,……..,xn} be the set of data points and V = {v1,v2,…….,vc} be the set of centers.

i. Randomly select *'c'* cluster centers.
ii. Calculate the distance between each data point and cluster centers.
iii. Assign the data point to the cluster center whose distance from the cluster center is minimum of all the cluster centers.
iv. Recalculate the new cluster center using

$$v_i = (1/c_i) \sum_{j=1}^{c_i} x_i$$

where, *'ci'* represents the number of data points in *ith* cluster.

v) Recalculate the distance between each data point and new obtained cluster centers.
vi) If no data point was reassigned then stop, otherwise repeat from step 3.

We have presented a system to filter out undesirable images from OSN walls. The goal is to provide an overview of the functionality of image filtering in OSN walls. In the proposed method, flexibility of its system can be enhanced through filtering rules and blacklist management. This system gives security to the Online Social Networks by means of preventing display of unwanted image contents. In future, we plan to enhance our filtering rule system, with a more sophisticated approach to manage those images caught just for the tolerance. For instance, the system will automatically take a decision about the images to be blocked on the basis of some statistical data.

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