SURVEY ON REMOVAL OF UNDESIRABLE IMAGES IN ONLINE SOCIAL NETWORK USER WALLS

M.Swapna[#1], Dr.D.Malathi [*2]

[#]*Final year, M.Tech/CSE, SRM University*
40, Sannathi Street, Natesan Transports, Jayankondam, Ariyalur District – 621802, India.
[1]Swapna.manickam@gmail.com

[*]*Professor, SRM University*
SRM Engineering Ladies hostel ("C" Block – 111), SRM University, Kattankulathur, Kancheepuram DT – 603203, India
[2]mala_kam@yahoo.com

Abstract: **Most of the people use online social network for communication between different users. While regular communication they exchange contents in the form of text, image, audio and video data. To access the data, it is uncomfortable for the user. The problem is the vast number of databases and the undesirable images that cannot be controlled by the user. Till now OSNs provide few support for this issue. To solve this problem, we proposed a system to control the images automatically by the user that are posted on their wall. This solution can be obtained through the image classification that allows users to modify the filtering principle. In addition to the classification provision, the system provides a substantial rule layer utilizing an adaptable language to define Filtering Rules (FRs), by which the user can state the contents that should not be displayed on their walls. Besides that, list of users that are temporarily blocked to post any kind of images on a user wall referred to as user – defined Black Lists (BLs) is also provided by the system for the support of user.**

Keywords: Image classification, Filtering rules, Black lists.

I. INTRODUCTION

Online social networks are one of the favorable medium to communicate, share and spread widely a considerable amount of people's information. Regular and continuous interactions define the sharing of several types of contents, including text, images, audio and video data. According to statistics, average user posts 90 pieces of content each month, while more than 30 billion content (web links, news stories, blog posts, etc.) are distributed each month. The large and constantly changing character of these data evolves the premise for the service of web content mining strategies intended to automatically discover helpful information unasserted within the data. They are useful to make available an active support in difficult and complex tasks involved in OSN management, such as for continuous access control or information filtering.

Information filtering has been greatly examined for what related textual documents and, latest web content (e.g., [1], [2], [3]). However, the intense of the most of these proposals is mainly to give users a classification mechanism to prevent the overcome by unwanted data. In OSNs, removing unwanted information can also be used for a different, more sensitive motive. This is due to the reality that in OSNs there is the probability of posting or commenting other posts on particular public/private areas, called in general walls. Removing unwanted information can therefore be used to give users the skill to automatically control the images posted on their own walls, by removing undesirable images. To believe that this is a key OSN service that has not been provided so far. Instead, today OSNs provide very less support to prevent undesirable images on user walls.

However, no content based preferences are supported and therefore it is not possible to eliminate undesirable images, such as political or vulgar ones, besides the user who posts them. Providing this service is not only a matter of using previously defined web content mining techniques for a different application, instead it requires to design ad – hoc classification strategies. In addition to the filtering rules, Black Lists (BLs) also provided to block the list of undesired users temporarily from posting the images in the user walls. Instead, decided to let the

users to mention BL rules controlling who has to be prohibited from their walls and for how long. Therefore, a user might be interdicted from a wall, by, at the same time, being able to post in other walls. Similar to FRs, our BL rules make the users to establish users to be blocked according to their profiles as well as their relationships.

The remainder of this paper is organized as follows. Section II surveys related work, whereas Section III describes the K Means Algorithm, Section IV describes the conceptual architecture of the proposed system, whereas Section V & VI illustrates design implementation of the filtering and blacklists. Section VII illustrates the performance evaluation of the proposed system, whereas the blacklist management is described in Section IX. Finally, Section X concludes the paper.

II. RELATED WORK

The aim of the present work is therefore to propose and practically verify an automated system, called Filtered Wall (FW), able to filter undesirable images from OSN user walls. Image classification algorithm is exploited to classify the features of the images and automatically assign images to the training set on a set of categories based on its information. The major efforts in building a robust image classification method are concentrated in the deduction and selection of a set of characterizing and differentiate features. The solutions investigated in this paper are an extension of those adopted in a previous work [5] from which inherits the learning model and the elicitation procedure for generating pre-classified data. The difference between the existing and proposed system is removal of undesirable images rather than text and additionally include black list with filtering rules to enhance the flexibility and effectiveness of our project.

In addition to the classification facilities, the system gives a powerful rule layer exploiting a flexible language to specify Filtering Rules (FRs), by which user can state which contents, should not be displayed on their walls. FRs can support a variety of different filtering principle that can be combined and customized according to the user needs. More definitely, FRs utilize the user profiles, relationships related to the user as well as the output of machine learning process to state the filtering principles to be executed. Besides, the system provides for user – defined Black Lists (BLs), that is, the lists of users that are temporarily blocked to post any kind of images on a user wall.

The experiments that have been carried out projects the effectiveness of the developed filtering techniques. An additional component of our system is a Black List mechanism to avoid images from undesired creators irrespective of their contents. BL is directly managed by the system to determine the users who all to be inserted in the BL and decide when user's retention in the BL is finished. To enhance flexibility, such information is given to the system through a set of rules, hereafter called BL rules. To the best of our knowledge this is the first proposal of a system to automatically filter unwanted images from OSN user walls on the basis of both image content and the creator relationships and characteristics.

III. K MEANS ALGORITHM:

K-means algorithm criterion function adopts square error criterion, be defined as:

$$E = \sum_{j=1}^{k} \sum_{\substack{i=1 \\ x_i \epsilon c_j}}^{n} \|x_i - m_j\|^2$$

(3.1)

Where E is total square error of all the objects in the data cluster, *xi* bellows to data object set, *mi* is mean value of cluster *Ci* (x and m are both multi-dimensional). The function of this criterion is to make the generated cluster be as compacted and independent as possible.

The distance between data points and the cluster center is identified. The distance formula of data point xi and cluster center kj defined as following

$$d_{j,i} = \sqrt{\left(x_{i_1} - k_{j_1}\right)^2 + \left(x_{i_2} - k_{j_2}\right)^2 + \cdots + \left(x_{i_w} - k_{j_w}\right)^2}$$

(3.2)

where w represents the number of attributes of the data points xi.

The clustering algorithm adds the weight of data point to the cluster center. Data points near the center of the cluster weights, on the contrary, the value of data points away from the cluster center is less weight. The formula of cluster center defined as follows:

$$k = \frac{d_{j_h}}{D} x_{J_1} + \frac{d_{j_{(h-1)}}}{D} x_{J_2} + \cdots + \frac{d_{j_2}}{D} x_{J_{(h-2)}} + \frac{d_{j_1}}{D} x_{j_h}$$

(3.3)

Where j represents the jth cluster, h is the number of data points in the cluster, djh represents the distance between the hth data point which belongs to cluster c and cluster center. And with the restriction of $d_{j_1} \leq d_{j_2} \leq \ldots \leq d_{j_h}, \frac{d_{j_1}}{D} + \frac{d_{j_2}}{D} + \cdots + \frac{d_{j_h}}{D} = 1.$

(3.4)

The Euclidean distance between data points and the cluster center is identified. The distance between data point and the cluster center determine the cluster which data point belongs to, the formula of Euclidean distance is defined as follows:

$$d_{j_i} = \left(1 - \frac{\sigma_j}{\sigma}\right) d_{j_i}$$

(3.5)

Where j represents the jth cluster cj, i represent the ith data point xi, dji is the Euclidean distance between data point xi and the cluster center cj, σi represents the squares error of the cluster cj, σ is the squares error sum of the K clusters c.

IV. ARCHITECTURE FOR REMOVAL OF UNDESIRABLE IMAGES

After entering the private wall of one of his/her contacts, the user tries to post a image, which is interrupted by FW. The image that is legitimate to the user will be already stored in the training process. Admin uses data provided in the training process, together with data extracted from the social graph and user's profiles, to enforce the filtering and Black List (BL) rules. Depending on the result of the previous step, the image will be published or filtered. The architecture diagram is explained in figure 1.

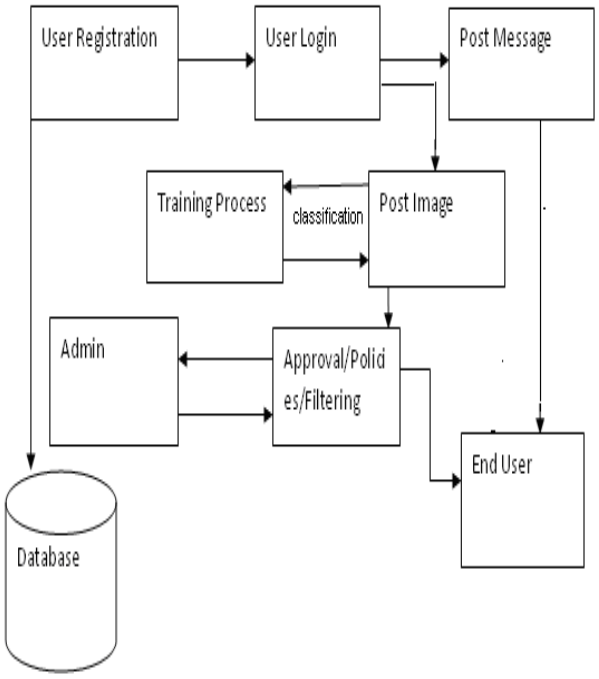


Fig.1 Architecture for removal of undesirable images

V. DESIGN FOR REMOVAL OF UNDESIRABLE IMAGES

1. User Registration
2. Image Posting
3. Training & Image Classification
4. Filtering Rules
5. Blacklist

VI. DESIGN IMPLEMENTATION

USER REGISTRATION:

In this module, the user will be getting registered to OSN website. The registered user can login using their credentials to access the OSN website. The admin user has the privilege to manage these users.

IMAGE POSTING:

The valid users are logged in to the OSN website. The users can post the image on their wall in order to convey the messages. The posted images need to be set on the wall that can be visible to users.

TRAINING AND IMAGE CLASSIFICATION:

The training set will be prepared that contains a set of images. The intent of the classification process is to categorize all pixels in a digital image. The image classification is used to recognize the features occurring in an image.

FILTERING RULES:

This module enables the user to post images according to the Filtering Rule (FR) being created. If the image that is posted by the user is classified with the training process, then that image will be posted on to the wall. If the image that is posted by the user is not getting classified with the training process, then that image will be filtered and could not be displayed on the wall.

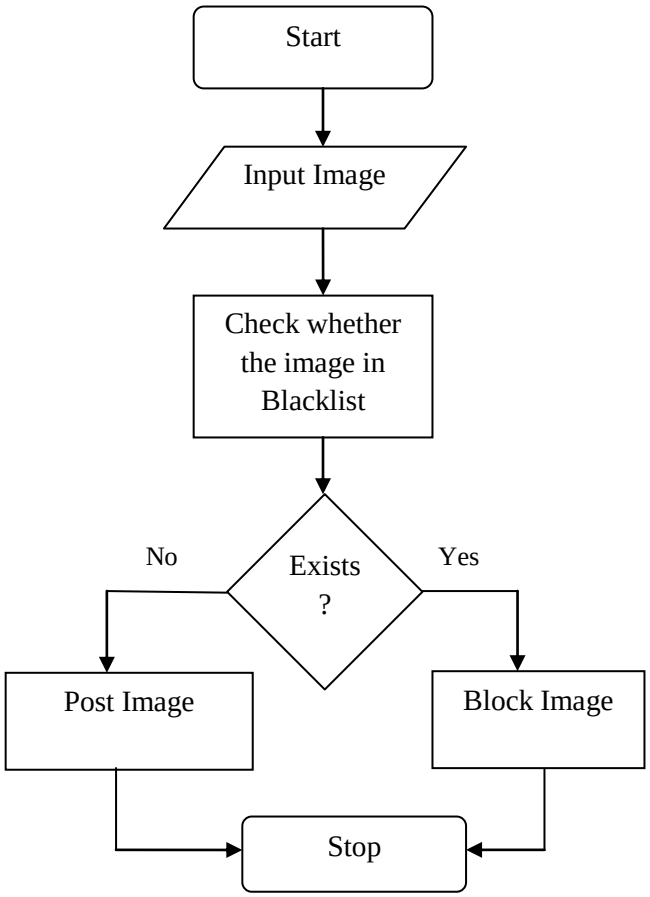
BLACKLIST:

This project also provides the support for user – defined Black Lists (BLs) that is, lists of users that are temporarily prevented to post any kind of images on a user wall. When the image that is posted by the user, matches with the blacklist, then that image will also not be displayed on the wall.

VII. EVALUATIONS

We perform comprehensive assumptions to legalize the effectiveness of the discussed issues and problems. We determine the flexibility and accuracy of removing the undesirable images in online social network user walls with K Means algorithm. We demonstrate the results with effective implementation and examine the performance with different inputs. In addition, we provide a blacklist mechanism to block the users temporarily to post the images on their walls and organize the images on the user walls according to the filtering rules and blacklists.

VIII. FLOW CHART:



IX. BLACKLIST MANAGEMENT

An additional component of our system is a Black list mechanism to remove undesirable images from unwanted creators, irrespective of their contents. BLs is straightly accomplished by the system, which

should be able to find the users who all to be inserted in the BL and decide when user's retention in the BL is completed. We use a set of rules to accomplish the flexibility in the system using BL rules. Rather we let the users to specify the rules who has to be blocked and for how long.

Likely, BL rules make the users to recognize the person to be filtered according to their profiles and relationships in the OSN. By means of BL rule, the users can block the person whom they do not know directly or if they have bad judgment on any person in their profile. This blocking can be remained for an undetermined period or for a specific time period. Moreover, filtering rules may also be considered including the account user's action in the OSN. We also mainly concentrated on two measures.

The first is related to the condition that if the person has been inserted into a blacklist more than a threshold value, that particular person is permanently blocked and will stay in blacklist. This condition is suitable for the person who is in blacklist at least once. The second measure is Relative Frequency which is used to find the new bad actions of the person. These two measures can be calculated either by contemplating only the images or the blacklist of the user determining the BL rules.

X. CONCLUSIONS AND FUTURE WORK

In this project, a system to remove undesirable images from online social network walls has been prepared and analyzed. Moreover, extension of the system in terms of filtering options will be improved through organizing the blacklists. This task is the first step of wider project. Additionally, enhancement of our system with more complex approach to decide when a user should be inserted into a BL is determined. The classification steps are obtained so that it correct us to continue with other work that will aim to enhance the quality of classification. In particular future works contemplate a deeper investigation on two different tasks. First depends on the filtration or selection of features that have been provided for high discriminative power. The other task involves the learning phase. Since the fundamental domain is dynamically varies, the collection of pre – classified data may not be representative in the longer term. The current strategy is dependent on the preliminary collection of the entire set of labeled data from seniors, allowed an accurate experimental calculation but needs to be presented to include new requirements. In future, thought to address this issue by investigating the use of on – line learning standards able to include label feedbacks from users.

REFERENCES

[1] A. Adomavicius, G.and Tuzhilin, "Toward the next generation of recommender systems: A survey of the state-of-the-art and possible extensions," IEEE Transaction on Knowledge and Data Engineering, vol. 17, no. 6, pp. 734–749, 2005.

[2] M. Chau and H. Chen, "A machine learning approach to web page filtering using content and structure analysis," Decision Support Systems, vol. 44, no. 2, pp. 482–494, 2008.

[3] R. J. Mooney and L. Roy, "Content-based book recommending using learning for text categorization," in Proceedings of the Fifth ACM Conference on Digital Libraries. New York: ACM Press, 2000, pp. 195–204.

[4] F. Sebastiani, "Machine learning in automated text categorization," ACM Computing Surveys, vol. 34, no. 1, pp. 1–47, 2002.

[5] M. Vanetti, E. Binaghi, B. Carminati, M. Carullo, and E. Ferrari, "Content-based filtering in on-line social networks," in Proceedings of ECML/PKDD Workshop on Privacy and Security issues in Data Mining and Machine Learning (PSDML 2010), 2010.

[6] N. J. Belkin and W. B. Croft, "Information filtering and information retrieval: Two sides of the same coin?" Communications of the ACM, vol. 35, no. 12, pp. 29–38, 1992.

[7] P. J. Denning, "Electronic junk," Communications of the ACM, vol. 25, no. 3, pp. 163–165, 1982.

[8] P. W. Foltz and S. T. Dumais, "Personalized information delivery: An analysis of information filtering methods," Communications of the ACM, vol. 35, no. 12, pp. 51–60, 1992.

[9] P. S. Jacobs and L. F. Rau, "Scisor: Extracting information from online news," Communications of the ACM, vol. 33, no. 11, pp. 88–97, 1990.

[10] S. Pollock, "A rule-based message filtering system," ACM Transactions on Office Information Systems, vol. 6, no. 3, pp. 232–254, 1988.

[11] P. E. Baclace, "Competitive agents for information filtering," Communications of the ACM, vol. 35, no. 12, p. 50, 1992.

[12] P. J. Hayes, P. M. Andersen, I. B. Nirenburg, and L. M. Schmandt, "Tcs: a shell for content-based text categorization," in Proceedings of 6th IEEE Conference on Artificial Intelligence Applications (CAIA- 90). IEEE Computer Society Press, Los Alamitos, US, 1990, pp. 320–326.

