AutoFilter System for OSNs

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Abstract - *Nowadays modern lifestyle is totally based on On-line Social Networks (OSN's). One fundamental issue in today's OSNs is to give users the ability to curb the nonessential messages on particular public/private areas, called general walls. Up till now OSNs did not provide much support to the users requirements. In this paper we propose a system for OSN users to directly limit the contents posted on their time line and our aim to investigate the utility of linguistic features for detecting the sentiment of the posts done on person's time line. We'll use Information filtering techniques to remove non-essential contents by using customizable content based filtering rules, Machine learning approach; according to user's interest and recommends an item.*

Key Words: *Content based filtering, Text filtering, Machine learning, On-line Social Networks.*

1. Introduction

Nowadays modern lifestyle is totally based on Internet. People cannot imagine life without Internet. Also, OSN is just a part of modern lifestyle. From past few years people share their views, ideas, information with each other using social networking sites. Such infrastructures may involve dissimilar types of contents like text, image, audio and video data. But, in today's OSN, there is actually a high chance of posting unsolicited content on particular public/private areas, called general walls. So, to control this type of action and to avoid the undesirable messages posted on user's wall we can implement filtering procedures in our system. OSN users have capability to keep in touch with his/her friends by exchanging different types of data or messages like text, audio and video data. Today's OSNs did not provide much support to the users to avoid undesirable messages displayed on their own private space called general wall. So, in we represent OSNs. One ultimate issue in today's OSNs is to give users the ability to curb the nonessential messages on particular public/private areas, called general walls. Up till now OSNs did not provide much support to the users requirements.

In this paper we propose a system for OSN users to directly limit the contents posted on their time line. The aim is to investigate the utility of linguistic features for detecting the sentiment of the posts done on person's time line. We'll use Information filtering techniques to remove undesirable contents by using customizable content based filtering rules and Machine learning approach according to user's interest and mentions an item [1], [2], [3], [4]. Natural Language Processing and Information Extraction aims to obtain writer's feelings to be conveyed in positive or negative remarks, by analyzing a large numbers of documents. Task of classifying the orientation of opinions expressed, towards a specific entity in the subjective portions of a given piece of text. It uses various classification techniques to identify the tone of a given piece of text. It specifies whether the text is positive, negative or neutral.

To the best of our knowledge this is the first proposal of the system to automatically filter the unwanted posts from the real time OSN user walls on the basis of content based filtering rules. This application is useful for common people who don't want to write any undesirable messages like vulgar, political, sexual messages on his /her wall by any third persons.

2. Literature Survey

Previously "Privacy Wizards for Social Networking Sites" in this paper privacy was an enormous problem in social networking sites. Networking sites such as Facebook allow users fine-grained control over who can see their profiles, it is difficult for average users to identify this kind of detailed policy. In this paper, we propose a template for the proposal of a social networking privacy wizard. The perception for the design comes from the observation that real users consider their privacy preferences (which friends should be able to see which information) based on an implicit set of rules. Thus, with a inadequate amount of user input, it is usually possible to build a machine learning model that briefly describes a particular user's

preferences, and then use this model to configure the user's privacy settings automatically. Even though the Social Networks today, have the restrictions on the users who can post and comment on any user's wall, they do not have any limits on what they post. So, some people will use the indecent and vulgar words in commenting on the public posts. Providing this service is not only a matter of using previously defined web content mining methods for different applications, rather it requires to design ad hoc classification strategies [5].

Recent improvements in paper "A Rule-Based Language for the Specification of Message Routing Policies in a Universal Communication System" tools for communication devices, especially portable ones, and in networks have made available a large variety of means by which users can easily interconnect among each other's anywhere and at any time. Users have now several choices among which to choose whenever they need to communicate and/or to exchange data, including multimedia ones, with other users or applications. Gadgets, such as new generation cellular phones, palm PC, PDA, laptops, have extremely improved the communication process, by increasing both the quantity and quality of data that are exchanged and by providing easy-to-use interfaces. Online Social Networks (OSNs) are today one of the most popular interactive medium to share, communicate, and allot a significant amount of human life information. In OSNs, information filtering can also be used for a diverse, more responsive, function. This is owing to the fact that in OSNs there is the possibility of posting other posts on particular public/private regions, called in general walls. On a daily basis and continuous messages involve the exchange of numerous types of content, including free content, image, audio, and video information. Along with Facebook information 1 average user creates 90 pieces of matter every month, while more than 30 billion quantity of matter (web links, news stories, notes, blog posts, photo albums, etc.) are distributed every month [6].

3. Related Work

The main significance of this paper is to design a system supplying transformable content-based message filtering for OSNs, based on Machine Learning. As we have mentioned in the introduction, to the best of our knowledge we are the first to introduce real time application for social networks. The system work is as follows initially integrate the system with Facebook by using Facebook 4J API and read the real time posts from user's wall. As soon as the user logs in to Facebook, the access token will be generated for that particular user (it will be unique and valid for two months) and with the help of this access token, the system will be able to read all the posts from user's timeline.

3.1.   Content-Based Messages Filtering (CBMF):

For content-Based Massages filtering, we first filter out duplicate tweets and Facebook comments, non-English tweets and non-English Facebook comments, and tweets that do not contain hashtags. From the remaining set, we investigate the distribution of hashtags and identify what we hope will be sets of frequent hashtags that are telling of positive, negative and neutral messages. These hashtags are used to choice the tweets that will be used for development and training.

3.2.   Short Text Classifier

Designing and evaluating several representation techniques in mixture with a neural learning strategy to semantically categorize short texts. From a Machine Learning point of view, we approach the duty by defining a hierarchical two level strategy assuming that it is better to identify and discard "neural" sentences, then classify "non-neural" sentences, by the class of interest instead of doing everything in one step [1].

3.3.   Preprocessing

Pre Processing includes the following steps which are listed below:

Tokenization: Firstly we will do the tokenization by which sentences are split into the words.

Normalization: Followed by that we will use the Stanford NLP to remove stop words from all the words.

Part-of-speech (POS) tagging: Lastly detect if the word token is noun, verb or adjective.

3.4.   NLP & Feature Extraction:

Initially apply Stanford NLP to separate part of speech from the sentence. After which Porter Stemmer algorithm will be applied for getting root of the word for adjectives. After getting root of the word, we will compare weight / sense of each word with the affine dictionary. Finding negative annotations in the sentence and reverse the weight. Then calculate the overall weight using dictionary approach. Calculate overall weight using emoticons approach and perform the summation of both to draw final conclusion. Finally, positive, negative or neutral count for that particular post will be calculated. After the analysis, the action on the posts will be taken accordingly, whether to publish the post or not on the user's wall. If found negative sense, the system won't allow the user to make the posts on his / her friend's wall. In case of real time fetched posts, the system will either delete or hide the posts depending on the user's choice.
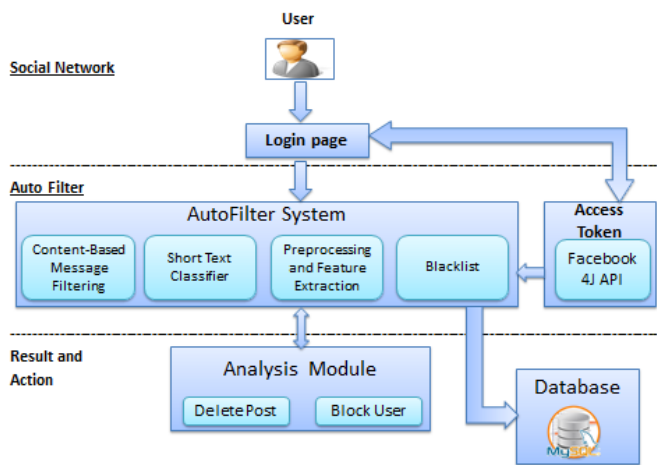
4. Proposed Architecture

Fig -1: System Architecture

The architecture in support of OSN service is a three-tier structure (Figure 1). The first layer called Social Network aims to provide the basic OSN functionality, whereas the second layer AutoFilter System states the whole system flow and the last layer is the Result/Action layer where the final result of the system is presented. According to the orientation architecture, the proposed system is placed in the second and third layers. In particular user interacts with the system by means of the user GUI. The core components of the system are AutoFilter System, Access Token and the Analysis Module.

5. Algorithm

5.1. Porter Stemmer: (suffix stripping) Algorithm

- Step 1: The algorithm is intended to deal with past participles and plurals. The subsequent steps are much more straightforward. Ex. Plastered Plaster Cats Cat
- Step 2: Deals with pattern identical on same common suffixes. Ex. Happy Happi Relational Relate
- Step 3: Deals with distinctive word endings. Ex. Triplicate Triplic Hopeful Hope
- Step 4: Check the exposed word in contradiction of more suffixes in case the word is compounded. Ex. Revival Reviv Allowance Allow
- Step 5: Check if the exposed word ends in a vowel and fixes it properly. Ex.Controll Control Probate Probat

5.2. Spell Check Algorithm

- Step 1: splits [(word[:i], word[i:]) for i in range(len(word) + 1)]
- Step 2: deletes [a + b[1:] for a, b in splits if b]
- Step 3: transposes [a + b[1] + b[0] + b[2:] for a, b in splits if len(b)>1]
- Step 4: replaces [a + c + b[1:] for a, b in separates for c in alphabet if b]
- Step 5: Inserts [a + c + b for a, b in splits for c in alphabet] return set(deletes + transposes + replaces + inserts)

6. Conclusion

In this paper, we have presented a system to filter the nonessential contents from OSN walls. This system exploits ML concept to enforce the customizable filters. Moreover flexibility is increased in terms of filtering options which is further prolonged through the management of black lists. This work is the first step to contribute to the real time implementation of the system. The early encouraging results we obtained only aimed to improve the quality of classification. Our present work is limited to the messages based only on English language. In particular future plans are to contribute to different languages. Additionally we plan to desire a more sophisticated approach to when a user should be penetrated into a black lists.

Appendix

In our system we are using the concept of Machine learning, customizable content dependent filters and user specified black list mechanism to secure the unwanted messages on the private/public walls. Our main objective is to secure the OSN from the undesired messages being posted on the public/private walls. The system mainly consist of fetching the live post from Facebook and filter it and machine decides whether the post is to be posted on the wall or not and further decides to block the user or not.

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