

Content Based Mechanism for Social Network using Machine Learning

^{#1}Akshata Thorat, ^{#2}Priyanka Ghule, ^{#3}Snehal Dabhade, ^{#4}Prof. Megha Jadhav

¹akshatathorat2@gmail.com

²priyanka.v.ghule1717@gmail.com

³snehal23.dabhade@gmail.com

⁴meghajadhav004@gmail.com

^{#123}Department of Computer Engineering

^{#4}Prof. Department of computer Engineering

JSPM's, BSIOTR

Wagholi, Pune



ABSTRACT

Nowadays we are facing many difficulties in the online social network for posting the messages. Online social network (OSNs) gives users the facility to control unwanted messages posted on the user's private wall. It can avoid unwanted message to be shown. We are proposing a system to spontaneously filter abuse message and direct control of unwanted messages. This is called as filtered wall. We are using machine learning text classification technique. In this paper, we explore the Naive Bayes algorithm for learning and to classify text documents. In proposed system, user are providing certain set of filtering rules to specify what contents are not to be display on users wall.

Keyword: Online social network, Machine Learning, Filtering Rules, Short text classification, Blacklist, Whitelist.

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I. INTRODUCTION

Today most of the people spend more time in social network sites such as Facebook twitter .OSN is most popular interactive medium to communicate with people to share ideas, information, and views making new friends over the internet. The main feature of online social network is ability to create and share a personal profile. The personal profile includes some basic personal information such as name, age, sex, location and photo. People daily communicate with each other by exchanging various types of content, image, video and audio data .The aim of these proposals is to provide user's classification mechanism to avoid unwanted data to be displayed. OSN uses information filtering mechanism. The machine learning text categorization Technique is used to direct control messages of user's walls. Machine learning has the capability to assign each message a set of categories. In this paper we are using the black list and white list mechanism to control the message posted on user's private space.

The OSN provide very less amount of security in user wall. Short text classifiers include text representation, and classify the text which contain large amount of data. In first level Short messages are categorizes as Neutral and Non neutral. In second level Neutral messages are classified. Apart from classification, filtering rules is exploited. Filtering rules are used to define the language for FR specification .Filtering

rule should allow the user to restrict the message creators. Filtering rules consist of creator specification, Filtering rule and blacklist management. FR is defined as the author and creator who specify the rules. In Blacklist management, owner can identify which user should be blocked based on the relationship in OSN and the user's profile such as the Naïve Bayesian classification is applied for text classification techniques.

II. LITERATURE SURVEY

A. Content-based filtering

Information filtering systems are used to classify a stream of dynamically generated information by a producer of information and present to the user those information that are likely to satisfy his/her requirements. Each user operates independently in content-based filtering. In content-based filtering system selects information items based on the items content and the preferences of the user as it is opposite to a collaborative filtering system in that it chooses items based on the people with similar preferences. Nature of the documents processed in content-based filtering are text-based and because of this it is similar to text classification. Concept of ML model is used in this method. By using this, classifier is automatically induced by learning from a set of pre-classified examples. For authorizing the superiority of

boosting-based classifiers, Artificial Neural Networks and SVM (Support Vector Machines) a detailed comparison analysis has been conducted on popular methods as Rocchio and Naive Bayesian. For the long-form the work related to text filtering by ML has been applied. On the nature of the textual documents performance of the text classification is strictly dependent.

B. Policy based filtering

Some proposals have been exploited classification mechanisms for personalizing access in OSNs. For instance, a classification method has been designed to categorize short text messages in order to avoid crushing users of microblogging services by unstructured data. If we focus on Twitter so twitter associates a set of categories with each tweet describing its content. The user of the twitter can then view only those types of tweets based on his/her interests. Such systems do not provide a filtering policy layer for user so that user can exploit the result of the classification process decides to which extent filtering out unnecessary information. In our filtering policy, according to a variety of criteria filtering policy language allows the setting of FRs, the setting of FRs do not consider only the output of the classification process but also considers the relationships of the wall owner with other social network users and also information on the profile of the user. Our system is also complemented by a flexible mechanism for BL (black list) management that provides a further opportunity of customization to the filtering procedure on the OSN wall.

Our work is also inspired by the various access control models and concerned policy languages and enforcement mechanisms that have been proposed so far for OSNs since filtering is similar with access control. Actually, content filtering can be an extension to access control, since it can be used to protect objects from unauthorized subjects, and also to protect subjects from incorrect objects. Here we are using similar idea to identify the users to which a FR applies. However, our filtering policy language is extending the languages proposed for access control policy specification on social network to cope with the extended requirements of the filtering domain. As we are dealing with filtering of unnecessary contents rather than with access control, one of the key points of our system is the presence of description for the message contents to be exploited by the mechanism of filtering. So here we prefer to define our own abstract and more compressed policy language.

C. Short Text Classification

Whatever techniques are established for text classification works well on large documents dataset but it doesn't work properly when the document length is small. Our aim is to design and evaluating various representation techniques in combination with a neural learning strategy to categorize short texts. From ML technique, we approach the task by defining a two level hierarchical strategy assuming that it is better to recognize and eliminate "neutral" sentences, and then classify "non neutral" sentences by the interest of class rather than doing everything in one level. This choice is inspired by related work showing the advantages in classifying text or short texts using a hierarchical strategy. The first level task is identified as a hard classification in which short texts are labeled as Neutral and Non-Neutral

labels. The second level soft classifier acts on the crisp set of non-neutral short texts and, for every entity, it "simply" produces estimated correctness or "gradual membership" for each of the classes, without taking any "hard" decision on any of those entities. Then such a list of grades is used by the subsequent phases of the filtering process.

Text Representation-

For obtaining the appropriate set of features by Which representing the text of a given document is a crucial task and it strongly affects the performance of the overall strategy of classification. Different sets of features have been proposed for text categorization however the most appropriate feature set and feature representation for short text messages have not yet been sufficiently found.

Machine Learning-based Classification-

We represent a short text categorization as two level hierarchical classification processes. Binary hard categorization that labels messages as Neutral and Non-Neutral is performed by the first-level classifier. The first-level filtering task facilitates the consequent second-level task in which a finer-grained classification is done. The second-level classifier executes a soft-partition of Non-neutral messages allotting a given message to each of the non neutral classes. From the several of multi-class ML models well-suited for text classification, we choose the RBFN model for the competitive behavior as compare to other state of the art classifiers. Classification function of RBNF is non-linear which is the main advantage.

III. EXISTING SYSTEM

We In our Existing system, Machine learning soft classifier is used, to customize content-dependent FRs. Through the management of BLs systems flexibility in terms of filtering options is improved. The step relates the removal of contextual features and in the second task learning phase is involves. System called Filtered Wall (FW) is designed, by using this filtered wall we can filter out the unwanted messages. A significant rule called filtering rules and it is used to decide which content should be displayed on user wall. This system will not provide more security. The main problem of this paper is, the user who send that message will not be blocked it will block only the unwanted messages.

IV. PROPOSED WORK

A. Architecture

We propose an automated system called Filtered Wall (FW) which is able to filter unwanted messages from user walls. We use Machine Learning (ML) technique which helps in text categorization which would automatically assign with each short text message with a set of categories based on its content. We use neural learning method which is the most efficient solutions in text classification method [1]. We base the overall short text classification method on Radial Basis Function Networks (RBFN) for proven capabilities in acting

as soft classifiers and managing noisy data. Proposed system is three tier architecture[2].

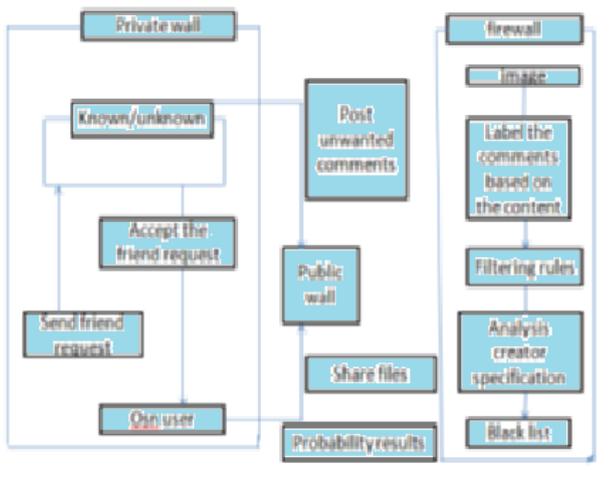


Fig.1. Flow of messages from writing to publication.

Architecture of the proposed system includes filtering rules and blacklist. The whole process will be visible clearly in Architecture. Message will be labelled based on the content, so classification will be over. Then the filtration part, which is done by filtering rules. Analysis of creating the specification will be done. Finally probability value is calculated and the user who posts the unwanted message will be kept in Blacklist. So that the user will be temporarily blocked. Advantage of our proposed System is to have a direct control over the user wall [4].

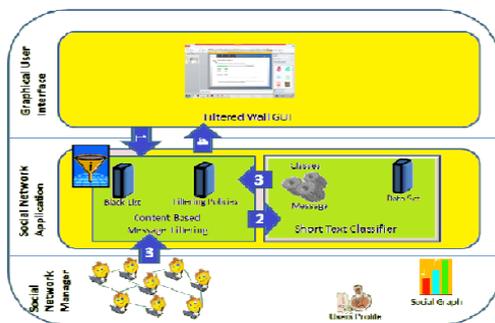


Fig 2. System Structure

- The first layer is the Graphical User Interfaces (GUI) layer which provides additional support to SNAs layer.
- The second layer is the Social Network Applications (SNAs) layer which provides external support for SNAs.
- The third layer, is the Social Network Manager (SNM) layer which provide the basic OSN Functionalities like profile and relationship management.

B. Filtering Rules

In defining the language for FRs specification, we consider three main issues that, in our opinion, should affect a message filtering decision. First of all, in user walls like in everyday life, the same message may have different meanings and significance based on who writes it. As a

consequence, FRs should allow users to state constraints on message creators. Boolean expression and Action is the action performed by the system.

Creator specification-

A creator specification creatorSpec implicitly denotes set of OSN users. It can also have the following forms-

- A set of attribute constraints of the form an OP av where An is user profile, Av is attribute value and OP is the operator or comparison.
- A set of relationship constraints of the form (m, rt, minDepth, maxTrust) where m is the number of users ,Rt is the relation type ,depth greater than or equal to MinDepth and trust value greater than or equal to MaxTrust.

Filtering Rule-

- A filtering rule FR is a tuple of (author, creatorSpec, contentSpec, action) where Author is the user who states the rule, Creator Spec is Creator Specification, Content Spec is the Boolean expression and Action is the action performed by the system.

Filtering rules are applied when a user profile does not hold value for attributes submitted by a FR. This type of situation will ask the user to choose whether to block or notify the messages which does not match with the users wall FRs, due to some missing of attributes.

C. Online setup for FRs thresholds

OSN application provides the user with a set of messages selected from the database. It gives user the permission for each message which tells the system whether to accept or reject the message.

D. Blacklist

A other component of our proposed system is a Black List(BL) mechanism which helps the user to avoid messages from undesired creators.

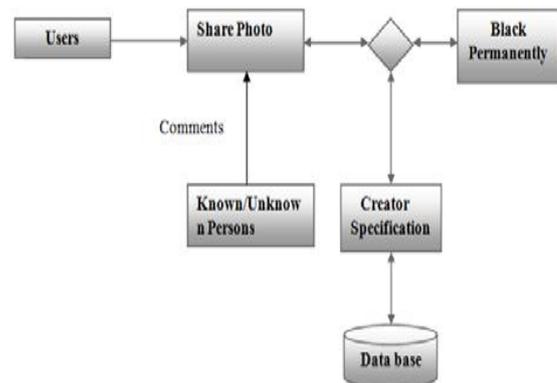


Fig 3. Internal working

BLs are managed directly by the system, which is able to determine who are the users which are to be presented in the BL and to decide when users should be removed from the BL is. To improve the elasticity we introduce a set of rules, called BL rules. These rules are not defined by SNM. Set of rules are applied to improve the difficulty, such rules are

called BL rules. By applying the rule of BL, user can recognize which user should be blocked based on the relationship in OSN and the user's profile [4]. This popular message-filtering method tries to stop unwanted messages from a present list of senders. When an incoming message arrives, the message filter checks to see if its mentioned in blacklist; if so, the message is considered and rejected.

E. Whitelist

A whitelist blocks message using a system almost exactly conflicting to that of a blacklist. Rather than letting you state which senders to block messages from, a whitelist lets you specify which senders to allow messages from; these addresses are placed on a trusted-users list. Most messages filters let you use a whitelist in addition to alternative message-fighting feature as a way to cut down on the number of legitimate messages that unintentionally get highlighted as message. However, using a very strict filter that only uses a whitelist would mean that anyone who was not permitted would automatically be blocked. Some anti-message applications use a variation of this system known as an involuntary whitelist. In this system, an unknown sender's email address is checked against a database; if they have no history of spamming, their message is sent to the receiver's inbox and they are added to the whitelist.

V. ADVANTAGES AND DISADVANTAGES

A. Advantages

- Unwanted messages are filtered from OSN user walls on the basis of both message content and the creator of the message relationships and characteristics.
- The blacklist guarantees 100% filtering of messages coming from suspicious sources.
- Processing of Filtering is automatically done.
- Individual setting is provided.
- An online setup assistant (OSA) is provided which helps the users in FR specification.

B. Disadvantages

We plan to study the techniques limiting the inferences that the user can do on the enforced filtering rules which aims in bypassing the filtering system that would automatically notifying a message that should instead be blocked to the profile attributes defeating the filtering system.

VI. CONCLUSION

The aim of our proposed system is to evaluate an automated system called as Filtered Wall (FW) which would be able to filter unwanted messages from users wall. Future we exploit Machine Learning (ML) text categorization mechanism which automatically assign with each short text message a set categories based on its content. The flexibility of the system in terms of filtering options is enhanced by management the Black Lists.

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