



## Filtering of Unwanted Messages from OSN User Walls

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### ABSTRACT

*An information filtering scheme is an information organization designed in support of unstructured or semi structured information. Filtering applications naturally entail streams concerning incoming information, moreover being transmitted by distant sources. Text categorization is accordingly a discipline at intersection of machine learning and information retrieval and as such it contributes to a numeral of characteristics by means of other responsibilities. Filtering was used to explain the procedure of accessing as well as retrieving information from distant databases, in which incoming information is the consequence of database searches. To enforce the filtering rules precise by the user the initial component makes use of the categorization of message provided by means of the module of short text classifier.*

**Keywords:** Filtering rules, Short text classifier, Database, Machine learning.

### 1. INTRODUCTION

Content-based filtering was extensively examined by developing machine learning methods in addition to other schemes. The difficulty of concerning content-based filtering on diverse contents substituted by users of social set of connections has arriving up to currently little attention in scientific neighbourhood<sup>[1]</sup>. In the present days Text categorization is accordingly a discipline at intersection of machine learning and information retrieval and as such it contributes to a numeral of characteristics by means of other responsibilities. Automatic indexing by means of guarded dictionaries is intimately connected to automatic metadata invention. Several of metadata is thematic, specifically its task is to explain semantics concerning document by bibliographic codes, or key phrases. The making of metadata might consequently be out looked as a difficulty of document indexing by means of guarded dictionary, and accordingly tackled by methods of

text categorization. Various sets of features intended for text categorization have been introduced on the other hand; the majority of suitable feature set in addition to depiction of feature for small text communication were not adequately explored. An assortment of characteristics set intended in support of text classification are introduced alternatively majority of suitable feature set in addition to depiction of feature of short text communication were not observed<sup>[2][3]</sup>.

### 2. LITERATURE REVIEW & RELATED WORK

In the OSN domain, interest in access control and privacy protection is quite recent. As far as privacy is concerned, current work is mainly focusing on privacy-preserving data mining techniques which is protecting information related to the network, i.e., relationships/ nodes, while performing social

network analysis. Works more related to their proposals are those in the field of access control. In this field, many different access control models and related mechanisms have been proposed so far, which mainly differ on the expressivity of the access control policy language and on the way access control is enforced. They use a similar idea to identify the users to which a filtering rule applies. However, the overall goal of their proposal is completely different, since they mainly deal with filtering of unwanted contents rather than with access control. As such, one of the key ingredients of their system is the availability of a description for the message contents to be exploited by the filtering mechanism as well as by the language to express filtering rules.

Content-based filtering has been widely investigated by exploiting ML techniques as well as other strategies. The advantages of using ML filtering strategies over ad-hoc knowledge engineering approaches are a very good effectiveness, flexibility to changes in the domain and portability in different applications. This system providing customizable content-based approach to avoid unwanted messages from user wall, based on ML techniques. However, the work has relationships both with the state of the art in content-based filtering, as well as with the field of policy-based personalization for OSNs and, more in general, web contents. Therefore, literature survey in both these fields is as follows.

### A. Content based filtering

As a result, a content-based filtering system selects information items based on the correlation between the content of the items and the user preferences as opposed to a collaborative filtering system that chooses items based on the correlation between people with similar preferences<sup>[8]</sup>. While electronic mail was the original domain of early work on information filtering, many related projects have addressed different domains including newswire articles, Internet “news” articles, and broader network resources<sup>[13],[11]</sup>. Documents processed in content-based filtering are mostly textual in nature and this makes content-based filtering close to text

classification. The task of filtering can be modelled as a case of classification, dividing all incoming documents into non relevant and relevant categories.

Content-based filtering is mainly based on the use of the ML paradigm according to which a classifier is automatically induced by learning from a set of pre-classified examples. The application of content-based filtering on messages posted on OSN user walls poses additional challenges given the short length of these messages other than the wide range of topics that can be discussed. Up to now Short text classification has received little attention in the scientific community<sup>[4]</sup>. Recent work highlights difficulties in defining many robust features, essentially because of the fact that the description of the short text is concise with many spellings mistakes, non standard terms and noise. Zelikovitz and Hirsh attempt to improve the classification of short text strings developing a semi supervised learning strategy based on a combination of labelled training data plus a secondary corpus of unlabeled but similar large documents. This solution is not applicable in the domain in which short messages are not summary and even not a part of large semantically related documents.

A different approach is proposed by Bobicev and Sokolova that circumvent the problem of error-prone feature construction by adopting a statistical learning method that can perform reasonably well without having feature engineering. However, Prediction by Partial Mapping method, generates a language model that is used in probabilistic text classifiers which are hard classifiers in nature and do not easily integrate soft classifier that is multi-membership paradigms. In this scenario, for defining flexible policy-based personalization strategies<sup>[5]</sup> consider gradual membership to classes a key feature.

### B. Policy-based personalization of OSN contents

Policy based personalization has been applied to number of contexts. According to user defined policies it adapts a service in specific context. The policy based system which focuses on Twitter. It defines & allocates a category to every tweet and display only those tweet to the user who is of

interest. In this scenario, policy based personalization represent the ability of the user to filter wall messages according to filtering criteria specified by user. In contrast, Golbeck and Kuter<sup>[15]</sup> propose an application, given a name FilmTrust that makes the use of OSN trust relationships and provenance information to personalize access to the website. However this kind of system doesn't provide a policy layer for filtering by which the user can exploit the result of the classification process to decide how and to which extent filtering out the information which is not required.

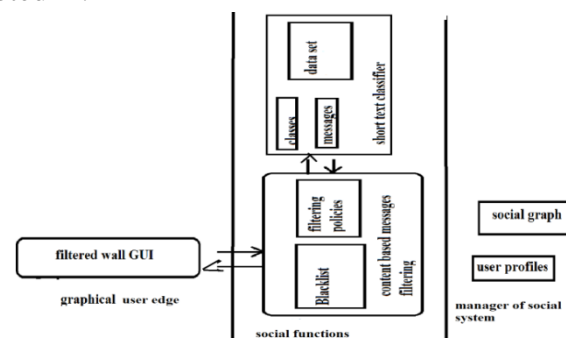
In contrast, filtering policy language allows the setting of FRs according to a different criteria, that will not consider only the output or results of the classification process but also the relationships of the wall owner with other OSN users as well as information on the user profile<sup>[7]</sup>. Furthermore, system is complemented by a flexible mechanism for BL management that provides a further opportunity of customization to the filtering procedure. The only social networking service that is aware of providing filtering abilities to its users is MyWOT social networking service which gives its subscribers the ability to: 1) rate resources according to four criteria: truthfulness, trader or vendor reliability, privacy, and safety of child 2) specify preferences determining whether the browser should block access to a given or specified resource, or should simply give a warning message on the basis of the specified rating. In spite of the presence of some similarities, the method adopted by MyWOT is somehow different from this system. Particularly it supports filtering criteria which are less flexible than the ones of Filtered Wall.

### 3. METHODOLOGY

Rules of filtering have to permit user for declaring restraint on the makers of message where filter rule concerns are particularly based on various different measures, one of the most applicable is by arresting conditions on their attributes of profiles. Towards robotically allocate by every message of small text, several groups on the basis of material, techniques of machine learning text categorization were made

used. Information filtering in online social networking can moreover be used for a various, additionally sensitive function. In support of services of online social networks, the architecture is a structure of three-tier shown in fig1.

To make available the basic functionalities of online social network, the initial layer, known as social network manager, usually aims. The layer of second makes available the support for external applications of social network applications. Blacklists can also be used to improve the process of filtering. To enforce the filtering rules precise by the user the initial component makes use of the categorization of message provided by means of the module of short text classifier. Consistent with the user needs filtering rules can hold up a multiplicity of criteria of dissimilar sort out which is shared in addition to modification. In addition to the output of the process of machine learning categorization the filtering rules develop user profiles, relationships of user to position the filtering standard to be imposed. To situate any category of messages on the wall of user, the system makes available the maintenance intended for black lists of user-defined, specifically lists of users that are for the short term prevented<sup>[4][5]</sup>. Rules of filtering have to permit user towards declaring restraints on top of the designer of message where a filter rule concerns are particularly on the basis of various different measures, one of the most applicable is by arresting conditions on their attributes of profiles. It is, probable to describe rule pertaining merely in the direction of youthful makers otherwise for makers by means of specified view of devoted<sup>[6]</sup>.



**Fig:** An overview of Filtered wall conceptual design

In Accordance to the research some prime methodologies are Short Text Classifier (STC) in which a Text representation, Machine learning based classification is considered and another is the Content Based Message Filtering (CBMF).

#### A. Short text classifier

Established techniques used for text classification work well on datasets with large documents such as newswires corpora, but suffer when the documents are short. Within this context, critical aspects are the definition of a set of characterizing and discriminant features allowing the representation of underlying concepts and the collection of a complete and uniform set of supervised examples. The goal of study is designing and evaluating various representation techniques in combination with a neural learning strategy to categorize short texts semantically. Keeping ML point of view in mind, the task is approached by defining a hierarchical two level strategy assuming that it is better to identify and eliminate “neutral” sentences, then classify “non neutral” sentences by the class of interest instead of doing everything in one step<sup>[12]</sup>. This choice is motivated by related work showing advantages in classifying text and/or short texts using a hierarchical strategy. The first level task is conceived as a hard classification in which short texts are labelled as neutral and non neutral crisp set. In the second level soft classifier acts on the crisp set of non-neutral short texts and, for each of them, it “simply” generates estimated appropriateness or “gradual membership” for each of the conceived classes, without considering any “hard” decision on any of them. Such type of grades is then used by the subsequent phases of the filtering process<sup>[1],[3]</sup>.

#### B. Classification based on machine learning

Short text categorization is considered as a hierarchical two-level process of classification. In the first-level, the classifier will perform a binary hard categorization that labels messages or text as Neutral and Non-Neutral. The first-level filtering action facilitates the subsequent second-level task in which a classification is performed which is finer-

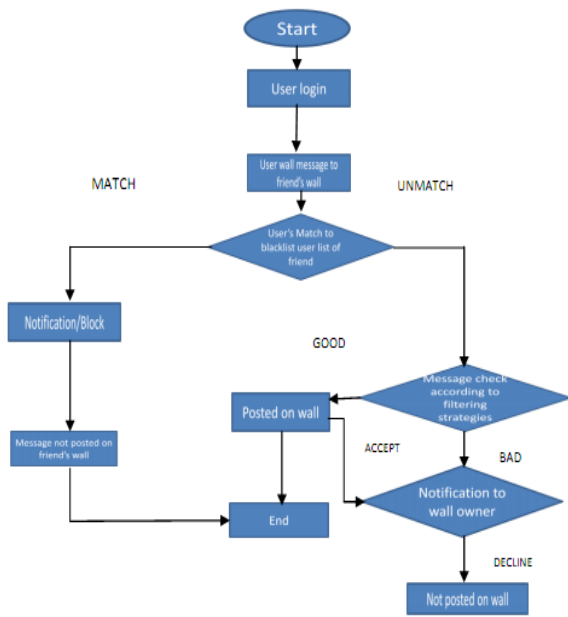
grained. The second-level classifier performs a task of soft-partition of Non-neutral text or messages assigning a given message a gradual membership to each of the non neutral classes. Among the number of multi-class ML models for text classification, for the experimented behaviour Neural Network is adopted with respect to other state of the art classifiers<sup>[6],[9]</sup>.

#### C. Content based message filtering

As a result, a content-based filtering system selects information items based on the correlation between the content of the items and the user preferences as opposed to a collaborative filtering system that chooses items based on the correlation between people with similar preferences<sup>[14]</sup>. While electronic mail was the original domain of early work on information filtering, many related projects have addressed different domains including newswire articles, Internet “news” articles, and broader network resources<sup>[10],[11]</sup>. Documents processed in content-based filtering are mostly textual in nature and this makes content-based filtering close to text classification. The task of filtering can be modelled, as a case of classification, dividing or partitioning all incoming documents into relevant and non relevant categories. Content-based filtering is mainly based on the use of the ML paradigm.

#### 4. PROPOSED SYSTEM

Main aim of proposed system is to build a system that allows OSN users to have a direct control on the messages posted on their walls. Avoid messages from undesired creators (blacklist user), independent from their contents and allow users to state constraints on messages (filtering rules). Following is the flowchart of proposed system.



**Fig:** Flowchart of Proposed System

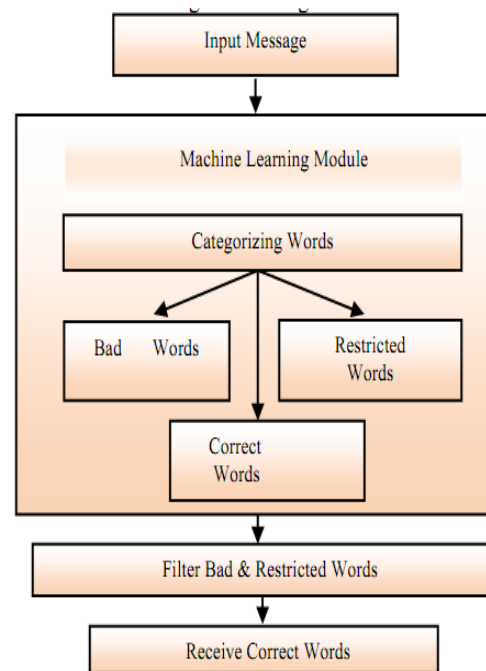
**I. MACHINE LEARNING**

Machine Learning is “The ability of a machine to improve its performance based on previous results.” Basic schema of a Artificial Neural Networks is used for machine learning, also known as “Artificial Neural nets” or ANN. ANN are a computational tool used on the interconnection of the neuron in the nervous systems of the human brain and that of other organisms. Biological Neural Nets (BNN) is the naturally occurring similar to the ANN. Artificial neural networks is very different from biological networks, although many characteristics of biological systems are faithfully reproduced in the artificial systems. Artificial neural nets are a kind of non-linear processing system that is ideally suited for a many range of tasks, especially for those tasks where there is no existing algorithm for completion of task. ANN can also be used to train & to solve certain problems using a teaching method and sample data. In this way, similar type of constructed ANN can be used to perform different tasks depending on the training received. When proper training is provided, ANN can be capable of generalization, the ability to identify similarities among different input patterns that have been corrupted by noise.

**II. INFORMATION FILTERING & BLACKLIST**

An information filtering scheme is an information organization designed in support of unstructured or else semi structured information. This contrasts by means of a distinctive database function that involves extremely controlled information, for instance employee records. The idea of structure being employed is not merely that information conform towards a set-up for instance a record type explanation, but moreover that fields concerning records consist of uncomplicated data types through distinct meanings.

Information retrieval has been considered in a range of methods, from an explanation of its objective, to comparatively abstract model of its processes. A range of characteristics set intended for text classification was introduced conversely; majority of suitable feature set in addition to depiction of feature for messages of short text have not been looked at. Filtering applications naturally entail streams concerning incoming information, moreover being transmitted by distant sources. Filtering was used to explain the procedure of accessing as well as retrieving information from distant databases, in which incoming information is the consequence of database searches.



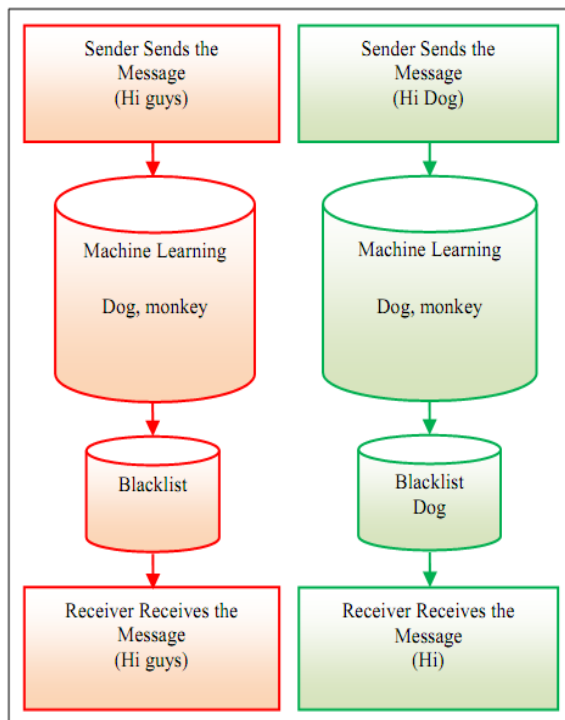
**Fig:** Filtering Process



Filtering rules are extremely stretchy in terms of filtering needs they can sustain, in that they permit to identify filtering situation basis on user profile, as well as the yield of machine learning classification procedure. The system makes available the support in support of user defined blacklist organization, specifically, listing of users that are provisionally prohibited to position messages on user wall.

By a graphical user interface particularly, users interrelate with the system to set up and direct their filtering rules or blacklists [8]. To put into effect the filtering and the rules of blacklists, filtered wall makes use of metadata that is provided by means of the classifier, accompanied by data which is removed from shared graph besides the profiles of user.

A further component of the system is a BL mechanism to avoid messages from unrecognized creators, which are not depending on their contents. Black list are directly managed by the system admin or by the system, which should be able to determine which users to be inserted in the BL and decide when users retention in the BlackList will finished. To increase flexibility, such information is given to the system through a set of rules called BL rules.



**Fig:** Blacklisting Process

## 5. RESULTS

Selection of data point based on the association connecting items substance and preferences of users in preference to a system of combined sorting out system which selects entities on basis of association among individuals by means of comparable inclinations. Main exact grouping introduction of contextual information appreciably get better aptitude of classifier in the direction of precisely differentiate among classes of non-neutral and making additionally dependable entire strategies exploiting classes of non-neutral. In content-based system, users are supposed for functioning separately. For component of content-based condition on top of the subsequent stage is to some extent less excellent. Results can be attained by means of the component of the content-based requirement, by renowned information filtering techniques, on top of classification of initial stage was measured well sufficient in addition to sensibly associating with the attained ones.

## 6. CONCLUSION

Filtering rules are extremely stretchy in terms of filtering needs they can sustain, in that they permit to identify filtering situation basis on user profile, as well as the yield of machine learning classification procedure. The system makes available in support of user defined blacklist organization, specifically, listing of users that are provisionally prohibited to position messages on user wall. To put into effect the filtering and the rules of blacklists, filtered wall makes use of metadata.

Thus this project describes different approaches to filter unwanted messages in online social network. Additionally the flexibility of a system can be enhanced through filtering rules and blacklist management and also studied, strategies and techniques limiting the inferences that a user can do on the enforced filtering rules with the aim of bypassing the filtering system. With the help of blacklist rules created users those are sending unwanted messages continuously will be blocked automatically after some attempts.

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