An application of customizable content-based filtering for unwanted messages on OSN walls

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ABSTRACT:
The attempt of the present work is consequently to propose and experimentally estimate an automated system called Filtered Wall (FW) which is capable to filter unwanted messages from OSN user walls. We develop Machine Learning (ML) text categorization techniques to automatically allocate with each short text message a set of categories based on its content. One essential issue in today’s Online Social Networks (OSNs) is to give users the facility to control the messages posted on their own private space to avoid that unwanted content is displayed. Up to now OSNs afford little support to this requirement. To fill the gap we propose a system allowing OSN users to have a direct organize on the messages posted on their walls. This is achieved through a flexible rule-based system that let users to adapt the filtering criterion to be applied to their walls and a Machine Learning-based soft classifier automatically labelling messages in support of content-based filtering. The main efforts in building a healthy short text classifier (STC) are concentrated in the taking out and selection of a set of characterizing and distinguish features. Another new technique machine learning text categorization techniques to automatically assign with each short text message a set of categories based on its content.

KEYWORDS: Online social networks, information filtering, short text classification, policy-based personalization.

INTRODUCTION:
In OSNs information filtering can also be used for a different more sensitive purpose. This is appropriate to the fact that in OSNs there is the opportunity of posting or commenting other posts on particular public/private areas called in general walls. Information filtering can consequently be used to give users the capability to automatically control the messages written on their own walls by filtering out unwanted messages. We consider that this is a key OSN service that has not been provided so far. Indeed today OSNs offer very little support to prevent unwanted messages on user walls. Daily and incessant communications entail the exchange of several types of content including free text, image, audio and video data. According to Face book average user creates 90 pieces of content each month whereas more than 30 billion pieces of content web links, news stories, blog posts, notes, photo albums, etc. are shared every month. The enormous and dynamic character of these data creates the principle for the employment of web content mining strategies intended to automatically discover useful information inactive within the data. They are influential to provide an active support in compound and sophisticated tasks involved in OSN management such as for occurrence access control or information filtering.

RELATED WORK:
The present paper considerably extends for what apprehension both the rule layer and the classification module. Most important differences comprise a different semantics for filtering rules to better fit the considered domain. An online setup assistant (OSA) to help users in FR specification the conservatory of the set of features measured in the classification process a more deep presentation assessment study and an update of the prototype performance to reflect the changes made to the classification techniques. The main contribution of this paper is the intend of a system providing customizable content-based message filtering for OSNs based on ML techniques. However our 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. Consequently in what follows we survey the literature in both these fields.
LITERATURE SURVEY:

The proposed approach was implemented using both a feed forward/back propagation neural network and a support vector machine. Two experiments were calculated and behaviour to compare the proposed Web-feature approach with two existing Web page filtering methods a keyword-based approach and a lexicon-based approach. The experimental results showed that the proposed approach in general executed better than the benchmark approaches particularly when the number of training documents was small. The proposed approaches can be applied in topic-specific search engine expansion and other Web applications such as Web content management.

EXISTING METHOD:

Provided that this service is not only a theme of using previously defined web content mining techniques for a different application rather it dictate to design ad-hoc classification strategies. This is due to wall messages are constitute by short text for which traditional classification methods have serious limitations since short texts do not provide sufficient word occurrences. Now a day’s OSNs provide diminutive support to avoid unwanted messages on user walls. For instance, Face book allows users to state who is authorized to add messages in their walls i.e., friends, friends of friends, or defined groups of friends. However, no content-based predilection is supported and therefore it is not possible to avert undesired messages such as political or vulgar ones, no matter of the user who posts them.

DISADVANTAGES:

The request of content-based filtering on messages posted on OSN user walls poses supplementary challenge given the short length of these messages other than the wide range of topics that can be discussed. Short text categorization has received up to now few attentions in the scientific community. Information filtering systems are considered to categorize a stream of dynamically generate information dispatched asynchronously by an information producer and present to the user those information that are probable to satisfy the requirements.

PROPOSED METHOD:

OSNs the mainstream of access control models proposed so far implement topology-based access control according to which access control requests are articulated in terms of relationships that the requester should have with the resource owner. A classification method has been proposed to sort out short text messages in order to keep away from overwhelming users of micro blogging services by raw data. Indeed since we are dealing with filtering of unwanted contents rather than with access control one of the key ingredients of our system is the accessibility of a description for the message contents to be exploited by the filtering mechanism. Filtering policy language broadens the proposed languages for access control policy specification in OSNs to deal with the extended requirements of the filtering domain.

ADVANTAGES:

It identifies preferences influential whether the browser should block access to a given resource or should simply return a warning message on the basis of the specified rating. In particular it supports filtering criteria which are far less supple than the ones of Filtered Wall since they are only based on the four above-mentioned criteria. Furthermore no automatic categorization mechanism is provided to the end user. A social networking service which gives its subscribers the facility to rate resources with respect to four criteria like trustworthiness, vendor reliability, privacy, and child safety.

SYSTEM ARCHITECTURE:
The core mechanism of the proposed system is the Content-Based Messages Filtering (CBMF) and the Short Text Classifier modules. The final component aspires to classify messages according to a set of categories. In dissimilarity the first component develops the message classification provided by the STC module to enforce the FRs specified by the user. BLs can also be used to improve the filtering process. The path followed by a message from its writing to the possible final publication can be summarized. After entering the private wall of one of his/her contacts the user tries to post a message which is interrupted by FW. A ML-based text classifier extracts metadata from the content of the message. FW uses metadata provided by the classifier together with data extracted from the social graph and users’ profiles to put into effect the filtering and BL rules. Depending on the result of the previous step the message will be published or filtered by FW.

SHORT TEXT CLASSIFIER:

We approach the assignment by defining a hierarchical two-level strategy assuming that it is better to classify and abolish neutral sentences and then sort non neutral sentences by the class of interest instead of doing everything in one step. This choice is stimulated by related work showing advantages in classifying text and short texts using a hierarchical approach. A set of distinguish and discriminate features allowing the demonstration of fundamental concepts and the collection of a complete and consistent set of instances.

TEXT REPRESENTATION:

Text representation using endogenous knowledge has a good common applicability. However in operational settings it is genuine to use also exogenous knowledge like any source of information outside the message body but directly or indirectly associated to the message itself. The most suitable characteristic set and feature demonstration for short text messages have not yet been adequately investigated. Proceeding from these considerations and on the basis of our experience we consider three types of features such as BoW, Document properties (Dp) and Contextual Features (CF). The first two types of features already used in are endogenous as they are completely derived from the information contained within the text of the message.

MACHINE LEVEL-BASED CLASSIFICATION:

The complexity of fulfilling this constraint is fundamentally related to the subjective character of the interpretation process with which an expert chooses whether to organize a document under a given category. The compilation of pre-classified messages presents some significant characteristics mostly affecting the performance of the generally classification approach. A ML-based classifier requests to be trained with a set of adequately absolute and reliable pre-classified data.

FILTERING RULES:

A message is therefore available only if it is not blocked by any of the filtering rules that apply to the message creator. A filtering rule FR is a tuple (author, creatorSpec, contentSpec, action), where author is the user who specifies the rule. More than a filtering rule can apply to the same user. Furthermore that it may happen that a user profile does not enclose a value for the attributes referred by a FR We ask the wall owner to make a decision whether to block or notify messages instigating from a user whose profile does not match against the wall owner FRs because of missing attributes. In that situation, the system is not able to assess whether the user profile matches the FR. Since how to deal with such messages depend on the measured situation and on the wall owner attitudes.

BLACKLISTS:

To improve suppleness such information are given to the system through a set of rules called as BL rules. They are not supposed as general high-level directives to be functional to the whole community. Rather we decide to let the users themselves, the
wall’s owners to state BL rules adaptable who have to be disqualified from their walls and for how long. Therefore a user might be excluded from a wall by, at the same time being capable to post in other walls. BLs is directly supervised by the system which should be capable to establish who are the users to be placed in the BL and decide when user’s retention in the BL is finished.

DICOMFW:

As a future extension we want to integrate background information related to the name of all the groups in which the user participates suitably weighted by the participation level. It is important to stress that this type of contextual information is related to the environment preferred by the user who wants to post the message thus the experience that you can try using DicomFW is reliable with what described and evaluated. To summarize our application permits to view the list of users’ FWs. View messages and post a new one on a FW. Define FRs using the OSA tool. When a user tries to post a message on a wall he/she receives an alerting message if it is blocked by FW.

ALGORITHM

Filtering rule.

A filtering rule FR is a tuple

(Author, creator Spec, content Spec, action), where:

- Author is the user who specifies the rule;
- Creator Spec is a creator specification, specified according to Definition 1;
- Content Spec is a Boolean expression defined on content

Constraints of the form (C; ml), where C is a Class of the first or second level and ml is the minimum Membership level threshold required for class C to Make the constraint satisfied;

- Action 2 fblock; notifyg denotes the action to be performed by the system on the messages matching content Spec and created by users identified by creat orSpec.

UNIVERSAL MATCH BASED ALGORITHM:

- The algorithm starts out with group formation, during which all nodes that have not yet been grouped are taken into consideration, in clustering-like fashion.
- In the first run, two nodes with the maximum similarity of their neighborhood labels are grouped together.
- Their neighbor labels are modified to be the same immediately so that nodes in one group always have the same neighbor labels.
- Then nodes having the maximum similarity with any node in the group are clustered into the group till the group has `nodes with different sensitive labels.
- Thereafter, the algorithm proceeds to create the next group. If fewer than `nodes are left after the last group’s formation, these remainder nodes are clustered into existing groups according to the similarities between nodes and groups.
- After having formed these groups, we need to ensure that each group’s members are indistinguishable in terms of neighborhood information.
- Thus, neighborhood labels are modified after every grouping operation, so that labels of
nodes can be accordingly updated immediately for the next grouping operation.

- This modification process ensures that all nodes in a group have the same neighborhood information.

CONCLUSION:

The early encouraging results we have get hold of on the categorization procedure prompt us to continue with other work that will aspire to get better the quality of classification. In particular future plans consider a deeper investigation on two interdependent tasks. The first concerns the extraction and/or selection of contextual features that have been shown to have a high discriminative power. The second task occupies the learning phase. Since the underlying domain is dynamically changing, the collection of reclassified data may not be representative in the longer term. The present batch learning strategy based on the preliminary collection of the entire set of labelled data from experts allowed an accurate experimental evaluation but needs to be evolved to comprise new operational requirements. In future work we plan to address this problem by investigating the use of online learning paradigms able to include label feedbacks from users. Additionally we plan to enhance our system with a more sophisticated approach to decide when a user should be inserted into a BL.

REFERENCES:

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