

A Survey of Filtering System for OSN (Online Social Networks)

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Abstract

In recent years, Online Social Networks (OSNs) have become an important part of daily life. Users build explicit networks to represent their social relationships. Users can upload and share information related to their personal lives. The potential privacy risks of such behavior are often ignored. And the fundamental issue in today On-line Social Networks is to give users the ability to control the messages posted on their own private space to avoid that unwanted content is displayed. Today OSNs provide very little support to prevent unwanted messages on user walls. For that purpose, we proposed a new system allowing OSN users to have a direct control on the messages posted on their walls. This is achieved through a flexible rule-based system that allows users to customize the filtering criteria to be applied to their walls, and a Machine Learning (ML) based soft classifier automatically labeling messages in support of content-based filtering. The system exploits a ML soft classifier to enforce customizable content-dependent Filtering Rules. And the flexibility of the system in terms of filtering options is enhanced through the management of Blacklists. The proposed system gives security to the On-line Social Networks.

Keywords

Online Social Networks, Machine Learning, Filtering Rules, Content-based filtering, Filtering system.

I. Introduction

Information and communication technology plays a significant role in today's networked society. It has affected the online interaction between users, who are aware of security applications and their implications on personal privacy. There is a need to develop more security mechanisms for different communication technologies, particularly online social networks. OSNs provide very little support to prevent unwanted messages on user walls. With the lack of classification or filtering tools, the user receives all messages posted by the users he follows. In most cases, the user receives a noisy stream of updates. In this paper, an information Filtering system is introduced. The system focuses on one kind of feeds: Lists which are a manually selected group of users on OSN. List feeds tend to be focused on specific topics; however it is still noisy due to irrelevant messages. Therefore, we propose an online filtering system, which extracts such topics in a list, filtering out irrelevant messages [1]. Following is the conceptual architecture of Filtering System.

In OSNs, information filtering can also be used for a different, more sensitive, purpose. This is due to the fact that in OSNs there is the possibility of posting or commenting other posts on particular public/private areas, called in general walls. In the proposed system Information filtering can therefore be used to give users the ability to automatically control the messages written on their own walls, by filtering out unwanted messages. The aim of the present work is therefore to propose and experimentally evaluate an automated system, called Filtered Wall (FW), filter

unwanted messages from OSN user walls. We exploit Machine Learning (ML) text categorization techniques [2] to automatically assign with each short text message a set of categories based on its content.

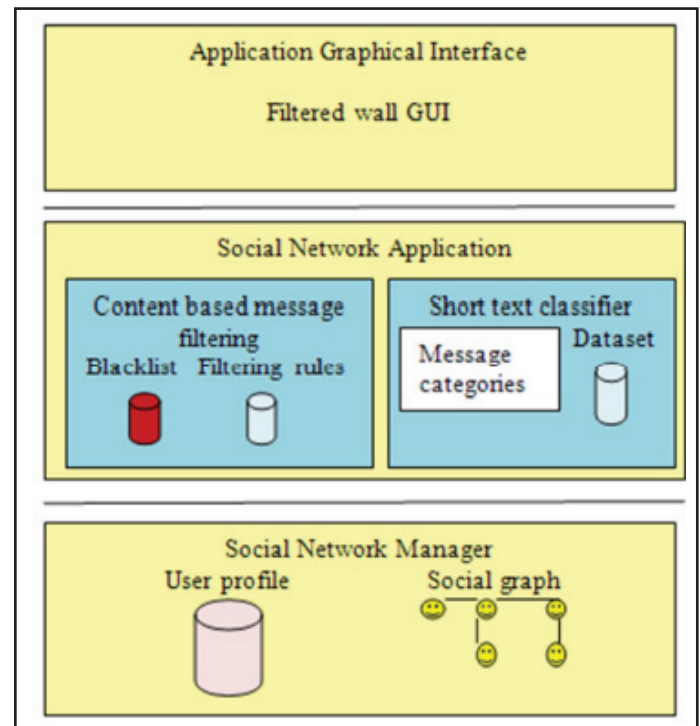


Fig. 1: Filtering System Conceptual Architecture

The major efforts in building a robust short text classifier are concentrated in the extraction and selection of a set of characterizing and discriminate features.

II. Literature Review

Marco Vanetti, Elisabetta Binaghi, elena Ferrari, Barbara Carminati, and Moreno Carullo [1] provide the user to have a straight rule over their own wall to avoid the unwanted messages. Aim of this paper is, user have a direct control over messages posted on their own wall. So automated system called Filtered wall (FW), which have a capacity to filter unwanted message. This system will block the undesired message send by the user. Drawback of this paper is the user will not be blocked, only the message posted by the user will blocked. Content based message filtering and short text classifier support this system. To overcome the problem of this paper, Blacklist rule will be implemented as future enhancement.

L.Roy and R.J.Mooney [16] uses Collaborative filtering method, but in the proposed system content based recommendation is used. It explain a content based book recommending system that develop information extraction and machine learning algorithm for text categorization.

B.Carminati, M.Vanetti, E.ferrari, M.Carullo, and E.Binaghi [8] Quality of classification is considered as the main aim. This system

can usually take decision about the messages which is blocked, due to the tolerance depends on statistical data.

F. Sebastiani [3] Efficiency is good, labor power will be saved is the advantage of this paper. The main approach used here is text categorization. Comparison will be performed between human expert and labor power expert.

H. Schütze, D. A. Hull, and J. O. Pedersen latent semantics indexing and feature selection used as an approach [9] comparison of this approaches will be done. Better performance will be taken. R. E. Schapire and Y. Singer [12] AdaBoost consist of two extension, specially planned for multi-class, multi labeled data. In first extension, learned classifier is evaluated to predict a good approximation of sets [12].

M. Chau and L. Roy [2] Related data are very complicated to find with search engine. Locations of relevant data, filtering irrelevant data are the issues. Web page is represented with content based and link based feature in proposed. Feed Forward and back propagation neural network approach is used for proposed system. Proposed approach can be applied for web content management.

A. Adomavicius and G. Tuzhilin [4] Recommender system's over view is explained. Main three approaches used in present generation of recommendation system are hybrid, content based and collaborative recommendation. Many restrictions of this system are elucidated. But argue to enlarge the advance system of recommender. So that this system can be used in wide variety. Extensions embrace sympathetic of users are enhanced, integrating the contextual information in recommendation method, sustain for multi criteria ranking.

B. Sriram, D. Fuhry, E. Demir, H. Ferhatosmanoglu, and M. Demirbas [5] in online services like twitter, users may grown to be plagued by the rare data. Resolution of this crisis is short text messages classification. To solve this problem, we suggest a small set of domain specific feature is haul out from user profile. This approach successfully classifies the text into generic classes.

V. Bodicev and M. Sokolova [6] classification of text enclose complex and specific terminology, need the application of learning method. Partial Matching method is applied which condense the text for confining the text feature. Partial matching develop a language model. The output of partial matching compression provides consistent precision of text classification.

J. Colbeck [7] Social network is the common interest group in web. To make the trust many explanations are required. Two level approaches are stated to combine annotation, trust and provenance. They state an algorithm for concluding trust relationship with provenance information and trust annotation in web social network. Film trust application is introduced which uses trust to movie rating and ordering the review.

M. Carullo, E. Binaghi, and I. Gallo [10] clustering of document is useful in many field. Two categories of clustering general purpose and text oriented, these both will be used for clustering of data. Novel heuristic online document clustering is anticipated, which is expert in clustering of text oriented parallel measures. Presentation measure is done in F-measure, then it will be match up with other methods.

III. Filtering Types

A. Content-based

Content Based filtering system recommends a document by matching the document profile with the user profile, using traditional information retrieval techniques such Term Frequency and Inverse Document frequency (TF-IDF). User characteristics

are gathered over time and profiled automatically based upon a user's prior feedback and choices. The system uses item to item correlation in recommending the document to the user. The system starts with the process of collecting the content details about the item, such as treatments, symptoms etc. for disease related item and author, publisher etc. for the book items. In the next step, the system asks the user to rate the items. Finally, system matches unrated item with the user profile item and assign score to the unrated item and user is presented with items ranked according to the scores assigned.

B. Collaborative Filtering

Collaborative filtering systems filters information based on the interests of the user (past history), and the ratings of other users with similar interests. It is widely used in many filtering systems or recommender systems, especially in ecommerce applications. One of the examples of such system are Amazon.com and e-Bay, where a user's past shopping history is used to make recommendations for new products.

C. Hybrid Filtering Systems

The hybrid filtering systems combines features of both the content and collaborative filtering systems. The hybrid system overcomes the problem of cold start and early rater problem by using the content based approach in the initial stage. In the subsequent stages, it uses collaborative filtering systems features, which helps the system to recommend all types of items, including multimedia items and overcomes the problem related to content based filtering techniques.

IV. Proposed Work

Our goal is to design an online message filtering system that is deployed at the OSN service provider side. Once deployed, it inspects every message before rendering the message to the intended recipients and makes immediate decision on whether or not the message under inspection should be dropped.

A. Working Modules:

1. Filtering Rules

The system provides a powerful rule layer exploiting a flexible language to specify Filtering Rules (FRs), by which users can state what contents should not be displayed on their walls.

2. Online Setup Assistant for FRs Thresholds

OSA presents the user with a set of messages selected from the dataset. For each message, the user tells the system the decision to accept or reject the message.

3. Blacklists

A further component of our system is a BL mechanism to avoid messages from undesired creators, independent from their contents.

V. Conclusion

In this paper, we describe our work to provide unwanted message filtering for social networks. We have presented a system to filter undesired messages from OSN walls. The system exploits a ML soft classifier to enforce customizable content-dependent FRs. Moreover, the flexibility of the system in terms of filtering options is enhanced through the management of BLs. we would like to remark that the system proposed in this paper represents just the

core set of functionalities needed to provide a sophisticated tool for OSN message filtering. Additionally, we 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, such as for instance randomly notifying a message that should instead be blocked, or detecting modifications to profile attributes that have been made for the only purpose of defeating the filtering system.

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