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Privacy Preserving and Collaborative Tagging with Facet Control

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Abstract: Collaborative tagging describes the process by which many users add metadata in the form of keywords to shared content. Collaborative tagging is one of the most popular service available online, that allow users to tag bookmarks, photographs and other content. The main purpose of tagging is to loosely classify either online or offline resources based on end user's feedback, expressed in the form of free-text labels (i.e., tags). In this paper we analyze how to classify resources, protect user privacy while tagging resources and searching and to enhance web access functionalities like content filtering based on the preference specified by end users. Tag suppression is a technique that has the purpose of preventing attackers from profiling user's interests on the basis of tags they specify. Our approach is to address two scenarios resource recommendation and parental control.

Keywords: Collaborative tagging, content filtering, privacy-enhancing, social bookmarking, tag suppression

I. INTRODUCTION

World Wide Web plays a vital role in our day today lives. Web browsers are the primary tool used to access the large quantity of information available online. Web revisitation is to re-find the previously viewed pages. However search engine suffer from fact that the user has to recall and hard to remember the combination of keywords in order to retrieve a specific web source. Bookmarks constitute the popular re-finding support as they optimize searching stage in comparison with search engine.

Users can search resources in web according to their personal preference. Several websites are displayed where user can bookmark their interested links. Collaborative tagging is used to support tag based resource discovery and browsing. Collaborative tagging enables user's to protect their privacy to let them hide certain user-generated contents without making them useless for the purpose they have been provided in a online service.

Our first contribution in this paper is privacy –enhancing N Technology namely tag suppression. Tag suppression is a technique which is used for preventing the privacy attackers from profiling user's interest on the basis of tags they specify (see Fig.1).

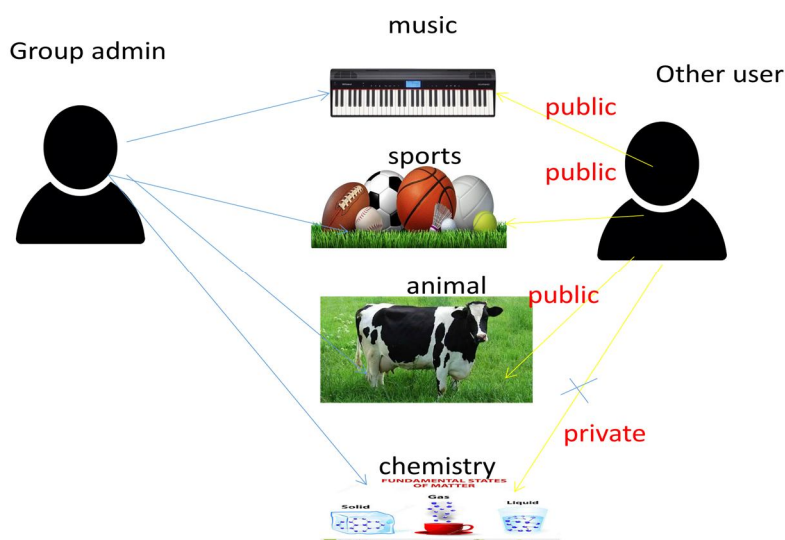


Fig 1: Tag suppression

While tagging user can suggest his own tag name or ask the server to suggest. The services are to enable user to specify policies to block the not wanted web content and to denote resource of interest. Then implements the Tag suppression technique. The

combination of these two services allows us the functionality of collaborative tagging and to provide user to preserve their privacy while tagging. Our performance is based on two scenario parental control and resource recommendation.

Section II consist of some work related to our target. Section III involves the feature of existing system and points out its lags. Section IV deals with the newly proposed system fulfilling our goal. Section V shows the result of our proposed work. Section VI concludes our idea and discusses the future extension of our proposed system.

II. RELATED WORK

To support personal web revisitation, a number of techniques and tools are developed and as well as how tag collections are advanced over this time. Apart from front and backward buttons, man mostly uses the bookmarking the favourite web pages in web browsers enables users to get back to the previously accessed pages. Observing to each and every users and web browsing, [2],[1] increases bookmarks automatically and ordered them in to a list of [2] or layered structure [1] respectively.

Social or Collaborative tagging is the earliest interested topic [5],[6]. For illustration, a recent work has done in tag recommendation and tag suppression. In tag suppression, while tagging, user can give their own tag name or server provides the suppressed tags where user can choose tag. If the link has multiple tags, the server suggest the past tags and links.

In both the cases, existing system binding in recommendation systems [3]. For illustration, in [7],[4], tags are foretell based on context. Social tagging is used to access the web resources. Another interesting concern in this tagging is the offline resource in social media (example: music, sports, etc) where relationship occur between users (see example : [8]) in the tags for specified users. Such issues are not enquired in social bookmarking.

In social tagging, privacy protection is another important issue that has not been investigated thoroughly. In this privacy protection content filtering plays a important role in content filtering recommendation. Content filtering is a web filter program that can screen an incoming web page to determine whether some or all of it should not be displayed to the user.

III. EXISTING SOLUTION

The collection of end-users private information stored by social services, is now recognized as a privacy threat it is worth nothing that the public availability of user-generated data (as the tags are) could be use to extract an accurate snap shot of users interest or users profiles, containing sensitive information, such as health-related information, political preferences, salary or religion.

Actually, the huge number of users using collaborative tagging services, and the fact that collaborative tagging is a service supported virtually by any social online application, increases the risk of cross referencing, there by seriously compromising user privacy. Indeed, it could be possible to correlate the account of a user with other accounts he/she may have at different services, which would imply gaining far more precise information about the user profile.

IV. PROPOSED SOLUTION

Proposed system protects user privacy to a certain extent, by dropping those tags that make a user profile show bias toward certain categories of interest. Tag suppression is a technique for preventing privacy attackers from profiling user interests on the basis of the tags they specify. Tag perturbation consists of specific user tags with general tag categories.

Proposed system addresses two scenarios: resource recommendation and parental control. Resource recommendation provides relevant resources based on user interest. Parental control concerns whenever a group user requests resource, group owner give privilege to access resources. We also provides Facet block for particular user.

To add group users, group owner has to register their details. After successful registration details are stored in database. When the group owner login, they can view their profile and can add users. Group owner set username and password to all group users. Using this username and password, user can view group owner's profile, bookmarks. Group user has to provide username and password given by group owner to register their details. Group owner can restricts users to view only specified contents.

User can search resources in web according to their personal preferences. If the user likes the link, can bookmark by giving tag for future tag search. While bookmarking, user can give multiple tags. Username, tag name, link and other details are stored in database. Tags given by user will be classified according to categories and stored in database. User can give access privileges to bookmarks. If the bookmark is private, only the user can view and if the bookmark is public, other users in the group can view the bookmarks.

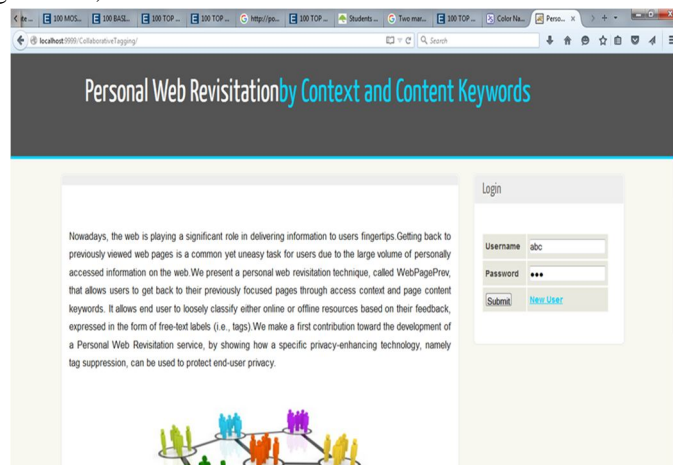
User tag the bookmark. While tagging, user can give own tag or ask server to suggest tags. Server provides suppressed tags where user can choose tag. All the bookmarking information will be stored in database. If the user searches tag, they can search in their bookmarks or in all bookmarks. If the link has multiple tags, user searched tag and other tags for that links will be displayed.

Group owner can add user for content filtration purpose. Group owner enable a web filter for group users by granting them access only to contents specified by group owner. By checking the available tag categories, group owner blocks the tags for users. Group user can access the tags by giving username and password. Group user has restrictions only in Tag Search. Group users can access search, bookmark, add bookmark. If any one of the facet is blocked to particular user, then he cannot access search, bookmark, and tag.

V. RESULT

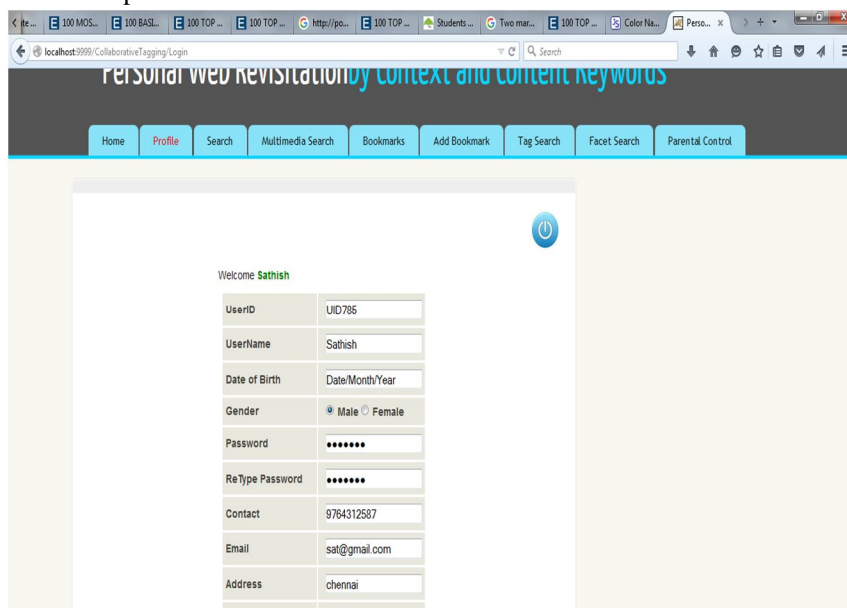
A. Registration

In these, Group owner has to register their details. Registration form should contain your name, address, Email id, phone number, DOB, gender. After successful registration, details are stored in database.



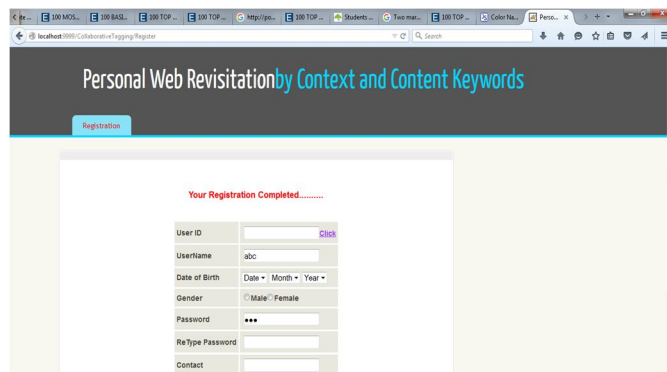
B. Login Admin Profile

After your registration is completed group owner have to give their username and password to view their page. When the group owner login, he/she can view his/her profile.



C. Add User

Here Group owner can add users. Group owner set username and password to all group users. Using this username and password, user can view group owner's profile, bookmarks etc.

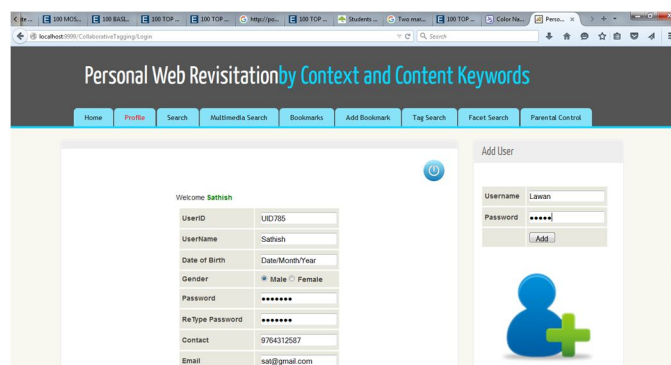


Personal Web Revisitation by Context and Content Keywords

Registration

Your Registration Completed.....

User ID	<input type="text"/>	Click
Username	abc	
Date of Birth	Date • Month • Year	
Gender	<input type="radio"/> Male <input type="radio"/> Female	
Password	***	
ReType Password	<input type="text"/>	
Contact	<input type="text"/>	



Personal Web Revisitation by Context and Content Keywords

Home Profile Search Multimedia Search Bookmarks Add Bookmark Tag Search Facet Search Parental Control

Welcome Sathish

User ID	UID785
Username	Sathish
Date of Birth	Date/Month/Year
Gender	<input checked="" type="radio"/> Male <input type="radio"/> Female
Password	*****
ReType Password	*****
Contact	976431267
Email	sai@gmail.com

Add User

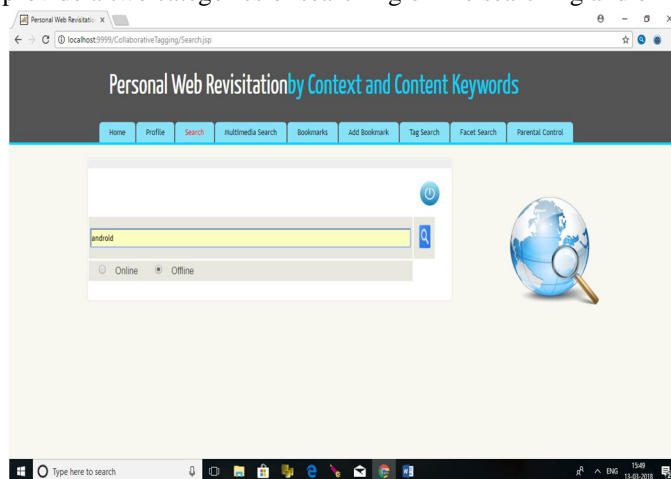
Username

Password

[Add](#)

D. Search and Bookmark

User can search resources in web according to their personal preferences. List of websites displayed where user can view his/her interested links. In search module provide a two categories of searching online searching and offline searching.



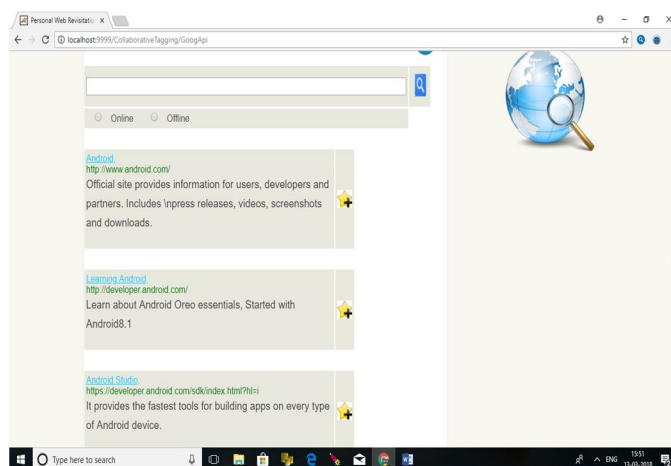
Personal Web Revisitation by Context and Content Keywords

Home Profile Search Multimedia Search Bookmarks Add Bookmark Tag Search Facet Search Parental Control

Search

Online Offline

Search



Personal Web Revisitation by Context and Content Keywords

Search

Online Offline

Search

Android

<http://www.android.com/>

Official site provides information for users, developers and partners. Includes inpress releases, videos, screenshots and downloads.

Learning Android

<http://developer.android.com/>

Learn about Android Oreo essentials, Started with Android8.1

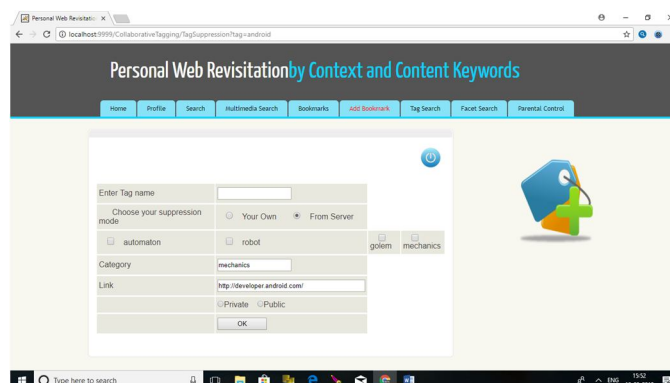
Android Studio

<https://developer.android.com/sdk/index.html#i>

It provides the fastest tools for building apps on every type of Android device.

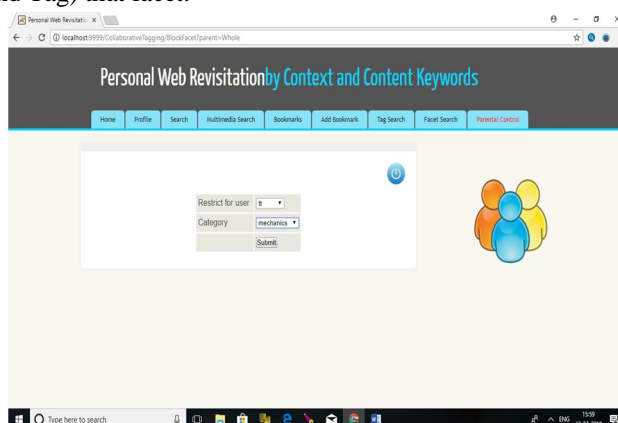
E. Tag suppression And Recommendation

User likes a link in web and bookmarks that link. User tag the bookmark. While tagging, user can give own tag or ask server to suggest tags. Server provides suppressed tags where user can choose tag. In this way, user protects their privacy while tagging.



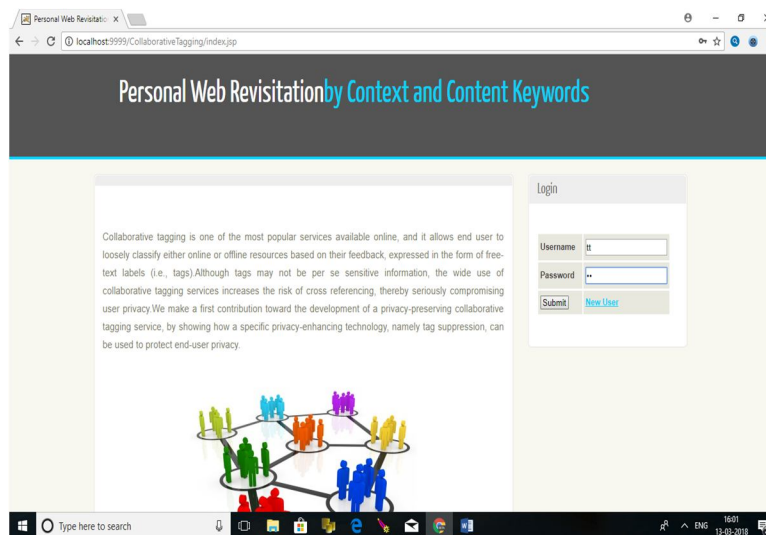
F. Parental Control:(Blocking)

Group owner denote which resources is un/safe. By checking the available tag categories, group owner blocks the tags for users. Group user can access the tags giving username and password. Group user has restrictions only in Tag Search. All the other services, group user can access (Search and bookmark, Add bookmark). If any one of the facet is blocked to particular user, then he cannot access (Search, Bookmark, and Tag) that facet.

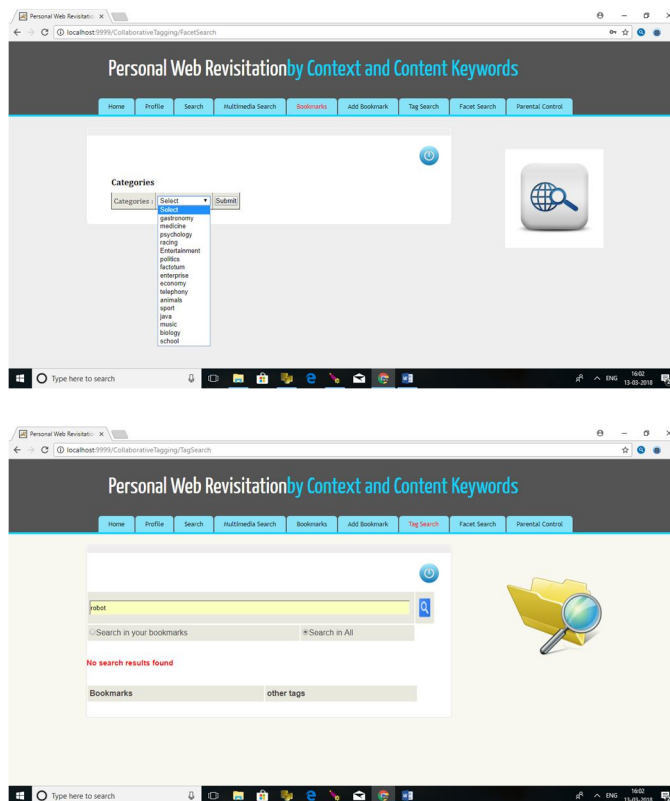


The category Mechanics will be blocked for the user

User login and view their profile.



User search for a category Mechanics. This category did not shown for this user.



VI CONCLUSION

Collaborative tagging is currently an extremely useful for online services. Although the collaborative tagging is mainly used to tag-based resource discovery and browsing, it could be exploited for other purposes.

One of these potential applications is the provision of web access functionalities such as content filtering and discovery. It would be necessary to extend the architecture of current collaborative tagging services so as to include a policy layer that supports the enforcement of user preferences.

In collaborative tagging, users tag resources on the web according to their personal preferences. Users therefore contribute to describe and classify those resources but this is inevitably at the expense of revealing their profile. This helps attacker to view users profile and collect user's information.

Our proposed system consists of a bookmarking service and two additional services built on it. . However, to achieve this enhanced use, the current architecture of collaborative tagging services must be extended by including a policy layer. The aim of this layer will be to enforce user preferences, intentionally denoting resources on the basis of the set of tags associated with them, and, possibly, other parameters concerning their trustworthiness (the percentage of users who have added a given tag, the social relationships and characteristics of those users, etc.).

The tradeoff between privacy on the one hand, and on the other hand, the effectiveness of the enhanced collaborative tagging services enabled by policy layer. Two key scenarios, for example, parental control and resource recommendation. Since we are not aware of similar experimental studies, we believe that what reported in this paper can be useful to evaluate further future developments in the area. Future work includes the development of a full prototype for the experimented system and its testing and use in further scenarios.

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