ADOPTIVE SEARCH ON WEB WITH SAFETY SECLUSION

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Abstract-

Adaptive search on web (ASW) has established its efficiency in improving the quality of various search services on the Web.evidences show that users' reluctance to disclose their private information during search has become a major barrier for the wide proliferation of ASW. We study privacy protection in ASW applications that model user preferences as hierarchical user profiles. We propose a ASW framework called UPS that can adaptively generalize profiles by queries while regarding user specified privacy necessities. overview aims at striking a balance between two prognostic metrics that evaluate the utility of Adaptive and the privacy risk of exposing the generalized profile. We present two greedy algorithms, namely GreedyDP and GreedyIL, for runtime generalization. We also provide an online prediction mechanism for deciding whether personalizing a query is beneficial. Extensive experiments demonstrate the effectiveness of our framework. The experimental results also reveal that GreedyIL significantly outperforms GreedyDP in terms of efficiency.

keywords* — Adaptive search on web ,data *Information ,GreedyDp , GreedyIL , Challenging issues, information mining, Security.

I. INRODUCTION

The solutions to ASW can generally be categorized into two types, namely click-log-based methods and profile-based ones. The click-log based methods are straightforward they simply impose bias to clicked pages in the user's query history. Although this strategy has been demonstrated to perform consistently and considerably well it can only work on repeated queries from the same user, which is a strong limitation confining its applicability. In contrast, profile-based methods improve the search experience with complicated user-interest models generated from user profiling techniques. Profile-based methods can be potentially effective for almost all sorts of queries, but are reported to be unstable under some circumstances the profile-based ASW has demonstrated more effectiveness in improving the quality of web search recently, with increasing usage of personal and behavior information to profile its users, which is usually gathered implicitly from query history browsing history click-through data bookmarks user documents, and so forth. Unfortunately, such implicitly collected personal data can easily reveal a gamut of user's private life. Privacy issues rising from the lack of protection for such data, for instance the AOL query logs scandal , not only raise panic among individual users, but also dampen the data-publisher's enthusiasm in offering adapted service. Unfortunately, the previous works of privacy preserving ASW are far from optimal. The problems with the existing methods are explained in the following observations The existing profile-based ASW do not support runtime profiling. A user profile is typically comprehensive for only once offline, and used to personalize all queries from a same user indiscriminatingly. Such "one profile fits all" strategy certainly has drawbacks given the variety of queries. This probably makes some user privacy to be overprotected while others insufficiently protected. all the sensitive topics are detected using an absolute metric called shocker based on the information theory, assuming that the interests with less user document support are more sensitive. However, this assumption can be doubted with a simple counterexample: If a user has a large number of documents about "sex," the shocker of this topic may lead to a conclusion that "femininity" is very general and not sensitive, despite the truth which is opposite. Many Adaptive techniques require iterative user interactions when creating Adaptive search results

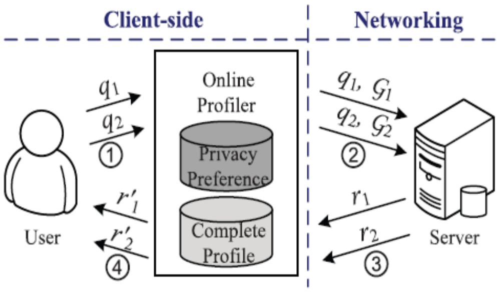

Fig .architecture

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1. When a user issues a query qi on the client, the proxy generates a user profile in runtime in the light of query terms. The output of this step is a generalized user profile Gi satisfying the privacy requirements. The generalization process is guided by considering two

conflicting metrics, namely the Adaptive utility and the privacy risk, both defined for user profiles.
2. Subsequently, the query and the generalized user profile are sent together to the ASW server for personalized search.
3. The search results are personalized with the profile and delivered back to the query proxy.
4. Finally, the proxy either presents the raw results to the user, or reranks them with the complete user profile.
UPS is distinguished from conventional ASW in that it
1) provides runtime profiling, which in effect optimizes the Adaptive utility while respecting user's privacy requirements
2) allows for customization of privacy needs; and
3) does not require iterative user interaction. Our main contributions are summarized as following:
We propose a privacy-preserving personalized web search framework UPS, which can generalize profiles for each query according to user-specified privacy requirements. . Relying on the definition of two conflicting metrics, namely Adaptive utility and privacy risk, for hierarchical user profile, we formulate the problem of privacy-preserving personalized search as _-Risk Profile Generalization, with itsNP-hardness proved.We develop two simple but effective generalization algorithms, GreedyDP and GreedyIL, to support runtime profiling. While the former tries to maximize the discriminating power (DP), the latter attempts to minimize the information loss (IL). By exploiting a number of heuristics, GreedyIL outperforms GreedyDP significantly.We provide an inexpensive mechanism for the client to decide whether to personalize a query in UPS. This decision can be made before each runtime profiling to enhance the stability of the search results while avoid the unnecessary exposure of the profile. . Our extensive experiments demonstrate the efficiency and effectiveness of our UPS framework.

1.2 MOTIVATIONS

To protect user privacy in profile-based ASW, researchers have to consider two contradicting effects during the search process. On the one hand, they attempt to improve the search quality with the Adaptive utility of the user profile. On the other hand, they need to hide the privacy contents existing in the user profile to place the privacy risk under control. A few previous studies suggest that people are willing to compromise privacy if the Adaptive by supplying user profile to the search engine yields better search quality. In an ideal case, significant gain can be obtained by Adaptive at the expense of only a small (and less-sensitive) portion of the user profile, namely a generalized profile. Thus, user privacy can be protected without compromising the personalized search quality. In general, there is a tradeoff between the search quality and the level of privacy protection achieved from generalization. Unfortunately, the previous works of privacy preserving ASW are far from optimal. The problems with the existing methods are explained in the following observations:

1. The existing profile-based ASW do not support runtime profiling. A user profile is typically generalized for only once offline, and used to personalize all queries from a same user indiscriminatingly. Such "one profile fits all" strategy certainly has drawbacks given the variety of queries. One evidence reported in this system is that profile-based Adaptive may not even help to improve the search quality for some ad hoc queries, though exposing user profile to a server has put the user's privacy at risk. A better approach is to make an online decision on
a. whether to personalize the query (by exposing the profile) and
b. what to expose in the user profile at runtime..
2. The existing methods do not take into account the customization of privacy requirements. This probably makes some user privacy to be overprotected while others insufficiently protected. For example, in this system, all the sensitive topics are detected using an absolute metric called surprisal based on the information theory, assuming that the interests with less user document support are more sensitive. However, this assumption can be doubted with a simple counterexample: If a user has a large number of documents about "sex," the surprisal of this topic may lead to a conclusion that "sex" is very general and not sensitive, despite the truth which is opposite. Unfortunately, few prior works can effectively address individual privacy needs during the generalization.
3. Many Adaptive techniques require iterative user interactions when creating personalized search results. They usually refine the search results with some metrics which require multiple user interactions, such as rank scoring, average rank, and so on. This paradigm is, however, infeasible for runtime profiling, as it will not only pose too much risk of privacy breach, but also demand prohibitive processing time for profiling. Thus, we need predictive metrics to measure the search quality and breach risk after Adaptive, without incurring iterative user interaction.

1.3 CONTRIBUTIONS

The above problems are addressed in our UPS (literally for User customizable Privacy-preserving Search) framework. The framework assumes that the queries do not contain any sensitive information, and aims at protecting the privacy in individual user profiles while retaining their usefulness for ASW.

As illustrated in this system, UPS consists of a no trusty search engine server and a number of clients. Each client (user) accessing the search service trusts no one but himself/ herself. The key component for privacy protection is an online profiler implemented as a search proxy running on the client machine itself.

The proxy maintains both the complete user profile, in a hierarchy of nodes with semantics, and the user-specified (customized) privacy requirements represented as a set of sensitive-nodes.

The framework works in two phases, namely the offline and online phase, for each user. During the offline phase, a hierarchical user profile is constructed and customized with the user-specified privacy requirements. The online phase handles queries as follows:

1. When a user issues a query qi on the client, the proxy generates a user profile in runtime in the light of query terms. The output of this step is a generalized user profile Gi satisfying the privacy requirements. The generalization process is guided by considering two conflicting metrics, namely the Adaptive utility and the privacy risk, both defined for user profiles.

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. We propose a privacy-preserving personalized web search framework UPS, which can generalize profiles for each query according to user-specified privacy requirements. Relying on the definition of two conflicting metrics, namely Adaptive utility and privacy risk, for hierarchical user profile, we formulate the problem of privacy-preserving personalized search as _-Risk Profile Generalization, with its NP-hardness proved. We develop two simple but effective generalization algorithms, Greedy DP and Greedy IL, to support runtime profiling. While the former tries to maximize the discriminating power (DP), the latter attempts to minimize the information loss (IL). By exploiting a number of heuristics, Greedy IL outperforms Greedy DP significantly. We provide an inexpensive mechanism for the client to decide whether to personalize a query in UPS. This decision can be made before each runtime profiling to enhance the stability of the search results while avoid the unnecessary exposure of the profile. Our extensive experiments demonstrate the efficiency and effectiveness of our UPS framework.

II. RELATED WORKS

In this section, we overview the related works. We focus on the literature of profile-based Adaptive and privacy protection in ASW system.

II.1 Profile-Based Adaptive

Previous works on profile-based ASW mainly focus on improving the search utility. The basic idea of these works is to tailor the search results by referring to, often implicitly, a user profile that reveals an individual information goal. In the remainder of this section, we review the previous solutions to ASW on two aspects, namely the representation of profiles, and the measure of the effectiveness of Adaptive. Many profile representations are available in the literature to facilitate different Adaptive strategies. Earlier techniques utilize term lists/vectors bag of words to represent their profile. However, most recent works build profiles in hierarchical structures due to their stronger descriptive ability, better scalability, and higher access efficiency. The majority of the hierarchical representations are constructed with existing weighted topic hierarchy/graph.

II.2 Privacy Protection in ASW System

Generally there are two classes of privacy protection problems for PWS. One class includes those treat privacy as the identification of an individual, as described .The other includes those consider the sensitivity of the data, particularly the user profiles, exposed to the PWS server. Typical works in the literature of protecting user identifications (class one) try to solve the privacy problem on different levels, including the pseudoidentity, the group identity, no identity, and no personal information. Solution to the first level is proved to fragileThe third and fourth levels are impractical due to high cost in communication and cryptography. Therefore, the existing efforts focus on the second level. anonymity on user profiles by generating a group profile of k users. Using this approach, the linkage between the query and a single user is broken. profile (UUP) protocol is proposed to shuffle queries among a group of users who issue them. As a result any entity cannot profile a certain individual. These works assume the existence of a trustworthy third-party anonymizer, which is not readily available over the Internet at large. Viejo and Castell_a-Roca use legacy social networks instead of the third party to provide a distorted user profile to the web search engine. In the scheme, every user acts as a search agency of his or her neighbors. They can decide to submit the query on behalf of who issued it, or forward it to other neighbors. The shortcomings of current solutions in class one is the high cost introduced due to the collaboration and communication.

III.PRELIMINARIES & PROBLEM DEFINITION

In this section, we first introduce the structure of user profile in UPS. Then, we define the customized privacy requirements on a user profile. Finally, we present the attack model and formulate the problem of privacy preserving profile generalization. For ease of presentation

3.1 User Profile

Consistent with many previous works in personalized web services, each user profile in UPS adopts a hierarchical structure. Moreover, our profile is constructed based on the availability of a public accessible taxonomy, denoted as R, which satisfies the following assumption.

$$sup_{\mathcal{R}}(t) = \sum_{t' \in C(t,\mathcal{R})} sup_{\mathcal{R}}(t'). \qquad (1)$$

$$Pr(t \mid s) = \frac{sup_{\mathcal{R}}(t)}{sup_{\mathcal{R}}(s)}, \quad t \in subtr(s, \mathcal{R}). \qquad (2)$$

Thus, $Pr(t)$ can be further defined as

$$Pr(t) = Pr(t \mid root(\mathcal{R})), \qquad (3)$$

A diagram of a sample user profile is illustrated in Fig. 2a, which is constructed based on the sample taxonomy repository in Fig. 2b. We can observe that the owner of this profile is mainly interested in Computer Science and Music, because the major portion of this profile is made up of fragments from taxonomies of these two topics in the sample repository. Some other taxonomies also serve in comprising the profile, for example, Sports and Adults.

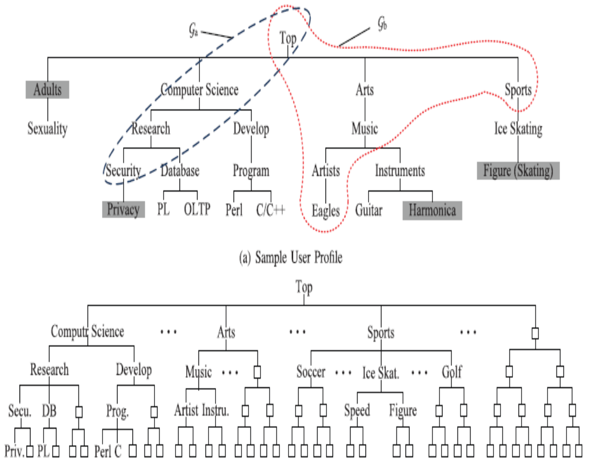


Fig 2 .adaptive search on web of privacy

IV.ATTACKER MODEL

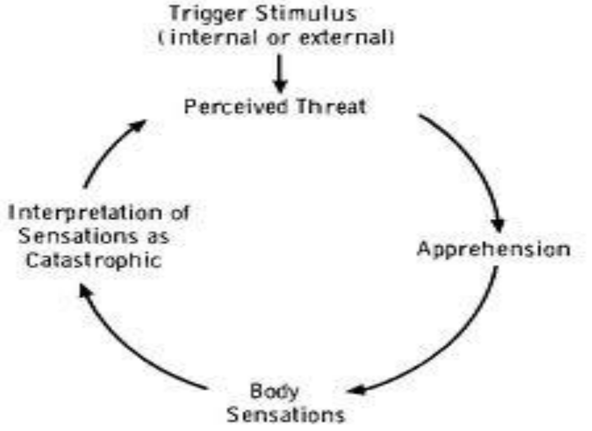


FIG 3.ATTACK MODEL

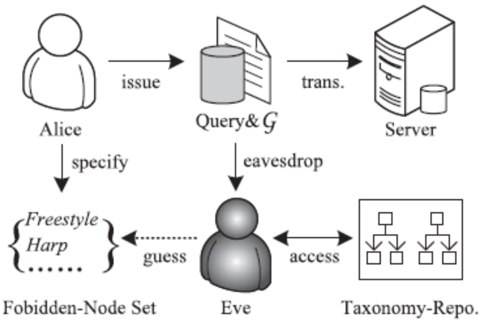


Fig.Attack In Adaptive Web Search

Alice's privacy, the eavesdropper Eve successfully intercepts the communication between Alice and the PWS-server via some measures, such as man-in themiddle attack, invading the server, and so on. Consequently, whenever Alice issues a query q, the entire copy of q together with a runtime profile G will be captured by Eve. Based on G, Eve will attempt to touch the sensitive nodes of Should Supporting Privacy Protection In Personalized Web Search .

Specifically, each user has to undertake the following procedures in our solution:

1. offline profile construction,
2. offline privacy requirement customization,
3. online query-topic mapping, and
4. online generalization.

1. For each *sensitive-node*, $cost(t) = sen(t)$;
2. For each *nonsensitive* leaf node, $cost(t) = 0$;
3. For each *nonsensitive* internal node, $cost(t)$ is sively given by (6) in a bottom-up manner:

$$cost(t) = \sum_{t' \in C(t,\mathcal{H})} cost(t') \times Pr(t' \mid t).$$

Then, the preference value of a topic $t \in \mathcal{H}$ is computed as following:

1. If t is a leaf node and $t \in T_{\mathcal{H}}(q)$, its preference $pref_{\mathcal{H}}(t, q)$ is set to the long-term user support $sup_{\mathcal{H}}(q)$,[3] which can be obtained directly from the user profile.
2. If t is a leaf node and $t \notin T_{\mathcal{H}}(q)$, $pref_{\mathcal{H}}(t, q) = 0$.
3. Otherwise, t is not a leaf node. The preference value of topic t is recursively aggregated from its child topics as

$$pref_{\mathcal{H}}(t, q) = \sum_{t' \in C(t,\mathcal{H})} pref_{\mathcal{H}}(t', \mathcal{H}).$$

Finally, it is easy to obtain the *normalized preference* for each $t \in \mathcal{H}$ as

v. GENERALIZATION TECHNIQUES

In this section, we first introduce the two critical metrics for our generalization problem. Then, we present our method of online decision on personalization. Finally, we propose the generalization algorithms.

V.I. Metrics

V.1.1 Metric of Utility

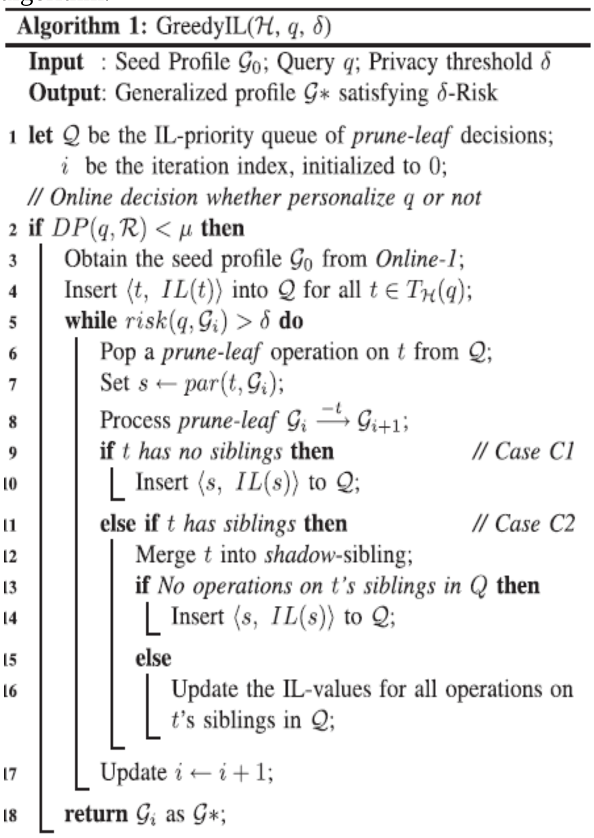
The purpose of the utility metric is to predict the search quality (in revealing the user's intention) of the query q on a generalized profile G. The reason for not measuring the search quality directly is because search quality depends largely on the implementation of PWS search engine, which is hard to predict. In addition, it is too expensive to solicit user feedback on search results. Alternatively, we transform the utility prediction problem to the estimation of the discriminating power of a given query q on a profile G under the following assumption.

The GreedyDP Algorithm

Given the complexity of our problem, a more practical solution would be a near-optimal greedy algorithm The first greedy algorithm GreedyDP works in a bottomup manner. The main problem of GreedyDP is that it requires recomputation of all candidate profiles (together with their discriminating power and privacy risk) generated

The GreedyIL Algorithm

The GreedyIL algorithm improves the efficiency of the generalization using heuristics based on several findings. One important finding is that any prune-leaf operation reduces the discriminating power of the profile. In other words, the DP displays monotonicity by prune-leaf. Formally, we have the following algorithm.



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Algorithm 1: GreedyIL($\mathcal{H}$, $q$, $\delta$)
Input  : Seed Profile $\mathcal{G}_0$; Query $q$; Privacy threshold $\delta$
Output: Generalized profile $\mathcal{G}*$ satisfying $\delta$-Risk

let $\mathcal{Q}$ be the IL-priority queue of prune-leaf decisions;
    $i$ be the iteration index, initialized to 0;
// Online decision whether personalize $q$ or not
if $DP(q, \mathcal{R}) < \mu$ then
    Obtain the seed profile $\mathcal{G}_0$ from Online-1;
    Insert $\langle t, IL(t) \rangle$ into $\mathcal{Q}$ for all $t \in T_{\mathcal{H}}(q)$;
    while $risk(q, \mathcal{G}_i) > \delta$ do
        Pop a prune-leaf operation on $t$ from $\mathcal{Q}$;
        Set $s \leftarrow par(t, \mathcal{G}_i)$;
        Process prune-leaf $\mathcal{G}_i \xrightarrow{-t} \mathcal{G}_{i+1}$;
        if $t$ has no siblings then                    // Case C1
            Insert $\langle s, IL(s) \rangle$ to $\mathcal{Q}$;
        else if $t$ has siblings then                  // Case C2
            Merge $t$ into shadow-sibling;
            if No operations on $t$'s siblings in $\mathcal{Q}$ then
                Insert $\langle s, IL(s) \rangle$ to $\mathcal{Q}$;
            else
                Update the IL-values for all operations on
                $t$'s siblings in $\mathcal{Q}$;
        Update $i \leftarrow i + 1$;
    return $\mathcal{G}_i$ as $\mathcal{G}*$;
```

FIG. Geedy IL Algorithm

VI. WEB MINING:

As the usage of web started to increase, so does the demand of data mining. Web mining is the application of data mining performance s to discover usage patterns from large Web repositories. It reveals interesting and unknown knowledge about both users and websites which can be used for analysis. It is used to understand customer behaviour, evaluate the effectiveness of a particular website and help quantify the success of a marketing campaign [3, 4]. Web mining can be classified into three types based on the type of data:

Web content mining – it is the process of extracting useful information and knowledge from the web contents/data/documents. Content may consist of text, images, audio, video or structured records such as lists and tables. Web content mining is differentiated from two different points of view: Information Retrieval View and Database View [5].

Web structure mining – it is the process of using graph theory to analyse the node and connection structure of a website. It tries to discover the underlying link structures of the web. It can be used to generate information on the similarity or the difference between different websites [4].

Web usage mining — it attempts to discover useful knowledge from the data obtained from web user sessions. It tries to find usage patterns from the web data to understand and better serve the needs of Web-based applications. Some applications of web usage mining are adaptive websites, web Adaptive and recommendation, business intelligence.

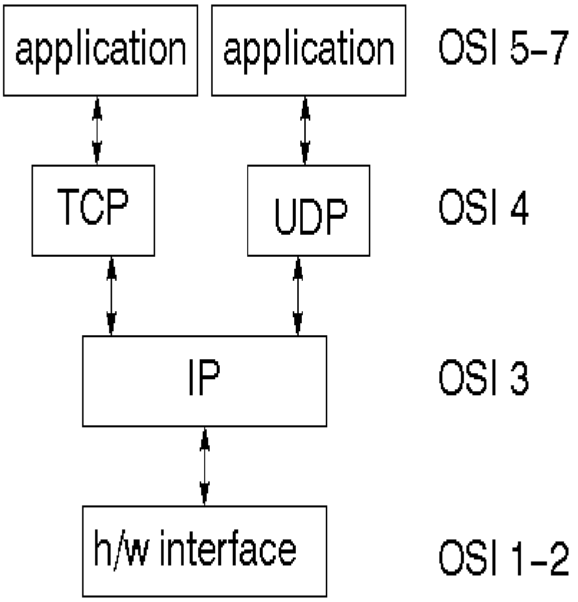
APPLICATIONS OF WEB MINING

- It has its great use in e-commerce and eservices
- In e-learning
- Self-organizing websites
- Digital libraries
- E-government
- Security and crime investigation

2.5 Networking

2.5.1 TCP/IP stack

The TCP/IP stack is shorter than the OSI one:



TCP is a connection-oriented protocol; UDP (User Datagram Protocol) is a connectionless protocol.

2.5.2 IP datagram's

The IP layer provides a connectionless and unreliable delivery system. It considers each datagram independently of the others. Any association between datagram must be supplied by the higher layers. The IP layer supplies a checksum that includes its own header. The header includes the source and destination addresses. The IP layer handles routing through an Internet. It is also responsible for breaking up large datagram into smaller ones for transmission and reassembling them at the other end.

2.5.3 UDP

UDP is also connectionless and unreliable. What it adds to IP is a checksum for the contents of the datagram and port numbers. These are used to give a client/server model - see later.

2.5.4 TCP

TCP supplies logic to give a reliable connection-oriented protocol above IP. It provides a virtual circuit that two processes can use to communicate.

2.6 Internet addresses

In order to use a service, you must be able to find it. The Internet uses an address scheme for machines so that they can be located. The address is a 32 bit integer which gives the IP address. This encodes a network ID and more addressing. The network ID falls into various classes according to the size of the network address.

2.7 Network address

Class A uses 8 bits for the network address with 24 bits left over for other addressing. Class B uses 16 bit network addressing. Class C uses 24 bit network addressing and class D uses all 32.

Subnet address

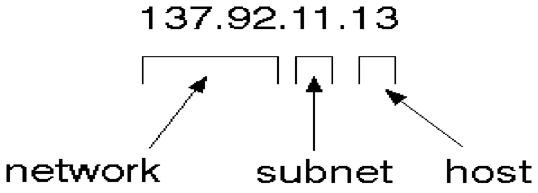
Internally, the UNIX network is divided into sub networks. Building 11 is currently on one sub network and uses 10-bit addressing, allowing 1024 different hosts.

Host address

8 bits are finally used for host addresses within our subnet. This places a limit of 256 machines that can be on the subnet.

Total address

The 32 bit address is usually written as 4 integers separated by dots.



Port addresses

A service exists on a host, and is identified by its port. This is a 16 bit number. To send a message to a server, you send it to the port for that service of the host that it is running on. This is not location transparency! Certain of these ports are "well known".

Sockets

A socket is a data structure maintained by the system to handle network connections. A socket is created using the call socket. It returns an integer that is like a file descriptor. In fact, under Windows, this handle can be used with Read File and Write File functions.

```
#include <sys/types.h>
#include <sys/socket.h>
int socket(int family, int type, int protocol);
```

Here "family" will be AF_INET for IP communications, protocol will be zero, and type will depend on whether TCP or UDP is used. Two processes wishing to communicate over a network create a socket each. These are similar to two ends of a pipe - but the actual pipe does not yet exist.

J Free Chart

J Free Chart is a free 100% Java chart library that makes it easy for developers to display professional quality charts in their applications. J Free Chart's extensive feature set includes:A consistent and well-documented API, supporting a wide range of chart types;A flexible design that is easy to extend, and targets both server-side and client-side applications;

Support for many output types, including Swing components, image files (including PNG and JPEG), and vector graphics file formats (including PDF, EPS and SVG);

JFreeChart is "open source" or, more specifically, free software. It is distributed under the terms of the GNU Lesser General Public Licence (LGPL), which permits use in proprietary applications

1. Map Visualizations

Charts showing values that relate to geographical areas. Some examples include: (a) population density in each state of the United States, (b) income per capita for each country in Europe, (c) life expectancy in each country of the world. The tasks in this project include: Sourcing freely redistributable vector outlines for the countries of the world, states/provinces in particular countries (USA in particular, but also other areas); Creating an appropriate dataset interface (plus default implementation), a rendered, and integrating this with the existing XYPlot class in JFreeChart; Testing, documenting, testing some more, documenting some more.

2. Time Series Chart Interactivity

Implement a new (to JFreeChart) feature for interactive time series charts --- to display a separate control that shows a small version of ALL the time series data, with a sliding "view" rectangle that allows you to select the subset of the time series data to display in the main chart.

3. Dashboards

There is currently a lot of interest in dashboard displays. Create a flexible dashboard mechanism that supports a subset of JFreeChart chart types (dials, pies, thermometers, bars, and lines/time series) that can be delivered easily via both Java Web Start and an applet.

4. Property Editors

The property editor mechanism in J Free Chart only handles a small subset of the properties that can be set for charts. Extend (or re implement) this mechanism to provide greater end-user control over the appearance of the charts.

VII. MODULES

VII.1 ADMIN MODULES

In this module, the Admin has to login by using valid user name and password. After login successful he can do some operations such as add contents, view all contents, list all searching history, list ranking of images, list of all personalized search, attacker details, recover contents, list of all user and logout.

VII.1.1 Add contents

In this module, the admin can add n-number of contents. If the admin want to add a new content, then admin will enter a URL, domain, title, description, uses, related images of the particular content ,then submit and that data will stored in data base. If admin want view to the newly added content, then click on view contents button, it will display the all contents & with their tags, the initially rank will be zero.

VII.1.2 List of users

In this module, the Admin can view list of all users. Here all register users are stored with the details such as user ID, user name, E mail ID, mobile no, Location, date of birth, address, pin code, general key and personalized key.

VII.1.3 View list all searching history

This is controlled by admin; the admin can view the all searching history. If admin clicks on search history button, then the server will display the all searching history with their tags such as user name, key word used, field searched, time & date.

VII.1.4 Attacker details

In this module, the admin can view the attacker details. If admin clicks on attacker details button, the admin will get attacker information with their tags such as attacker name, attacked content URL and attacked content ID. After attacking content, the admin will recover the content.

VII.1.5 USER

In this module, there are n numbers of users are present. User should register before doing some operations. After registration successful he has to login by using authorized user name and password. Login successful he will do some operations such as view my details, query search, personalized search, personalized search comparisons, attack content details, request for general key, request for personalized key and logout. If user clicks on my details button, then the server will give response to the user with their tags such as user ID, name, mobile no, address, pin code and email ID.

VII.2.1 Query Search

In this module, the user can search query. Before searching any query, the user should request general key, then admin will provide a general key. Then enter general key, select field to search, enter key word and search, it will display all related contents with their tags. After searching a content rank will be increased.

VII.2.2Personalized Search

In this module, the user can search contents. Before searching contents, the user should request personalized key, then admin will provide personalized key, then enter key and enter keyword, then user will get a related contents with their tags. After searching content the rank will be increased.

VII.2.3 Personalized Search Comparison

In this module, the user can view the comparison between greedy DP & greedy IL. After personalized searching, the greedy IL will be generated. If the user clicks on personalized search button, it will display all personalized search details with their tags such as user name, keyword used, date, time, using greedy DP and using greedy IL.

VII.2.4 Time delay Generation chart

In this module, we can view the time delay Generation chart results. This chart shows the time delay by using greedy DP and time delay using greedy IL. After viewing or search the content, rank will be increased and also the time delay will be display, the time variation can be shown in this chart.

VII.2.5 Attack content

In this module, user can attack contents, and then user should enter content URL to attack, then user will get all information about content, then user can add malicious data and click on attack button. After attacking successful, the attacker details will send to admin

VIII.DATA FLOW DIAGRAM

Data Flow Diagram

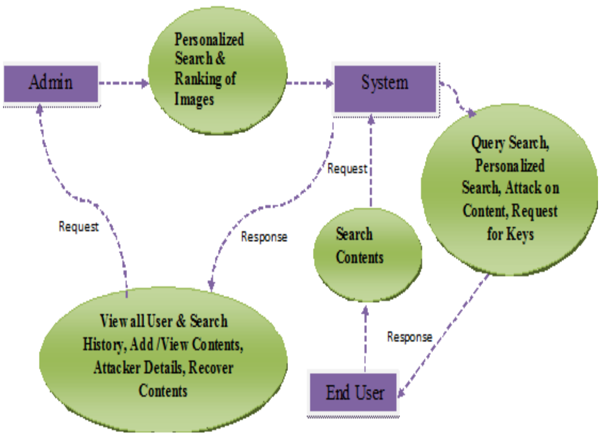

Admin
Personalized Search & Ranking of Images
System
Query Search, Personalized Search, Attack on Content, Request for Keys
Request
Request
Response
Search Contents
View all User & Search History, Add /View Contents, Attacker Details, Recover Contents
Response
End User

Fig: dataflow diagram

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IX.CONCLUSION

This system presented a client-side privacy protection framework called UPS for personalized web search. UPS could potentially be adopted by any PWS that captures user profiles in a hierarchical taxonomy. The framework allowed users to specify customized privacy requirements via the hierarchical profiles. In addition, UPS also performed online generalization on user profiles to protect the personal privacy without compromising the search quality. We proposed two greedy algorithms, namely GreedyDP and GreedyIL, for the online generalization. Our experimental results revealed that UPS could achieve quality search results while preserving user's customized privacy requirements. The results also confirmed the effectiveness and efficiency of our solution.

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