

# Effective User Navigation for Improving Web Structure

Prasad K. Bhamare  
Student of BE in Information  
Technology  
BVCOE&RI, Nashik, India  
Savitribai Phule Pune  
University

Ravikumar R. Metkar  
Student of BE in Information  
Technology  
BVCOE&RI, Nashik, India  
Savitribai Phule Pune  
University

Amol A. Sonawane  
Student of BE in Information  
Technology  
BVCOE&RI, Nashik, India  
Savitribai Phule Pune  
University

Hemangi R. Katare  
Student of BE in Information Technology  
BVCOE&RI, Nashik, India  
Savitribai Phule Pune University

Kavita S. Kumavat  
H.O.D. of IT dept.  
BVCOE&RI, Nashik, India  
Savitribai Phule Pune University

## ABSTRACT

For effective user navigation, designing of well structure websites are have challenge over faculty of computer engineering. How websites having their ideal structure can be considered different from users is the main reason of web developers. For effective user navigation of website structure have various methods that proposed to relinking web pages, the complete fulfill new website structure are may be unpredictable and the measurement analysis or cost of disorientation(confusion of flow)of users are still incomplete their analysis. This paper having ability to improve website structure without introducing any changes like existing, illusive, changes that also know as substantial changes in also allow large changes. In addition, this paper have defining evaluating analysis and using them for compute the overall performance of improve website structure by using genuine data sets.

## Keywords

Website structure, user navigation, data mining, user tracking.

## 1. INTRODUCTION

The website structure improvement through effective user navigation is useful to user for navigation of data. It is not easy to find information on a website even though there is heavy and increasing investment in designing website. The developer easily understands the structure of the poor website that is different from those of the users. In different cases the user cannot easily fill the information in a website. These cases are not easily avoided because of developer has no idea about users preferences (inclination/favorites).The developer organize (arrange) pages on their own judgments. The developer has to develop a website which satisfies the users rather than the developers. Therefore the website pages should be sorted according to users wish or which will satisfies users. The different issues are studied includes understanding web structure, finding relevant pages, mining information structure etc. But in this paper the work on to examine improvement in websites navigation with the help of users navigation data. Various works have made to find the solution of this question and it is distributed in two types to provide a particular user by dynamically arranged pages according to user requirements and the traversal path, often mentioned as personalization and to make changes in the website structure, make ease to navigation for all the users. In this paper, it is focused on the change methods. The works allowing for

changes in methods to completely rearrange the links structure of website. In case, many supporters in website rearrange process their drawbacks may occur. For a complete rearrangement, primarily change the location of familiar items, the new websites may difficult to users. Second the rearranged structure of website is randomly or highly volatile and the user get confused after the modified remain unanalyzed. Because of the structure of website is developed by experts and accepts business or structural logic, but when the website is completely arranged .The analysis logic is not valid for huge time period in the new structure. Since websites rearrangement methods change the current structure, they cannot be easily done to improve the navigability. Knowing the drawbacks of websites redeployment approaches specifically, mathematical programming model is developed that helps for easy user. Navigation on a websites with less change in the original structure. This model is suitable for websites whose contents are constants over time. Examples are universities, hospitals, and tourist's attraction. The following figure 1 shows that architectural block diagram of our system.

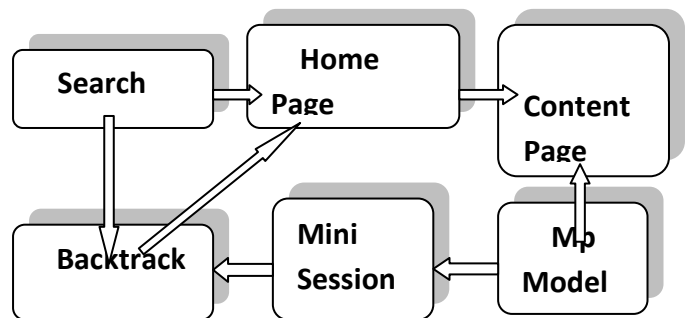


Fig 1: Architectural Block Diagram of Our System

1. Home page
2. History of link that want to flow over forward.

The content page have collection of several links that user will traverse over item model is nothing but the mathematical model that may having the overall significance of the structural operations. Mini session track the all the information. User can get appropriate content without loss the preference of individual users, personalization approaches need to collective information, data associated with that

clients or users. This operation intensive and time-saving process is not required for transformation process. Third, transformation approaches make for client of overall information use with the help of weblog files and not require tracking the past use of the weblogs for each user and clients while runtime or active pages are typically generating based on the users' traverse path. Thus, personalization approaches of the user navigation structure of website are more accurate for active websites whose data are more reliable, volatile and make accurate web structure by change methods are more that have a built-in architecture and store relative undynamic and stable contents of the website structure. This paper examines the questions of how to improve user navigation in a website with website is design by changing the original structure of website. It complements the literature of variations approaches may that concentrate on rearranging the link of a website structure. As a result, this model maintains the website structure and can be applied in a regular manner. Hence, there is no built-in web structure for the personalization approaches of the structure of the website Second, in order to understand

## 2. LITERATURE SURVEY

### 2.1 Actual Study of Structure of Website that Affects Website Structure Usability

The structure of websites are tends over knowlede assets as shown in figure 2. The website structure improvement through effective user navigation is useful to user for data navigation .for finding information on a website is not easy even though there is heavy and increasing investment in designing website. Website structure usability Based on taxonomy of factors affects,these hypotheses are developed about usability of tracking and navigation of website structures. These hypotheses are test through analysis that compute tracking of user in knowledge acquisition. [1]

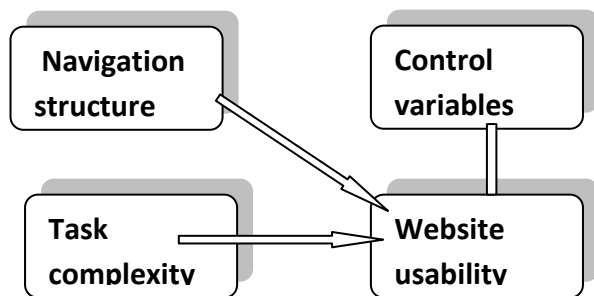


Fig 2: Research Model

### 2.2 Knowledge finding/understand from Web Logs

Web usage mining is obtaining the interesting and constructive knowledge and inexplicit information from formal activities related to the WWW (World Wide Web). Web servers trace information of user operations every time the user requests for particular resources. Compute the Web access logs would help in predict the user behavior. At a glance of the applications point of view information scattered from the web usage possibly directly apply to competently manages activity related to business, electronic-services, electronic-education, on-line web operations. On the other hand, density & size of the data grow increases, the

information is provided by web logs, hence most intelligent mining technique are web logs play a vital role in the data mining for web usage over structure. The knowledge that can be coming from web logs is the user's navigation. Tin obtaining such knowledge, it have some difficulty that is that the different users have different navigational behavior with different needs associated with them. [2]

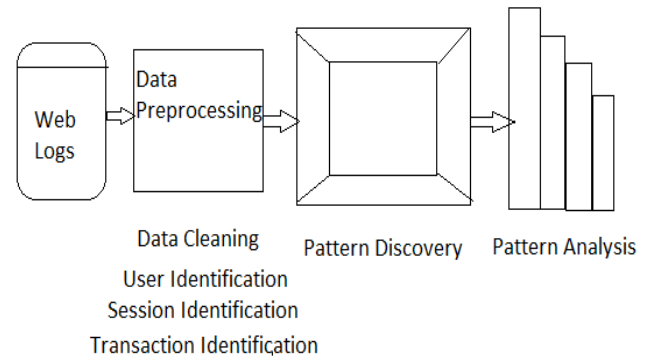


Fig 3: Phases of Web Usage Mining

### 2.3 Study of Framework for Consumer Satisfaction with E-Shopping

As shown in figure 3 Internet-shopping lends a great beneficial for shoppers, that means its electronic format changes information-knowledge methods traditionally that are used clients or customers. This appropriate change gain questions that concern satisfaction of customer or client with the internet purchase. Internet-shopping is involves several phases that including the phase of information or data, that means customers search data that related this purchase. This whole phenomenon helping in understands internet-shopping. By combining the expectation of user that improve website quality into data quality & system quality. Two phases are study in the measurements for these developments [3].

### 2.4 Imagery structure and case study towards website

Today's Web sites are complex but not intelligent; that navigation of web is runtime and individual, all are often in html technology. In occurence, this technical idea tends over adaptive Web sites study. websites are automatically raise their organization and presentation from learning from visitor's access strategy. modified Web sites mine the and the hide data in web server data logs to productivity of navigable structure websites.To reveal the viability of adaptive Web sitesthis paper contains the study of index page and drawing the novel clustering or conceptual clustering technique .[4]

### 2.5 Closing the Loop from Webpage Understanding

Bidirectional integration of page structure understanding and text understanding in an iterative manner. A novel framework called Web NLP, enables, fine-grained and informative blocks is represented here. News pages or bodies of news articles are the intra-page informative structures of pages in a news Web site contain only anchors linking to. WISDOM is An intra-page informative structure mining system (Web Intra-page Informative Structure data Mining based on the Document Object Model) which apply data DOM tree knowledge in order to build the structure to select a set of informative blocks that top-down informative block searching algorithm

WISDOM splits a DOM tree into many small sub-trees and applies the set using proposed merging methods that The structure is built by expanding [5].

## 2.6 For Web Personalization, study and Evaluation of Aggregate Usage

To personalization such as collaborative filtering Web usage mining, possibly used along with standard approaches, some of the shortcomings of these techniques can help address, including reliance of subjective ratings of user, the face of high-dimensional and sparse data and poor performance in. For performing the personalization tasks the discovery of patterns from usage data by itself is not sufficient is the effective derivation of good quality and useful. The critical step from these patterns based on clustering of user transactions and clustering of page views. The idea presents and experimentally evaluate two techniques, by recommender systems for real-time Web personalization, in order to discover overlapping aggregate profiles that can be effectively used as well as in the context of providing recommendations as an integrated part of a personalization, The evaluation is both in terms of the quality of the individual profiles generated [6].

## 2.7 Mining Data of Web Logs to Gain Analysis Website Structure Organization

Many organizations may be quite different from the organization expected by visitors to the website, many websites have a hierarchical organization of content, it is often unclear where a specific document is located. Here we propose an algorithm to automatically find pages in a website that locating different from visitors expect to analyze. If key is not find the information where they expect it. The key insight is that visitors will backtrack the point from where they backtrack is the expected location for the page. Handle page caching by the browser are presented the algorithm for discovering such expected locations presented to the website administrator expected locations with a significant number of hits. [7]

## 3. SYSTEM OVERVIEW

Effective user navigation is useful to user for navigation of data through website structure improvement through. It is not easy way to find information on a website because of investment in website designing is heavy and increase. The poor website and structure is to easily understand to developer often from those of the users. In different cases it is not easy to user fill the information in a website. These cases are not easily avoided because of developer has no idea about users preferences .The developer organize (arrange) pages on their own judgments. The developer has to develop a website which satisfies the users rather than the developers. Therefore the website pages should be sorted according to users wish or which will satisfies users. In this paper we work on to examine improvement in websites navigation with the help of user's navigation data. The different issues we have studied include understanding web structure, finding relevant pages, mining information structure etc. Various ways have made to find the solution of this question and it is distributed in two types to provide a particular user by dynamically arranged pages according to user requirements and the traversal path, often mentioned as personalization and to make changes in the site structure, make ease to navigation for all the users. The growth of the web has led to numerous studies on improving user navigation with the knowledge mined from web server logs and they can be generally categorized in to

web transformation approaches and web customization using the information of the users' navigational behavior and profile data To the needs of specific users of website structure having Web customization is the process of "tailoring" websites Perkowski and Etzioni are reports proceed towards that automatically synthesizes index log pages which contain links to log pages concerns to particular topics based on the co-incident frequency of pages in user traverse, to effective user navigation. The methods suggests by Mobasher et al. and Yan et al. create group of users profiles from logs and then actively generate links for users who are organized into various categories based on the access patterns of system Nakagawa and Mobasher develop a hybrid personalization system that can dynamically shift between recommended models based on degree of connectivity and the user's position in the site. For reviews on the web personalization approaches, Web modification, on the other hand, involves modify the architecture of a website to the navigation for a huge set of users in place of personalizing pages for independent users log. Fu et al. describe an approach for the web users to use the reorganized the WebPages and are shared to along with the information that they want to desire in fewer clicks.

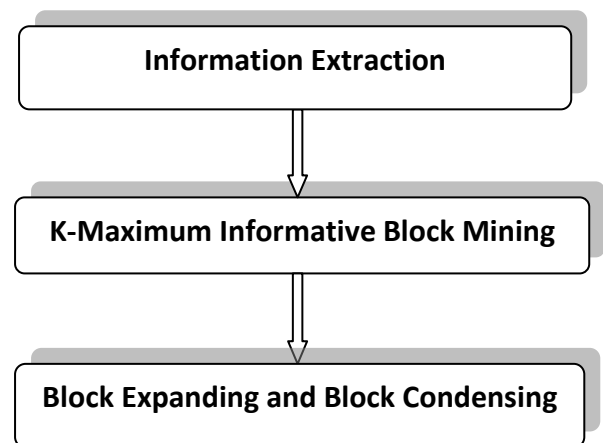
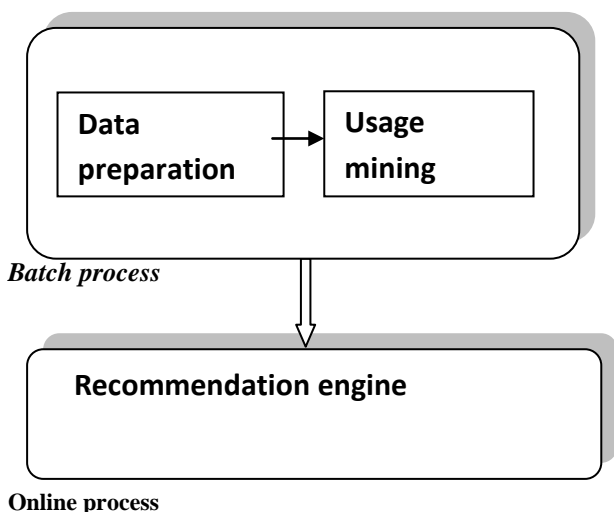


Fig 4: WISDOM System Flow

Figure 4 shows WISDOM system flow in which information is extracted using DOM tree then using K-maximum information block mining process block expansion and condensing is takes place.

However, this approach considers that the only local structures in website preferably than the site as a whole, so the new structure may not be naturally optimal. Gupta et al. introduce a examining method based on simulated annealing to relink WebPages for improvement in navigability. This method makes use of the accumulated user preference data and can be used to improve the link structure in websites for both wireless and wired devices. However, this approach does not yield optimal solutions and takes comparatively a long time (12 to 15 hours) to run even for a small website. Lin develops integer programming models so that it can reorganize a website which is based on the cohesion between the pages to reduce overloading information and to search depth for users. In addition, two-stage heuristic involving two integer-programming models are developed to depress the computation time. However, this heuristic still requires very long computation times to solve for the excellent solution, especially when the website contains many links. Besides, only randomly generated websites were used to test the models, so its applicability on real websites remains

questionable. To resolve the efficiency problem, Lin and Tseng propose an ant colony system to reorganize website structures. Although this approach is shown to provide proper solutions in a relatively short computation time, the sizes of the synthetic websites and real website tested in are still relatively small, posing questions on its scalability to large sized websites. There are various extraordinary differences between web alteration and private approaches. First, while personalization approaches dynamically reconstitute pages for individual users. Transformation approaches create or modify the structure of a website used for all users for navigation and tracking. Hence, there is no built-in web structure for the personalization approaches of the structure of the website. Second, in order to understand the preference of individual users, personalization approaches need to collective information, data associated with that clients or users. This operation intensive and time-saving process is not required for transformation process. Third, transformation approaches make for user or client of overall data is to be use with the help of log files and not require tracking the past use of the weblogs for each user and clients while runtime or active pages are typically generating based on the users' traverse path. Thus, personalization approaches of the user navigation structure of website are more accurate for active websites whose data are more reliable, volatile and make accurate web structure by change methods are more that have a built-in architecture and store relative undynamic and stable contents of the website structure. This paper examines the questions of how to improve user navigation in a website with website is design by changing the original structure of website. It complements the literature of transformation approaches that concentrate on rearranging the link of a website structure. As a result, this model maintains the website structure and can be applied in a regular manner. There are various extraordinary differences between web alteration and private approaches. First, while personalization approaches dynamically reconstitute pages for individual users. Transformation approaches create or modify the structure of a website used for all users for navigation and tracking.



**Fig 5: A General Frame Work for Personalization Based on Web Usage Mining**

As per figure 5 general flow of system contain normal representation regarding system working for various conditions.

## 4. ALGORITHM

Extract Candidate Link Algorithm

Input:  $P_i$  – outlined data of the user

Output: Links that can be use for redeveloped Steps-

- 1: We identify the consumption (usage) pattern of users from  $P_i = \{P_1, P_2, \dots, P_m\}$  to get link  $P_m$  set for user  $U_i$
- 2: For every access link set obtain the set of candidate links  $\{C_1, C_2, \dots, C_p\}$
- 3: For all users and all user have access link set obtain the set of user or candidate links.
- 4: Apply KNN organizer.
- 5: Then the links have problem for huge or maximum number of users are selected for redevelopment the website structure.

### 4.1 Expected Results

Result for system contain some searches takes place by different users as follows:

**Table 1: Expected Results**

Sr. No.	User	Demand
1.	User1	Search for clothes
2.	User2	Search for shoes
3.	User3	Search for laptops
4.	User4	Search for Mobiles
5.	User5	Search for books
6.	User6	Search for fridge

Whenever user first time search some information then next time previous search will be generated by default.

## 5. CONCLUSION

Website rearranges provides user to improve navigability, this papers analyzes the wide areas of website rearrangement and link examination on the basis of web logs and user session and data mining techniques applied on web data, which provides user to reach target in fewer clicks. This survey is beneficial for web developer to understand different aspect of website. For research to improve more in website and for commercial organization. Website reorganizes facilitate user to improve navigability, this paper surveys the broad areas of web site reorganization and link analysis on the basis of web logs and user session and data mining techniques applied on web data, which enables user to reach target in fewer clicks. This survey is beneficial for web developer to understand different aspect of website, for researcher to improve more in website and for commercial organization. Website reorganization is imp aspects as now days; it is vast source of information.

## 6. REFERENCES

- [1] J. Lazar, *Web Usability: A User-Centered Design Approach*. Addison Wesley, 2006.
- [2] D.F. Galletta, R. Henry, S. McCoy, and P. Polak, "When the Wait Isn't So Bad: The Interacting Effects of Website Delay, Familiarity, and Breadth," *Information Systems Research*, vol. 17, no. 1, pp. 20- 37, 2006.
- [3] J. Palmer, "Web Site Usability, Design, and Performance Metrics," *Information Systems Research*, vol. 13, no. 2, pp. 151-167, 2002.
- [4] V. McKinney, K. Yoon, and F. Zahedi, "The Measurement of Web- Customer Satisfaction: An Expectation and Disconfirmation Approach," *Information Systems Research*, vol. 13, no. 3, pp. 296-315, 2002.
- [5] T. Nakayama, H. Kato, and Y. Yamane, "Discovering the Gap between Web Site Designers' Expectations and Users' Behavior," *Computer Networks*, vol. 33, pp. 811-822, 2000.
- [6] M. Perkowitz and O. Etzioni, "Towards Adaptive Web Sites: Conceptual Framework and Case Study," *Artificial Intelligence*, vol. 118, pp. 245-275, 2000.
- [7] J. Lazar, *User-Centered Web Development*. Jones and Bartlett Publishers, 2001.
- [8] Y. Yang, Y. Cao, Z. Nie, J. Zhou, and J. Wen, "Closing the Loop in Webpage Understanding," *IEEE Trans. Knowledge and Data Eng.*, vol. 22, no. 5, pp. 639-650, May 2010.
- [9] J. Hou and Y. Zhang, "Effectively Finding Relevant Web Pages from Linkage Information," *IEEE Trans. Knowledge and Data Eng.*, vol. 15, no. 4, pp. 940-951, July/Aug. 2003.
- [10] H. Kao, J. Ho, and M. Chen, "WISDOM: Web Intrapage Informative Structure Mining Based on Document Object Model," *IEEE Trans. Knowledge and Data Eng.*, vol. 17, no. 5, pp. 614-627, May 2005.
- [11] J. Grau, "US Retail e-Commerce: Slower But Still Steady Growth," [http://www.emarketer.com/Report.aspx?code=emarketer\\_2000492](http://www.emarketer.com/Report.aspx?code=emarketer_2000492), 2008.
- [12] Internet retailer, "Web Tech Spending Static-But High-for the Busiest E-Commerce Sites," <http://www.internetretailer.com/dailyNews.asp?id=23440>, 2007.
- [13] D. Dhyani, W.K. Ng, and S.S. Bhowmick, "A Survey of Web Metrics," *ACM Computing Surveys*, vol. 34, no. 4, pp. 469-503, 2002.
- [14] X. Fang and C. Hollsopple, "An Empirical Study of Web Site Navigation Structures' Impacts on Web Site Usability," *Decision Support Systems*, vol. 43, no. 2, pp. 476-491, 2007.
- [15] J. Lazar, *Web Usability: A User-Centered Design Approach*. Addison Wesley, 2006.
- [16] D.F. Galletta, R. Henry, S. McCoy, and P. Polak, "When the Wait Isn't So Bad: The Interacting Effects of Website Delay, Familiarity, and Breadth," *Information Systems Research*, vol. 17, no. 1, pp. 20-37, 2006.

## 6. AUTHOR PROFILE

**Prasad K. Bhamare** is engineering student of Information Technology at Brahma Valley College of Engineering And Research Institute, Nasik under Savitribai Phule Pune University. His interest in the field of Tracking user navigation.

**Ravikumar R. Metkar** is engineering student of Information Technology at Brahma Valley College of Engineering And Research Institute, Nasik under Savitribai Phule Pune University. His interest in the field of Computer Networking, Security and Mining.

**Hemangi R. Katare** is engineering student of Information Technology at Brahma Valley College of Engineering And Research Institute, Nasik under Savitribai Phule Pune University. Her interest in the field of Data Mining.

**Amol A. Sonawane** is engineering student of Information Technology at Brahma Valley College of Engineering And Research Institute, Nasik under Savitribai Phule Pune University. His interest in the field of Website structure development and Tracking.

**K. S. Kumavat, ME, BE Computer Engg.** Was educated at Pune University. Presently she is working as Head of Information Technology Department of Brahma Valley College of Engineering and Research Institute, Nasik, Maharashtra, India. She has presented papers at National and International conferences and also published papers in National and International Journals on various aspects of Computer Engineering and Networks. Her areas of interests include Computer Networks Security and Advance Database.