

A SEMANTIC PERSONALIZED FEED RANKING SEARCH USING CONTEXT AWARE MULTILEVEL CLUSTERING APPROACH FOR PREDICTING USER INTEREST IN WEBLOG MINING

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Abstract

Day to day searching in internet is growing tremendous in terms of information in providing our way of thinking on web resources. Personalized information search point the user search logs to provide our related knowledge based information retrieval process. In many case, the user search with the principle of exact term required. The topics of query search other than the positioned term does not match our exact search result, so that the similar case search terms miss to provide the frequent terms results. This objective is regularly accomplished through related meaning full semantic searches. Customized information thinks about positioning or researching the query terms as index terms in light of understood input. The customized look framework will construe user data require in light of client web search holds relational connection. To propose a light weight point of searching enhancement clustering approach called context aware multilevel clustering algorithm (CAMC) which its predicts the relevant semantic meaning index term to search. The context ware based on dictionary algorithm analyses the weightage term index synonyms to customize the user point of customized query with different time dependent frequent search with cluster case query result (CAD-TDF). This much improve time consideration fact of cluster efficiency to provide higher search results based on user thing of query terms.

Key words: context aware, clustering, page ranking, search recommendations, semantic similarity

1. Introduction

A framework is a context-meaning full framework in the event that it utilizes setting to give important data or potentially administrations to the user search from personalization, where significance relies upon the user assignments from keyword based web search". Given diverse foundations of interests of users, distinctive interests of users and ambiguities in regular pattern continuity search, it is extremely likely that searches may show up precisely same despite the fact that their search needs are extraordinary from search engines. A specific word could mean numerous things in distinctive settings from search engines and the real setting can be resolved using advance search techniques. An average web index gives comparable arrangement of comes about without considering of who submitted the inquiry.

In this way, there is the prerequisite to have customized web seek framework which gives yields proper to the client as much positioned pages.

The present recovery frameworks play out a 'word to word match of the question from search results. It makes the present recovery frameworks a long way from ideal from web browser's history level of searching. The issue of Personalized Search points to tweak list items as indicated by every person client as indicated by his/her unique situation. This would potentially fulfill them in satisfying their data needs. Web look inquiries that have an area expectation, are additionally examined.

While a few questions have express area data in the question like "pizza cabin Kansas City", numerous others don't, like "air terminal transport", yet at the same time anticipate that web indexes will return confined indexed lists. Strategies, for programmed distinguishing proof of area touchy inquiries fused in a personalization process with a specific end goal to return nearby inquiry. Comes about requested higher in the list items searches are contemplated. Some Web look frameworks utilize pertinence criticism to refine client needs or request that clients enroll their statistic data in advance keeping in mind the end goal to give better administration. Since these frameworks expect clients to take part in extra exercises past hunt to determine their inclinations physically, approaches that can certainly catch clients' data needs ought to be developed.

Information process from clients to the clients' inclinations through the technique for customized re-ranking of the query items. In the personalization process, client profiles is an imperative part in re-ranking query items and hence should be prepared frequently relying on the client's hunt exercises. A few personalization procedures have been proposed to display clients' substance inclinations. In this research, they perceive the significance of area data in versatile hunt and client's area inclinations notwithstanding setting inclinations in client profiles.

Page Ranking is an important component for information retrieval system. It is used to measure the importance and behavior of web pages. We review two approaches for ranking: HITS concept and Page Rank method. Both approaches focus on the link structure of the Web to find the importance of the Web pages. The Page Rank algorithm calculates the rank of individual web page and Hypertext Induced Topic Search (HITS) depends upon the hubs and authority framework. A fast and efficient page ranking mechanism for web retrieval remains as a challenge. This formalized the new page rank algorithm which uses a normalization technique based on mean value of page ranks. The proposed scheme reduces the time complexity of the traditional Page Rank algorithm by reducing the number of iterations to reach a convergence point.

2. Literature survey

A wide variety of content to personalize that user's search needs advanced web search Web search. Rather than relying on the unrealistic assumption that people will precisely specify their intent when searching, they pursue techniques that leverage implicit information about the user's interests [1,2]. A new problem, called query taxonomy generation, which is trying to organize users' queries into a hierarchical structure of topic classes [3]. Such a query taxonomy provides a basis for the in-depth analysis of users' queries on a larger scale and can benefit many information retrieval systems.

The Effective log-based search approach to relevant term extraction and term suggestion. Using this approach, the relevant terms suggested for a user query are those that co-occur in similar query sessions from search engine logs[4,5,6], rather than in the retrieved web pages. The search engine searches all sort of information even if not suitable for users' minors. The usefulness of a search engine depends on the relevance of the results is insufficient [7,8]. While there may be millions of Web pages that include a particular word or phrase, some pages may be more relevant, popular or authoritative than others [10, 11]. They use of the Content search Clustering this system, makers use the Phrase Chunking Parser with heuristic information, for instance, snippet of data words for inferring striking sentences and articulations. By analyzing the user profiles are then used to improve retrieval effectiveness in Web search [12, 13]. A user profile and a general profile are learned from the user's search history and a category hierarchy, respectively. These two profiles are combined to map a user query into a set of categories which represent the user's search intention and serve as a context to disambiguate the words in the user's query [14]. Web search is conducted based on both the user query and the set of categories.

The user search opinions constitute a valuable resource for needs cluster case evaluation. In the last years, some researchers have proposed opinion extraction systems, mostly domain-independent ones, to automatically extract structured representations of opinions contained in those texts[17].By solving such a leads process method of semi-supervised hierarchical clustering under constraints ranking for handling cases when some constraints are more important than others and must be firstly enforced during the clustering process[18]. Besides, this approach uncovers intriguing or surprising connections among substances. Making database searchable will generously build the data volume that a client can get to, can possibly give search comes about better quality contrasted and watchword search on literary content searches, and consequently increment the database ease of use and have noteworthy effect to individuals' lives[19,20]. Because of considerable advantages of supporting catchphrase search on organized information, it turns into a rising hot region in database research and advancement.

Because of the distinction in the fundamental answer unit between content search searches and database searches, in social databases, it is important to dole out a solitary positioning score for each tuple tree, which may comprise of different tuples with content sections, keeping in mind the end goal to rank the appropriate responses adequately [19]. The attributes of content segments are typically different.

For instance, some content sections, for example, individuals' names and collection titles are short, while other content segments, for example, tune verses are any longer[20]. Search recommendation consider the problem of ranking all firms within a search recommendations by their likelihood of being competitors to a given focal firm. Most cases web recommendations course instructors prepare the web contents in different formats and those contents are published through the web site and they can identify e-learner's navigation pattern[22]and the site topology can be changed in an adaptive manner with relevant and useful contents. This problem represents an exhaustive search exploration for search engine orders They uncover the utility of predictive models based on online isomorphism in not only identifying contemporary ranks but also not efficient for Competitors

3. Proposed context aware multilevel clustering for personalized web

Content-based recommender system recommends users the items that similar or related to their preferences in the past. This approach itself requires data of individual user, and the attribute of the item. Using this approach, there is a chance for new items to get recommended, and there is no population bias. Context-aware Recommender System Recommender system has become widely used as a system for personalizing information access, especially big data. Most recommender system recommends only based on user interests independently ignore the environmental contexts.

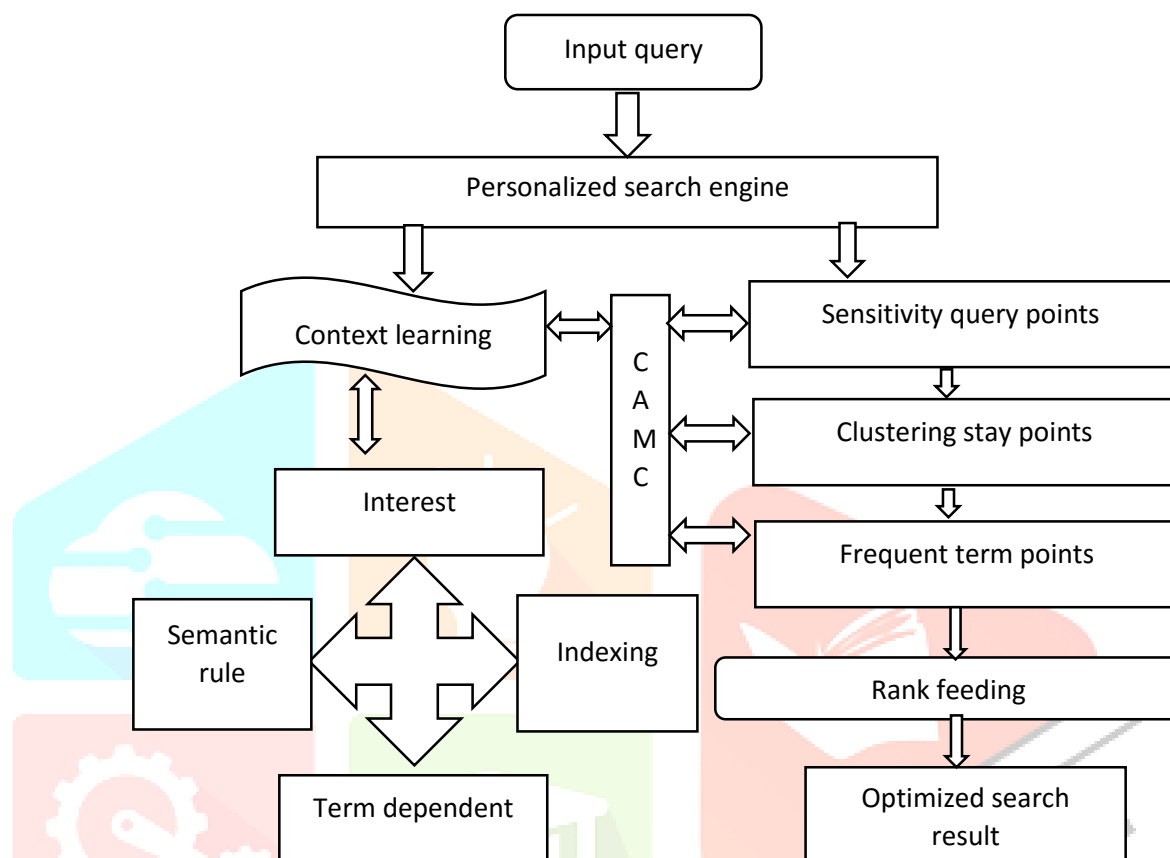


Figure 5.2 architecture of proposed personalized web search

A) Search recommendation system

Recommender system is the system that predicts the preferences of user in which user would give to the search items that user had not yet considered in personalized web search. Since the real world recommendation is going to be more socialized using context based clustering evaluation, and the data are becoming bigger, there are many recommendation algorithms have been proposed, in which suitable for the various types of data and purposes. Generally, there are two well-known techniques in recommender system; The system that recommends the items to user using model built from the characteristics of an item is called content-based recommender system, or the system that recommends items to user using social relationship between users is called collaborative rank filtering recommender system, and the recommender system that mixes both techniques, called context multilevel cluster system. To recommend items to the user, recommender system predicts user's preferences following three steps; extract user preferences from the data source, compute recommendation using appropriate techniques, and present the recommendation candidate items to the user. In the content-based and collaborative recommender system, the system requires similarity matrix among users and items.

B) Ranking Semantic pattern search

To propose a unique context search in recommendation system perspective to achieve this goal using pattern for Personalized rank feeding for effective search, which is quantifying user vitality by analyzing the dynamic interactions among search from browse history on web searching .personalization in clusters holds the continuity progress of patterns to order the ranking include match case terms limited to order in search sites and academics collaboration search. Based on this idea, we develop pattern quantitative measurements for user vitality and propose pattern raking order to finalize the search order.

3.1 Context aware formation of cluster.

Web-based similarity refers the browse history SH motivated by the nature of the proposed from web collections called search link SRL. In fact, since the retrieval process is formed using web search engines browse history and the web pages treated are cluster into facts by context terms, we relied on the web as to measure cluster semantic evaluation on the search terms from browse history from user for similarity contextualization variation of pattern similarity web measures the used corpus is the web to cluster. Analyze the search term feature of the web by reliance score of weightage between search terms are grouped into clusters provided by a web search engine.

Algorithm: Context level clustering algorithm

Input: SH =user we history, SRL = Search Relevant web links extracted from previous search on the web.

Output: $ctx\alpha = \{ctx1, ctx2, \dots, ctxn\}$.

For (identify search term Trm)

 Calculte Max $\leftarrow 0$ Trm ;

 varL $\leftarrow 0$ read(SH)

Listing search relavnt matches from terms from browse history

 SRL1 \leftarrow createList1 (SH, c)

 SRL2 \leftarrow createList2 (SH, c)

End for

For $m \in L2$ for searching from browse history groups

 for each search of c in SH

 do

 Calculate the medoids $m \leftarrow$ eliminate(StopWords \cup c);

$m \leftarrow$ cluster(m) Trm var \leftarrow Trm(m, web links)

 if Trm var $>$ max then

 Form Cluster $ctx1 \leftarrow L1(m)$ /* category of m */ $ctx2 \leftarrow m$

Repeats cluster for match terms from SRH

End

End for

The term user utilizing the query of max terms from browse from search engines may first select a category term before submitting a query. In this way, a category related to the user query is identified for easily retrieve the web search based on user interest.

3.2 Indexing personalized context search case similarity measure

The context clustering applied to the clustered similar semantic search from search history to list user interned most searching keywords in each search to compare with other pre-relevant keyword search is represented 'Ps' and 'Qs'. Where p_i is the index search case point. The similarity results are calculated as given below.

$$\text{search Sim cluster}(Ps, Qs) = \frac{\text{search list cluster } w(p_i, Ps) * w(p_i, Qs)}{\text{total clutr} \sqrt{\sum (w p_i, Ps)^2} * \sqrt{(w p_i, Qs)^2}}$$

where ' $w(p_i, P)$ ' represents the weight of search ' p_i ' from word set ' P '. With relative distance measure values, context multilevel clustering process grouping search from history index keyword and search ranking is formulated as given below.

$$\text{cluster reltive weight } Rw(Rp_i, Ps) = Rw_i(p_i^{Ps}, Ps) * \text{Reltive cluster } (p_i^{Ps}, p_{is})$$

Relative closeness is identifying the relative distance values ' $Relative form (p_i^{Ps}, p_{is})$ ', the efficiency of personalised web search has improved notably.

3.3 Context Query pattern evaluation

In this query evaluation from user may first browse a hierarchy of categories of clusters and select one or more categories in the most match case from browse index by submitting query form of contend order. By utilizing the selected categories as a context for the query, a search engine is likely to return search order by group that are more suitable to the user. The index search terms are pattern increased order of order by relevance to initialize the user search is usually very large and, as a result, an ordinary user may have difficulty in finding the proper paths leading to the suitable categories to supportive for pattern search.

Algorithm: Query reformulation algorithm

Input: searchreq of cluster groups= {c1 ...cn}

Output: Indexing req+ = {Icp1 . . . Icpm} and req- = {Icm1 . . . Iml}

For i = 1 ...n do

If $c_i \in H$ then for cluster relation $r_+ \in P_+$ relating c_i and c_j

Do

If relational search $(r^+) > \alpha$ and search $(c_j) > \beta$ then

$$\text{searchreq}^+ \leftarrow \text{req}^+ \cup \{c_j\}$$

End

End

For relation $r^- \in P$ – relating c_i and c_j do

If search term $(r^-) > \gamma$ and search term $(c_j) > \delta$ then

$$\text{serachreq SR} \leftarrow \text{req}^- \cup \{c_j\}$$

End

End

End

End.

Relational terms indexing formalize the pattern in edified by continuous cluster groups and relativity infer their intentions for new queries. This is to utilize differential level of personalized search the query and its context to retrieve Web pages.

3.4 Context level page ranking

In our context, the index terms Rank-style model with the competitive probabilities derived by the equal probability assumption order the search relevant terms. in any other cluster with the cluster indexing. All the documents in the cluster contribute in the calculation of the pairwise similarity and order the page ranking, thus, this method is a mid-point search has the possibility of search intent results in rank order. Then this method generates the rank list order and using the renk feed related search terms, the method computes the closeness measure to rank the search measure for each cluster index terms.

Algorithm: context level page ranking

Input: Search terms from paged cluster groups $LD=(Lx1,Lx2,Lx3...Lxn)$

Output: search Rank result $Wrp = (Wrp1, Wrp2, Wrp3...)$

Step 1: Assign initial value for Page rank search list

$$PLs1, PLs2, PLs3...PLsn \quad //p \text{ distance evaluated cluster page seeds}$$

Repeat

Step 2: Identify index search terms from PIs individual for the cluster which has the closest key word ;

$$\text{PageRank } Wrp = \frac{1}{n} \sum_{Lx1}^{Lxn} \frac{\text{Max search indes } PLS1}{\text{Total search terms}}$$

Step 3: For rank search Upto n page

Assign the search page as rank $Wrp1.,;$

End for

Until the removal of search term was performed;

Step 4: initialized= result Wri as rank 1;

Step 5: for each Wrp in index search as result rank feed;

Step 6: Feeding rank result += (Wrp1,Wrp2...);

Step 7: web page ranking order Wrp;

Considering the search phrases by our observation cluster index from search word, the pages which contain both names of competitive pair of relevant terms order exact and relative orders as ranking matched related to the competitive domains. The expressive domain names are more likely to feed ranking the lists are combined with subphrase terms to rank at initial. They collect the paging ranks by querying given entity name and competitor name from personalized search. Then Pattern parse the search data and get the list of phrases as the candidates of competitive domains in ranking list orders. Salient phrase ranking since the competitive domain are more likely to be salient phrase in data set, we improved the existing salient phrase raking method by adding new features for extracting domains. We denote the current phrase as p , and the collection of returned results for the pair of the given entity. The resultant provide ranking terms Wrp .

4. Result and discussion

The personalization search carried out to search with user search log intents carries out collection from UCI web link repository with search engine framework. The proposed personalized webs search be implemented context aware multilevel clustering and on page rank to deduce a set of related categories for each user query based on the retrieval history of the user search. The proposed method has produces efficient results on context aware clustering and improves the performance also. Parameters are tabulated given below.

Table 4.1: Details of Data set

Parameter	Value
Number of service	10
User logs	15
Datasets used	Web resources

Above Table 4.1, shows the details of data set being used to evaluate the performance of the proposed multi attribute opinion rate support measure based approach. The performance of SLPC is evaluated through clustering accuracy (cs), precision rate, recall rate and time complexity

$$\text{Clustering accuracy (cs)} = \sum_{k=0}^{k=n} \times \frac{\text{Retrived number of interest terms cluster(Cds)predictedlinks}}{\text{Total related datsetsTr)from search links}}$$

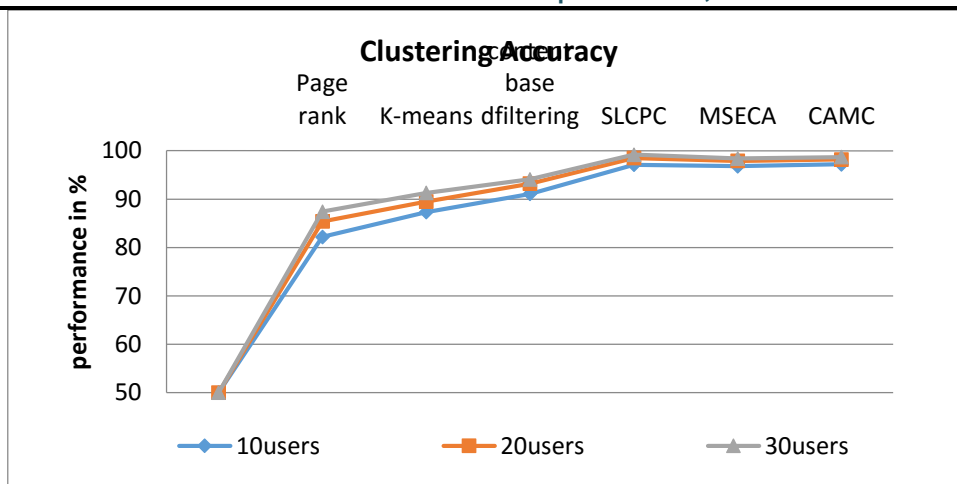


Figure 4.3: Comparison on Clustering Accuracy

Above Figure 4.3, shows the comparison of clustering accuracy and shows that the proposed method has produces higher clustering accuracy than other methods.

Table 4.2 comparison of clustering accuracy

Methods/number of records	Impact of Clustering accuracy in %					
	Page rank	K-means	Content based filtering	SLCPC	MSECA	CAMC
10users	82.2	87.3	91.1	96.1	96.8	97.2
20 users	85.4	89.5	93.2	97.5	97.9	98.2
30 users	87.4	91.3	94.1	98.1	98.4	98.7

Above Table 4.2, shows the comparison of clustering accuracy produced 10 users as 96.8%, 20 users as 97.9% and 30 users as 98.4 % shows that the proposed approach has produces higher clustering accuracy.

Analysis of precision rate

Precision, Pr is defined as the proportion of total number of relevant URL links and total number of retrieved URL links, where R is the relevant URL links calculated manually and A is the total number of retrieved URL links.

$$\text{Precision, (Pr)} = \frac{\text{Relavant links (R)}}{\text{Total number of retrived Links (A)}} \times 100$$

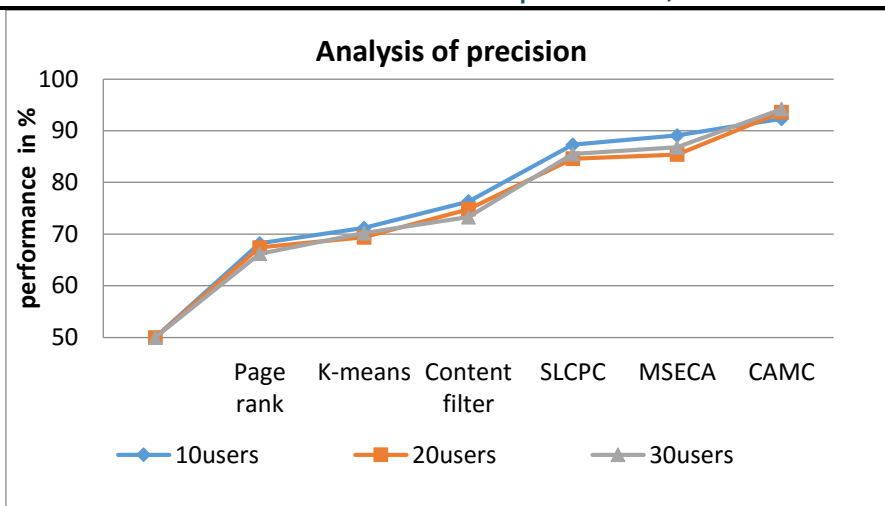


Figure 4.4: Comparison on precision rate

Above Figure 4.4, shows the comparison of precision rate produced by different methods and the proposed method has produces higher performance rate than other methods.

Table 4.3: comparison of precision rate

Methods/number of users	Impact of precision in %					
	Page rank	K-means	Content based filter	SLPCPC	MSECA	CAMC
10 users	68.2	71.2	76.3	87.3	89.1	92.3
20 users	76.4	69.4	74.8	84.6	85.4	93.6
30 users	66.2	70.2	73.2	85.5	86.8	94.2

The Table 4.3, shows the comparison of precision ratio produced 10 users as 89.3%, 20users as 85.4% and 30 users as 86.8 % shows that the proposed approach produces higher performance ratio

Analysis of recall

Recall, Rc is defined as the proportion of total number of retrieved URL links within the relevant URL links and the total relevant URL links with paged ranking.

$$\text{Recall, (Rc)} = \frac{\text{total retrived from relavant links (RA)}}{\text{relavant links(R)}} \times 100$$

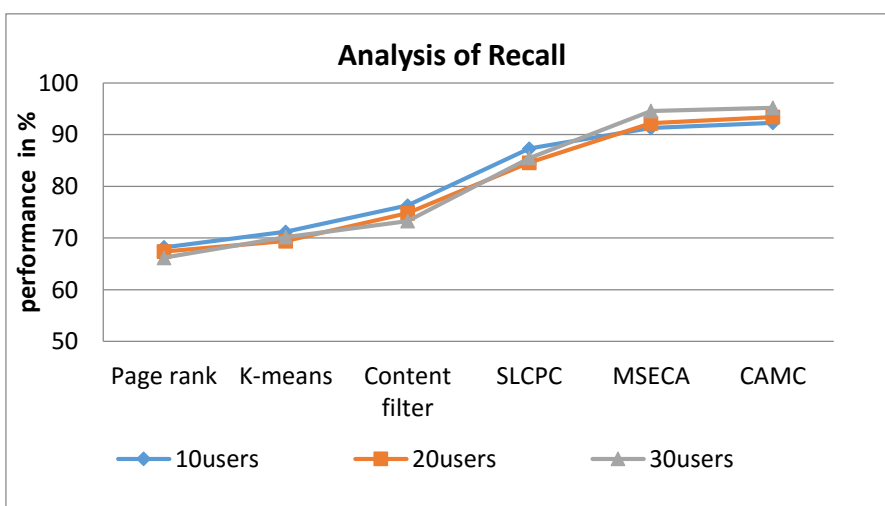


Figure 4.4: Comparison on recall

Above Figure 4.4, shows the comparison of false recall ratio produced by different methods and the proposed method has produces higher performance other methods.

Table 4.5: comparison of recall

Methods/number of records	Impact of recall in %					
	Page rank	K-means	Content based filter	SLCPC	MSECA	CAMC
10 Users	68.2	71.2	76.3	87.3	91.3	92.3
20 Users	67.4	69.4	74.8	84.6	92.2	93.4
30 Users	66.2	70.2	73.2	85.5	94.6	95.2

The above table 4.5 shows the comparison of recall page rank value that produce higher performance compared to other methods

Analysis of Time complexity

$$\text{Time complexity (Tc)} = \sum_{k=0}^{k=n} \times \frac{\text{prediction of clustering Accuracy(cs)+false classification(Fcr)}}{\text{Time taken(Ts)}}$$

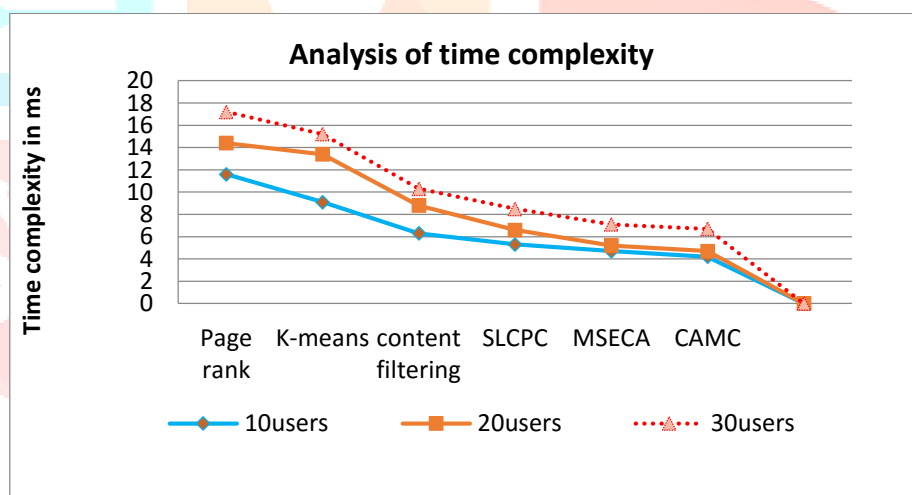


Figure 4.5: Comparison on time complexity

Above Figure 4.5, shows the comparison of time complexity produced by different methods and shows that the proposed approach has produced less time complexity than other methods.

Table 4.4: comparison of time complexity

Methods/number of records	Impact of time complexity in mille seconds (ms)					
	Page rank	K-means	Content based filter	SLCPC	MSECA	CAMC
10 Users	11.6	9.1	6.3	5.3	4.7	4.2
20 Users	14.4	13.4	8.8	6.6	5.2	4.7

30 Users	17.2	15.2	10.3	8.5	7.1	6.7
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Above Table 4.7, shows the comparison of time complexity proposed perfect clustering produced 10 users as 5.2(ms), 20 users as 6.6(ms) and 30 users as 7.1(ms) shows that the proposed approach has produced less time complexity.

Conclusion

In this paper, the proposed context aware multilevel framework to rank Web search results based on the information of the user personalized search in better way. We have shown how the proposed system can help in bringing more relevant and interesting information for a particular user by re-ordering the search results from Web search engines. Hence it enables users to find out the right information according to their interest easily. Our work includes developing different strategies for pulling out important publicly available information, based on standard social network analysis techniques, of a user and his/her activities from a social network. The proposed system produce clustering accuracy as well as 98.6%, time complexity search retrieval case in 4.7 milliseconds. Similarly, extracting the important information of the community of a user from relevance search case results, and using this information based on trust based metrics to rank and re-order the search results of a Web search engine, for a particular user as per its interests as well precision 95.2 % and recall accuracy 94.6 % highly performed.

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