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Improving Web Search by Mining Query Facets from Search Results

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ABSTRACT:Query Faceted search is a way for searching to find, analyse, and navigatethrough search data form online web pages. An effective approach for faceted search is thescope of this implementation. Most existing faceted search and facets generation systems are built on a specific domain (such as product search) or predefined facet categories. Forexample, Web search mining for an unsupervised contents by automatic extraction of facetsthat are relevant for search result for personal web search as user search interest pattern from text databases. Facet hierarchies are generated for a whole collection, instead of for a givenquery. Proposed facets searching system for information discovery and media exploration inonline search results. The proposed system explore to automatically find query related aspectof search for open-domain queries in Web search engine. Facets of a query are automaticallymined from the top web search results of the query without any additional domain knowledgerequired. As query facets are good summaries of a query and are potentially useful for usersto understand the query and help them explore information, they are possible data sourcesthat enable a general open-domain faceted exploratory search. In order to increase thequality of the extracted list,wrapper data extraction concept is introduced.

KEYWORDS:Facets generation, Query aspects, Query Reformation, Seed Collection

I.INTRODUCTION

The plentiful content of the World-Wide Web is useful to millions. In this case, users submit a query, typically a list ofkeywords, and receive a list of Web pages that may be relevant, typically pages that containthe keywords. There are many challenges in building good search engines, and describe someof the techniques that are useful. Query aspects provide interesting and useful information about a query and, therefore, can be used to improve research experiences in many ways. First, we can show the facets of the query with the innovative results given by search engine appropriately. Therefore, users can understand some important facets of a query without go through number of pages. In this paper, a proposed system scans to automatically identify the look related to searching for open domain queries in the Web search engine. The facets of a query are directly extracted from the consequences of the main query web search lacking the requirement for further domain knowledge. Because the aspects of the consultation are summaries in well manner and are truly helpful for users to know the query and aid them to get the information, data sources are possible that allow a general multifaceted exploratory search of open domain. System address the problem of finding query facets and to link to the intended web page. A query facet is a group of items which outline and encapsulate one prime aspectof a query.The proposed system address the difficulty of finding query facets which are several groups of words orphrases that explain and sum up the content covered by a query. This system bases on open domain search, it is not related only specific people or product. We are using online datasets for getting good results so for any type of query the system will give more accurate and most relevant result to the user. Query dimensions provide interesting and useful knowledge about a query and thus can be used to improve search experiences in many ways. First, we can

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display querydimensions together with the original search results in an appropriate way. Thus, users canunderstand some important facets of a query without browsing tens of pages.

II. LITERATURE REVIEW

- In this thesis author consider novel semantic presentation for query subtopic is implemented, which coversphrase embedding approach and query classification distributional representation, to solve those problemsmentioned above. Additionally this approach combines multiple semantic presentations in the vector spacemodel and calculates a similarity for clustering query reformulations. Furthermore, automatically discover acollection of subtopics from a query given by user and each of them are presented as a string that define anddisambiguates the search intent of the original query. Query subtopic could be minded from various resourcesinvolving query suggestion, top-ranked search results and external resource [2].
- In this article, author represents concept of query aspect to know the user interest for search on various topics,where every facet presents a collection of words which explain an user intention for searching that a query.Investigated approach generates subtopics related to query factors and proposed faceted diversificationapproaches. The actual query aspects are investigated to give more specific search to user such as collectingfacets and exploratory search. [1]
- In this thesis, author presents OLAP model for online analysis of user interest to extract query aspects withOLAP capabilities, existence of facet mining was related to the data over relational database, to the free textqueries from metadata list style content. This is an extension shows efficiently facet extraction by a searchengine to support correlated facets a more difficult data model in which having the values related with asearches in numerous facets which are not autonomous [5]
- In this survey author proposes a random faceted search approach for searching query driven analysis on datawith both textual content and structured attributes. From a facet query, user expected to dynamically choose a setof interesting aspect and present to a user. Similarly in OLAP exploration, author defines interestingness as how collected value is, based on a given probability [6].Author of this term paper searched the new techniques based on a graphical representation to extract query facets from the collection of noisy data. The graphical representation tells how likely a candidate form is to be a aspect string and how two terms are clustered jointly in a query feature, and captures the dependency between the two factors. This work proposes two mechanism for aggregation of an inference on the graphical representation sinceexact deduction is obdurate [4].
- A hidden webpage extraction from an association makes easy to get to the maze by allowing end user to enterqueries by a search engine. In other way, data collection as of such a cause is not by implemented in hyper link.As an alternative, data are collected by querying the boundary, and understanding the consequence page withrandomly generated [3].
- This paper resolve problem of relevant search by using the stuffing of pages to focus the search on a subject; byprioritizing capable links within the topic; and by also following links that may not lead to instant advantage.This paper recommend a new techniques whereby searching involuntarily find out patterns of useful links andapply their spotlight as the creep progresses, thus mainly plummeting the amount of requisite physical setup andchange [8].
- In this paper author design a two-stage crawler, namely Smart Crawler, for related harvesting deep web pages. Inthe primary stage, Smart Crawler performs web site (URL) based penetrating for hidden web pages with the assistance of search engines, avoiding visiting a huge quantity of pages. To accomplish extra efficientoutcome for a focused crawl, Smart Crawler position webpage to prioritize extremely related data for a specifiedsearch query. In the next stage, Smart Crawler achieves rapid in site web crawling by extracting mainly relatedlinks with an adaptive link prioritizing [7].

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III. SYSTEM ARCHITECTURE

Query facetsprovide fascinating and useful knowledge about a query and thus can be used to upgradesearch experiences. Users can perceive some prime aspects of a query without browsingtens of pages. Query facets may provide direct information or instant answers that usersare seeking. The facets are generated based on the users taste. The user can also go tothe desired web page by selecting the item from the facets. Thus it saves the users timewasted on searching for the data in tens or thousands of pages. Query facets are mined by using four methods.
Processing steps are as follows:

1.Crawling(Seed Collection):
A web crawler forms an integral part of any search engine. The basic task of a crawleris to fetch pages, parse them to get some more URLs, and then fetch these URLs to geteven more URLs. In this process crawler can also log thesepages or perform severalother operations on pages fetched according to the requirements of the search engines.
The crawler module retrieves pages from the Web for later analysis bythe indexing module.

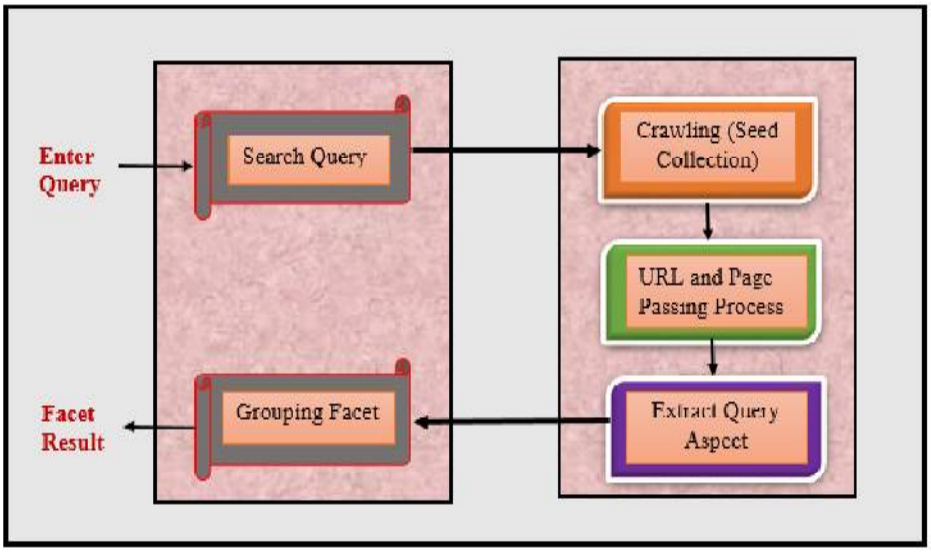

Fig.1 System architecture of facet mining

2. URL and Page parsing process:
First system consider URL, it will take last word from URL as a facet also for a list extracted from a HTML element like SELECT, UL, OL, or TABLE by pattern. Thatcontain facet and links that will display to user.

3. Extract Query Aspects:
After performing page extraction we get facets and links. SELECT For the SELECT tag, we simply extract all text from their child tags (OPTION) to create a list. UL/OLFor these two tags, we also simply extract text within their child tags (LI). For a listextracted from a HTML element like SELECT, UL, OL, or TABLE by pattern HTMLTAG, its context is comprised of the current element and the previous and next elementif any. Facets mainly extracted from the URL link and title.

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4. Facet Grouping:
Facets are grouped according to different classes. It group data of similar facetsshould frequently appear in the top results. This model isapplied over html document by parsing html tags. List clustering Similar lists are grouped together to compose a facet.

IV. METHODOLOGY

Query facets can be used to help improve search experience in many ways. Like in facetedsearch [6], query facet can help users to navigate through different topics of the search resultsby applying multiple filters.

Then, query facets are mined by the following steps:

1. Search Query :

As if user want to search related to anything user has to put the Query or keyword respectively,after that user has two options to search regarding that query,either user can search itin generalize way or in personalize way.

1)Generalize Search:In the generalize search system will take the query from user and send it to the search engine because it uses online database, so it will get the result or this process will be perform as per the normal search.

*2) Personalize Search:*In personalize search,system will give result by considering both query and user interest.Here, at the time of user registration user should put the profession or area of interest.This information later use for personalize search. For example if user put the queryrelated to shoes,and user area of interest is Sports so in personalize search user considerboth shoes and sports and in the result it will return the links related to correspondingquery and user interest,So user get most of links and facets related to the sports shoesbrands.

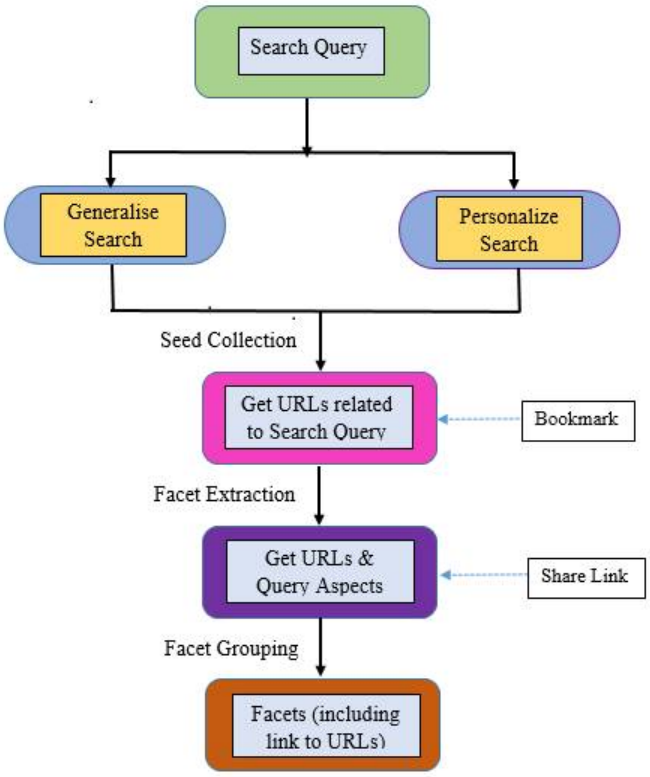

Fig.2 working of proposed system

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2 . URLs related to Search Query:

After performing first step of entering and submitting search query seed collection operationis perform. In the seed collection step search engine will search all the webpages or linksrelated to the search query. Firstly,it will take the raw query and remove the stop words fromit and remaining keyword is send to the search engine. System will return the webpages andURLs related to users query in the form of list to the user. In this step system provide theoption of Bookmark to user,in this step user can bookmark the important link for further use.Bookmark links are easily available to user for quick access so it will reduces the searching time and efforts.

3. Query Aspects and URLs:

In the next step, facet extraction process is perform in this step the system will find out different dimensions related to the search query. The query dimensions are extracted from webpages and different URL links or URL title and shown to the user in the form oflist. In this step system provides option of Share Link with the help of this option user cansend the link to the friends. Hence,due to this process unnecessary recommendation will beavoid. If another user want to search related to the same query so with share link optionimportant links can be share to that user,so instead of visiting number of links only mainlink will be visited.

4. Query Facets:

In this step,before displaying the facets to user Facet grouping step will be perform. In facet grouping step the collection of query aspect is perform and after grouping of facet it willshow to the user. The group of facets includes all the facets related to the search query,thesefacet contains link to the URLs related to that facets. After clicking on that facets it will shows links of different webpages. In this along with the main facets user can also parse or visit another extra facets.

V.EXPERIMENTAL RESULT

Propose system mine and analyse query facets or query aspects from search query. After the final result produce, all facets are display to the user and that time classification graphs are generated.

1. **Generalize search :**

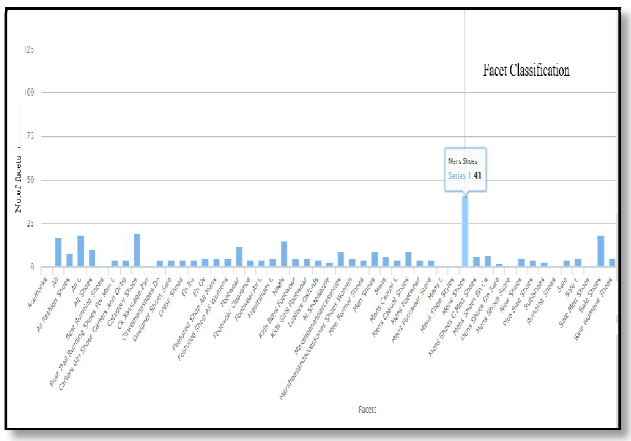

Fig 3. a) Facet Classification (Generalize)

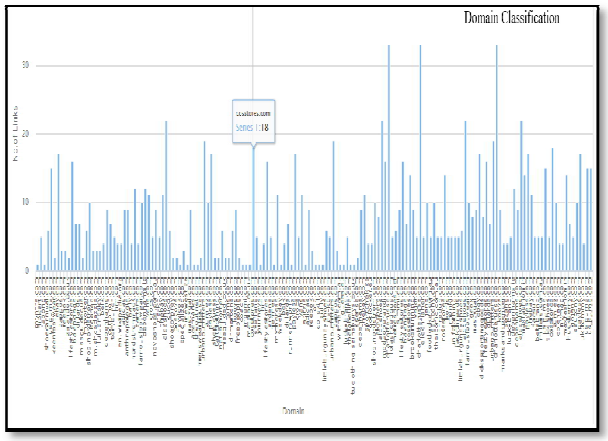

Fig 3. b) Domain Classification(Generalize)

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Fig 3 a) shows facet classification analysis graph, In this the user put query for searchingand search it in generalize way for example user put query 'Shoes' and search it in normalway it will give all aspects related to the query shoes and in this process only that queryis consider as input not user interest nor profession is include. In the output the group onfacets along with URL links are display to user. b) This graph represents, how many links contains by each domain, so user can see domain wise classification of facets.If particular domain includes more links then user can visit that domain or the URLs containby that domain first. Domain classification graph shows the proper distribution of domainand the links under that particular domain.

2. Personalize Search:

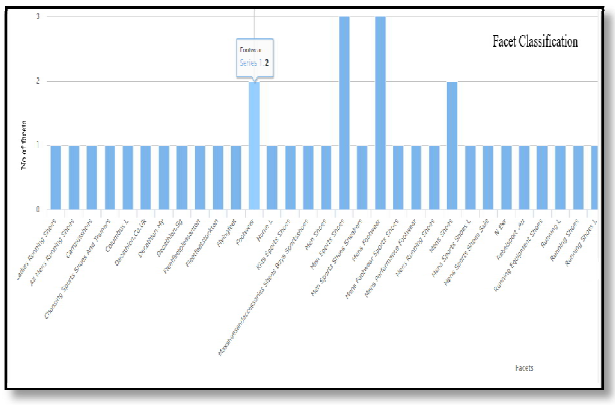

Fig 4. c) Facet Classification (Personalize)

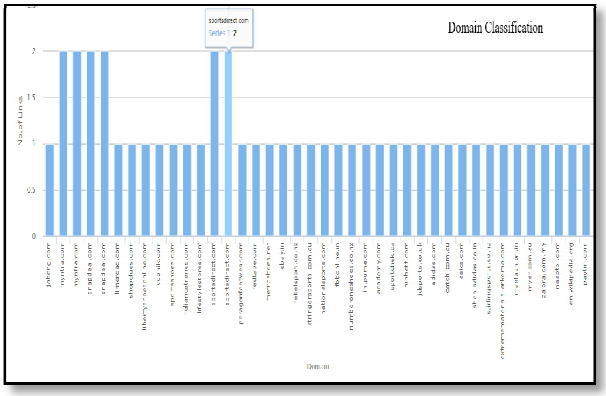

Fig 4. d) DomainClassification (Personalize)

Fig 4 c) shows the analysis graph of facets of search query. In facet classification in personalize case first when user put query for the search then user should select the way to search that particular query. As if user select the personalize way then while sending the search queryto search engine, user interest also get consider. This user interest is consider from the user profile,because at the time of registration user put the all information along with area ofinterest. If user choose the personalize way to search particular query then user's area ofinterest and search query both gets consider. For example at the time of registration userputs area of interest as 'Sports', and at the time of searching user put query as 'Shoes' andselect the option of personalize search then the system will return more links related to thesports shoes. So it will reduces the searching efforts and within less time user get the properresult for search query. b) Represents domain classification graphs. When system gives number of links as aoutput, this analysis shows the graphical representation of domain.As if search for user's query is perform in personalize way it will consider or shows only that
domain where system finds aspects by considering user query and user's area of interestboth.

VI. APPLICATION

In web application development, educational website,e-learning applications, online literature needs to generate facet for better search results. It is useful for getting the results ofqueries in less time. It will saves the time by providing the answer for the given queries alongwith some extra facets. If user wants to see another aspect of the queries, so withouthitting another sites, this system will give the information for that aspect in the same result. Hence the unnecessary recommendation is avoided for other user.This concept of facets mining and analysis will applicable in data mining.Users get most relevant result related to their search queries in less time, many recommendation system application can use it.

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VII. CONCLUSION AND FUTURE SCOPE

Hence we studied and implemented the method of generating meaningful facets from the user query search results. The facets here are generated using four steps, web crawling, URLparsing, facet extraction and facet grouping. In web crawling, user send query to search engine and it will find relevant result related to that query.In URL Parsing the uniquewebsites are collected and shown in the list. This method can extract high quality lists from the top k query search results. Hence these high quality lists can be used to generatemeaningful facets. In facet extraction step the facets are extracted containing links. Afterthis process grouping of facets is perform. These facets are generated based on either user'sinterest that means in personalize way or in generalize way. User can navigate to the specifiedpage by selecting the item on the facet to get detailed information. Mining information inthe form of facets from record by parsing html labels from the report.

In future will also investigate the concept that, along with facets the good descriptions of query facets may be helpful for users to better understand the facets. Automatically generate meaningful descriptions is an interesting research topic,this will be developedfor e-learning application. Faceted search is a technique for accessing information. Miningfacets classification system allows users to collect information by multiple filters. Findingquery facets is an important issue due to this only text based query processing is used. Ifimage is used as a query this makes complicated one so in future will investigate the conceptfor better result.

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