Intelligence based Faceted Search in Legacy Systems

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Abstract: **The 'Faceted Search' implemented in Mainframe using COBOL, DB2 and CICS concepts is highlighted in this paper. Faceted search, also called faceted navigation or faceted browsing, is a technique for accessing information organized according to a faceted classification system, allowing users to explore a collection of information by applying multiple filters. A faceted classification system classifies each information element along multiple explicit dimensions, called facets, enabling the classifications to be accessed and ordered in multiple ways rather than in a single, pre-determined, taxonomic order. Facets correspond to properties of the information elements. They are often derived by analysis of the text of an item using entity extraction techniques or from pre-existing fields in a database such as author, descriptor, language, and format. The project focuses on making the faceted search intelligent by providing personalized search choice based on the overall shopping experience. Thus, existing web-pages, product descriptions or online collections of articles can be augmented with navigational facets.
The credential part of this paper gives the idea of application of faceted search for easier search options for the users.**

Key words- **Faceted search, mainframes, CICS, DB2, COBOL, Cursors, intelligent search**

I. INTRODUCTION

Faceted search, also called faceted navigation or faceted browsing, is a technique for accessing information organized according to a faceted classification system, allowing users to explore a collection of information by applying multiple filters. A faceted classification system classifies each information element along multiple explicit dimensions, called facets [1], enabling the classifications to be accessed and ordered in multiple ways rather than in a single, pre-determined and taxonomic order [3]. The purpose of the system is to provide the customers with a fully functional online shopping system

Creating the faceted search in mainframes needs a lot of analysis and business verifications. The system needs to track the shopping behavior (click behavior) of the user and a personalized search options are shown to the user in the faceted search. User search and navigation behavior is learned during the stay on the portal. We have implemented Faceted Search [2] in which customers can select or refine their search by entering different fields and selecting from the fields provided.

Let's say, customer wants to search according to brand, price, rating or the product description, he can search the products by entering proper field values. The intelligent behavior is embedded into the search stream to provide a personalized experience to the user in the facets. The facets would be always related to the product bucket list and also based on the user behavior [4].

II. IMPLEMENTATION

The Faceted Search Algorithm for the project was implemented with the help of the TSQ concept in CICS wherein data from the DB2 database was fetched using different cursors depending on the search fields entered by the user and populating the resulting rows into the TSQ dynamically.

As and when the prospective customer inputs his desired requirements, the contents of the TSQ gets altered to reflect the narrowed search results instead of simply displaying only all the items in the database of the site. The customer is allowed to choose based only on the rating of the products in store, or on the basis of the product name/brand name, or he could search for products that satisfy his requirements in terms of cost. Apart from these basic functionalities, combination searches based on product name/brand and rating. Product name/brand and price range, price range and rating, or product name/brand, price range and rating can also be done.

An option to select a particular product alone from the narrowed search results in the primary list is also provided to the customer. This extra layer of filtering was implemented by means of the simple map-on-map concept offered by CICS. When the customer tries to search the products on the basis of either the product name or brand name, another TSQ displaying the brand name or product name respectively that satisfies the search criteria is displayed side by side the original TSQ. From this TSQ, the customer is allowed to select a particular brand or product name. Based on the selected item from the secondary TSQ,

the primary TSQ alters itself to show only those products in store that satisfies both the input filters, i.e. the product name as well as the brand.

The heart of the Faceted Search [5] implemented in the project is the Cobol code that is used to decide the appropriate cursor that is used to fetch data from the database based on the search query(ies) given by the user. The algorithm is a nested-if structure that checks for the input fields of the map each time the map is received. The code checks for values of each input field and selects the appropriate cursor for each of the possible combinations of filters. Based on the cursor being fetched, the results are populated on the map for the customer to view.

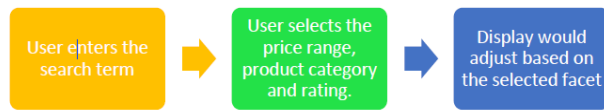The process flow of the search is given below in Fig1.

Fig1: Process Flow.

Browsing via the faceted search get an extra touch of user convenience with the display of the minimum and maximum price range for each of the narrowed search results displayed. Hence, the customer can at a glance see the least price and highest price of the products in store that satisfies his requirements without the need to go through the entire list of items that is available in store.

III. FIGURES AND TABLES

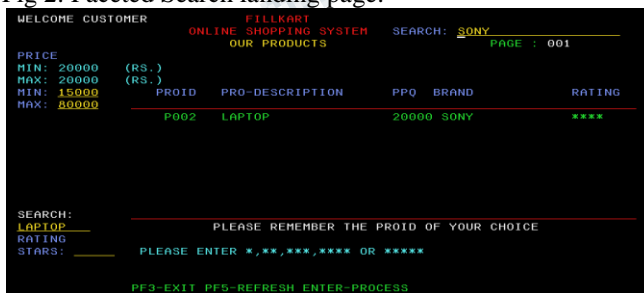Fig 2: Faceted Search landing page.
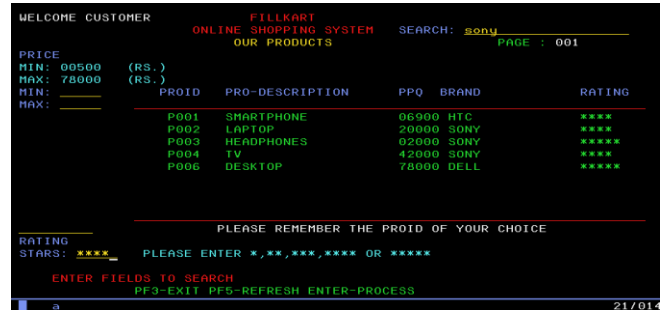

Fig 3: Faceted Search based on category.

Fig 4: Rating based faceted search

IV. RESULTS

The faceted search in mainframes using the intelligent tracking of the user provides a more useful search results to the user based on his click and behavior on the shopping portal. This provides the user meaningful product listings and also a range of products which are within the pattern behavior learned from the behavior.

We analyzed the results being shown across multiple platforms and found that the results are more efficient and more related to the customer needs and wants rather than a simple search performed by the current sites. This provided search results which are almost near to the customer search pattern flow and thus enabled the customer to get to the right product with minimum number of faceted parameters. Using the intelligent faceted search there was a saving of a minimum of two search facets and thus improving the efficiency to 6.66%. This is given in the below chart (Chart 1).
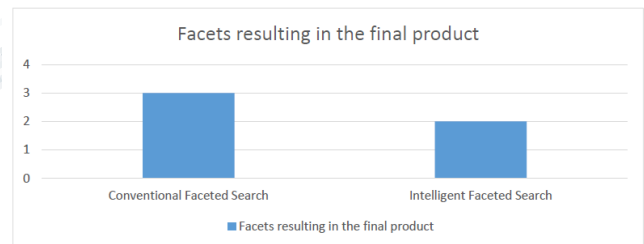

Chart1: Number of clicks to achieve the desired search result.

CONCLUSION

Thus, the faceted search concept implemented in the project makes it very user friendly and adds to customer satisfaction by enabling customers to choose products from store that caters to his various requirements at ease without having to browse through the entire range of products being sold on the site. This provides customer more intelligent experience and are able to zero down onto the products at an early stage and thus improve the customer satisfaction.

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