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This paper discusses using a hierarchical multi-faceted search interface for simple comment analysis utilizing the Interactive Comments in Schema (ICIS) tool. ICIS was developed at the University of North Carolina at Chapel Hill (UNC-CH) School of Information and Library Science (SILS) for viewing, exploring and sharing feedback comments from some UNC Libraries. It integrates a hierarchical faceted schema, search function and faceted filters for manipulating the retrieved dataset.

A research study was designed to evaluate ICIS's usability in exploring the comments, answering questions about the library services and assess if a faceted search interface is adequate for simple comment analysis. The study also compared the tool to a baseline search interface to evaluate the effects of its design over a simple search system. The findings show that all participants preferred ICIS and liked its flexibility of options in finding and viewing information. Overall performance was slightly better using ICIS.

Headings:

      Interactive Comments in Schema (ICIS)

      Faceted Search

      Comment Analysis

COMMENT ANALYSIS USING A FACETED SEARCH INTERFACE

by
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Introduction

The information age has overwhelmed us with a wealth of information in various forms and applications. There has been a shift towards more electronic information systems as they have made it convenient to share, view, find and analyze information. These systems are created to support data from endless sources including user surveys, clinical research, student information, library systems and commercial inventory. We have advanced from mere desktop computer access to such systems, and now have to support various mobile devices and their specific browsers, resolutions and underlying technologies. The proliferation of these electronic applications and users' needs have created the necessity to improve user interface presentation beyond standard navigation and the simple search box.

Similarly, this need for a flexible presentation of information and access by various users led to the development of the Interactive Comments in Schema (ICIS) tool, as a means of sharing survey comments of patrons' perceptions of some UNC libraries and their services. This visual online tool was developed with a hierarchical faceted schema based on the coding/classification of the feedback comments, and faceted classification of the various library services and comment types. ICIS would enable librarians to easily evaluate the feedback about their libraries. Ultimately, it gives a picture of how the libraries are performing, indicating issues and concerns that patrons might have, and provide knowledge that can be used in making decisions and improving

the libraries (Pulley, 2007). A user study was designed to determine if ICIS did meet these expectations and if such faceted interfaces can be used for simple comment analysis.

Faceted classification is a means of organizing information as it "decomposes compound subjects into foci in component facets, offering expressive power and flexibility through the independence of the facets" (Tunkelang, 2009). This classification is based on attributes, categories, functions or other aspects that are essential to the underlying data and its presentation (La Barre, 2007). The developed facets are isolated groupings of the same data and should serve the purpose for which it was created (Hjorland, 2013). Faceted categories are used to guide users as they navigate a data domain, aiding them in data discovery and reducing query reformulation (Kules, 2009). This classification can be hierarchical, nesting data points into levels of categories under broader concepts based on similarities like function, purpose and composition.

Faceted search interfaces use facet categories to group and present information, allowing users to "evaluate and manipulate the result set", making it easier for them to explore the data (White, 2009). In cases where a faceted search interface integrates hierarchical categories, search function and result filters, users have more options to search and retrieve information from the collection. When using keyword search in such a system, a user can further narrow his/her results using the faceted organization; this eliminates dead ends and empty result sets, allowing the user to find only relevant information (Tunkelang, 2009). As users navigate a hierarchical facet, the system "builds up a complex query over subcategories" (White, 2009), saving time and effort as users don't have to compose these queries to explore every level of the hierarchy.

The combination of a hierarchical schema, faceted filters and search feature provides users with many paths to the underlying data, and renders ICIS as what is often called a "hierarchical multi-faceted search interface" (Hearst, 2006). Generally, facets have been a good enhancement to search interfaces, giving an overview of the dataset and presenting clear and concise categories to the users. Its implementation in ICIS adds the benefits of faceted classification to the system and takes faceted search a step further than shopping and finding materials in a library catalog.

Findings from this study prove that ICIS is appropriate for comment analysis, and faceted search interfaces can be used in more instances than library catalogs or ecommerce systems. The tool was preferred over a plain text file containing the same comments, and offered users different methods to filter and manipulate the retrieved comments. Overall, users performed better in ICIS but there was not a huge difference in the time on task or task accuracy measures for the two systems.

Related Research

Faceted Search

Previous research studies on faceted search interfaces have shown that facets can "improve the search experience, encourage browsing, is flexible, preferred by users in most cases, easy to use and can increase task accuracy" (Fagan, 2010). It creates an awareness of the collection (Yee, 2003) and aids users in narrowing their searches and focusing on a specific category that is useful for a given task (Olson, 2007). The two main methods used in studies of faceted search interfaces are large-scale log analysis and comparative user studies; with log analysis utilizing logs of users' search sessions of specific tasks to determine which elements were used, and comparative user studies comparing interfaces using various measures like time on task and user satisfaction (Kules, 2009).

Results from these studies have shown the benefits and challenges of faceted interfaces. When a facet is used for both browsing and refining of a search result, its usage improves as compared to an implementation that only refines the result set of a keyword search (Nui, 2010). Hence there is more value to a faceted classification that allows browsing without the need for keyword search and modifies the result set after a text search. Users also preferred the faceted interface since it was easier to use and enabled them to learn more about the dataset (Yee, 2003). User satisfaction is higher for

the faceted interface for studies that compared such interfaces to baseline, cluster or ranking tools (Fagan, 2010).

The literature indicates that time-on-task can be less for a faceted interface as compared to that of a baseline search system. Uddin and Janacek compared faceted and traditional search retrieval interfaces, finding that participants spent less time and found more relevant results using the faceted interface (Fagan, 2010). More significantly, task accuracy is higher for faceted interfaces as compared to standard search systems. Results from Marchionini and Zhang's usability study of a faceted search system (Relation Browser) against a baseline search interface showed that users performed better in the Relation Browser and the baseline system had significantly higher error rate (Zhang, 2005).

Regardless of users' general preference for faceted systems, there have been instances where users have found the faceted interfaces overwhelming (Yee, 2003). When there are a lot of categories in a flat facet classification, or hierarchy with several nodes and levels, users are likely to get lost and miss some information. User interaction with facets also increases if the facets adequately describe the data and has multiple functions (Nui, 2010). Generally, users like the simplicity and flexibility of faceted systems, as they are easily adaptable in guiding the user and subsequently increasing task accuracy.

Comment Analysis

Empirical studies of comment analysis are not common, but this process is often done using different mechanisms depending on the users and institution. With many of today's companies, institutions and governments having online representations, we have seen an increased need for user feedback on how these entities are performing. There are online surveys, contact us forms and other methods to solicit feedback on organizational performance and user satisfaction. Data collected from these sources as open-ended responses have to be presented in a form that makes it easy to view and analyze. Often times, such data is coded in order to classify and analyze it. Examples of such cases are the classification of the comments used in ICIS (Pulley, 2007), and the coding of comments from the perception survey evaluating the UK government online tax submission site (Barnes, 2005). Although coding enables the organization to understand users perception, it needs a user interface geared to0wards presenting that information in a way that makes it easy to view, explore and analyze. With no standard guidelines for comment analysis interfaces, we are left with commercial systems like Public Comment Analysis Toolkit (PCAT) and Wordstat with different coding and presentation methods.

Background

During the spring of 2005, a user satisfaction survey evaluating the UNC Biology, Chemistry, Health Sciences and Math and Physics libraries was conducted, soliciting feedback from academic scientists who were patrons of these libraries. Survey questions included 25 closed-ended questions and 3 open-ended questions. The closed-ended questions were aimed at understanding how these academic scientists used the libraries to find information (Hemminger, 2007). The open-ended questions asked for the positive aspects of the libraries, the negatives or shortcomings of the library services, and wish/improvements that users wanted for the future. The goal of these questions was to allow the scientists to evaluate the library services and help the libraries to determine if they were meeting the needs of their patrons (Pulley, 2007). Hence, the open-ended results would reveal areas of the libraries that were successful, problems that patrons had encountered, aspects that needed improvements and help in overall planning and decision-making.

A total of 1365 open-ended comments were received from the survey. Of these, 648 were positive or successes of the libraries, 574 were negative or shortcoming of the libraries and 544 were wish requests for the libraries (Pulley, 2007). These comments were analyzed, coded and classified based on related aspects of the library services. Considering the volume of responses, it was inefficient to evaluate, analyze or share the comments by simply printing them out. The ICIS tool was created using the coded hierarchical faceted schema, facet filters of the comment type (positive, negative, wish)

and libraries (Biology, Chemistry, Health Sciences, Math & Physics), and a search

function as a novel means of displaying and exploring the survey results.

ICIS combines the hierarchical coded schema for browsing with search

functionality and facets for filtering the retrieved data. It allows users to drill down a

category or view all comments retrieved for the selected settings or search criteria. The

comment count is displayed for and within each level of the schema, so a user knows

how many have been returned. These functions make it more efficient for quick comment

analysis, as a librarian using the system can look at comments related to a specific

library, a subset of a library service, or search for comments with a particular keyword.

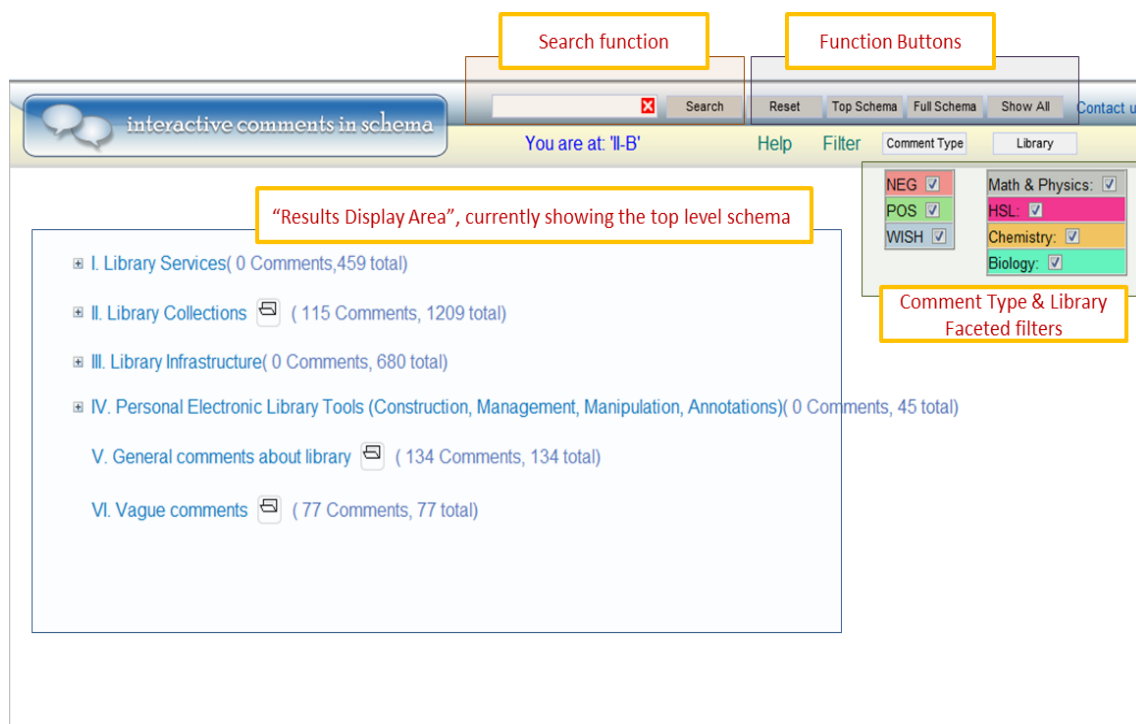The default ICIS interface is shown below.

Figure 1: ICIS Default View

The default ICIS interface shows the hierarchical faceted schema and the faceted

filters with all facets selected. The schema contains the number of comments at each

node (## Comments) and within each category (## total). Users can drill down the schema and view comments at the various levels. They can also filter the comments in the schema using the Comment Type filter, Library filter and/or a keyword search. This study focused on the first four categories of the schema as these were specifically related to the library services and thus coded accordingly. The function buttons allow the user to do the following:

Reset: resets to the default interface, clearing selected filters and search terms.

Top Schema: displays the collapsed schema with its default comments, but maintains user filters.

Full Schema: expands all categories of the hierarchical schema.

Show All: expands all categories of the schema and displays all comments at every node.

Figure 2: ICIS showing comments in the schema based on selected facets and search term

The above view shows comments in the Library Services -> Electronic Search Capabilities Provided by Library -> Catalog subcategory, and Library Services -> Electronic Search Capabilities Provided by Library -> Electronic Journal Finder subcategory based on the selected faceted filters and search term. The comment count is updated to show how many were found at each node and within each category of the schema. The search term is highlighted in the results for easy recognition and the comments are color coded to match the Comment Type and Library filters. This expanded view shows that users will have to scroll for comments in other categories and subcategories of the schema. The ICIS tool is publicly available, and can be accessed at http://gallifrey.ils.unc.edu/icis/.

The comments received from the survey were also put in a PDF file as a baseline search interface to compare with ICIS. The PDF format was chosen because of it is a commonly available operating system independent format that supports high quality display of the document and easy to use search functions (via ^F). This file is referred to as the Plain Text Comments in this paper. The comments were divided into positive, negative and wish sections with bookmarks pointing to the beginning of each section. There was no other organization to the file and analyzing comments in this system meant users could search or scroll beginning with a given section. The Plain Text document had a total of 105 pages of comments.

In order to test the usability of ICIS and determine if it is efficient and can be used for comment analysis, the two systems were used in this study where users performed various tasks exploring the coded data with the aim of understanding:

Can a faceted search interface be used for simple comment analysis?

How effective was the faceted interface over a plain text document?

Method

The study comparing ICIS to a baseline search interface had users perform comparable tasks in both systems using the same underlying feedback comments. This was a between-subject and within-subject study of 12 participants performing search and exploratory tasks in both systems. This setup enabled us to evaluate the usability of ICIS and compare it to a system that can be used for simple comment analysis.

Study Setup

This study included 13 graduate students from the UNC School of Information and Library Science including Information and Library Science majors. The final study data excludes data from one participant; hence the data analysis is based on what was collected from 12 of the participants. These participants were given general training on both systems, and system specific training before beginning the tasks for a given system. They were asked to perform 6 comparable tasks in each system. The time on task, responses, faceted schema/faceted filter/search function usage and task difficulty were recorded for each task scenario. Participants also completed a System Usability Scale (SUS) questionnaire for each system and a brief survey asking which system they preferred and a comparison of the two systems. The time-on-task was recorded for each task and task accuracy was calculated for each response.

Study Tasks

Two sets of six comparable tasks were created for the study. Participants performed 6 tasks in ICIS and 6 tasks in a plain text document. The study design had two counterbalanced groups of 6 participants each; however, when implementing the study an error resulted in 8 participants performing Set-A on ICIS and Set-B on Plain Text, while the other 4 did set A on Plain Text and set B on ICIS. These tasks were based on likely questions that a librarian would ask when reviewing comments from patrons of a library. Some tasks were exploratory while others could be answered with a simple search. Below is a list of all tasks from Set-A and Set-B.

Set-A	Set-B
1. As a Biology librarian, after reviewing positive comments about the Biology library, what is the common theme?	1. As a librarian reviewing negative comments about the Math and Physics library, what are the two most common concerns?
2. For all libraries in the system, what improvements do users want on the libraries' websites?	2. You want to ensure patrons are comfortable coming into the library and being helped by the staff. What is their general experience with the library staff?
3. As head of library collections, you are reviewing comments to plan for modifications to the electronic collection. Find two databases/repositories that users want you to purchase?	3. In planning for the electronic collections for next year, you are reviewing the related comments. Please list four database/repositories that patrons find most useful for their online searches?
4. Many users have been requesting help lately. What problems are they having finding items physically?	4. You want to evaluate your Interlibrary Loan (ILL) service. What are users' reviews about ILL?
5. You want to consider tools to help users with bibliography/citation management. Name one tool that users are requesting.	5. The libraries are in the process of implementing tools to help users with annotations and notes during research. What is the most common user feedback about taking notes?
6. You want to know what issues patrons are having with the catalog. What are the three most common complaints about the library catalog?	6. What were users' comments about the physical space in the Health Science Library (HSL)? What were the most common positive theme and the most common negative theme?

Table 1: Study task questions

Results

  This section covers the data analysis and findings of the study results. The time on task was recorded from the time a user clicked to begin a task, to the time the user indicated that he/she was finished. The task accuracy was coded on a scale of 0 - 1. A task was rated 1 if it was completed in full, fractions of 1 (0.25, 0.5, 0.75) for partial accuracy and 0 if the answer was wrong or the participant gave up on the task without giving the right answer. After each task, participants rated the task difficulty on a scale of 1 - 5 with 1 being very difficult and 5 being very easy. The usability questionnaires were evaluated on a likert scale of $1 - 5$. The System preference survey used a yes/no response for user preference, and asked users for the pros and cons and improvements for each system. The Facet Usage shows which methods (default facet, facet modification, search, drill and show all) participants utilized in performing the given tasks in ICIS.

Analysis

Average Time per Task

  The average time per task for participants using the ICIS interface ranged from 1:44 to 4:20 which was very similar to the time per task for the Plain Text file, which was from 01:29 to 4:29. Figure 3 shows a graph of the average time for each task in ICIS and Plain Text across all participants. Although most of these were done in less than three

minutes, a few for ICIS and more for Plain Text stand out as asking 3 to more than 4

minutes. Except for A4, there is no indication or a clear conclusion that a task taking

up a long time in one system had

the same result in the other. The

overall average for ICIS was 2:53

per task and Plain Text at 3:04,

showing Plaint text taking a little

longer (0:11 seconds) per task. A 1-

tailed T-test of unknown variance

for statistical significance on the
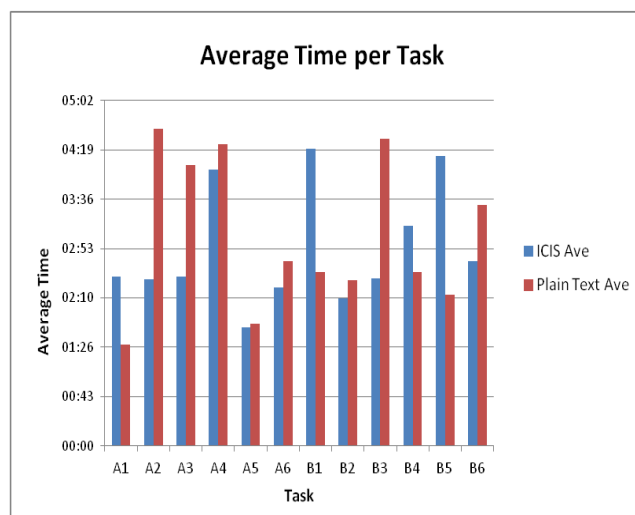
overall average time per task for

Figure 3: Average Time per Task

ICIS and Plain Text yielded a value of 0.32. This means there is not a statistical

difference between ICIC and PTS using a 95% confidence interval (0.05).

Average Accuracy per Task

Figure 4 shows the average accuracy per task across all participants in both

systems. With task accuracy calculated on a range of 0 - 1, the graph displays a range of

0.5 to 1 for the given tasks. This indicates that users were able to find some or all of the

answers. Of the 12 tasks, the average accuracy was the same for three of them; in two

instances the Plain Text Comments had a higher accuracy than ICIS and for seven of the

tasks, ICIS had a higher accuracy than Plain Text. This distribution reveals that ICIS had

a slightly higher overall average of 0.87 compared with the plain text file with an overall

average of 0.80. A T-Test on the average accuracy per task for both systems yielded a P-value of 0.31, indicating no statistical significance difference in the average accuracy of the two systems.
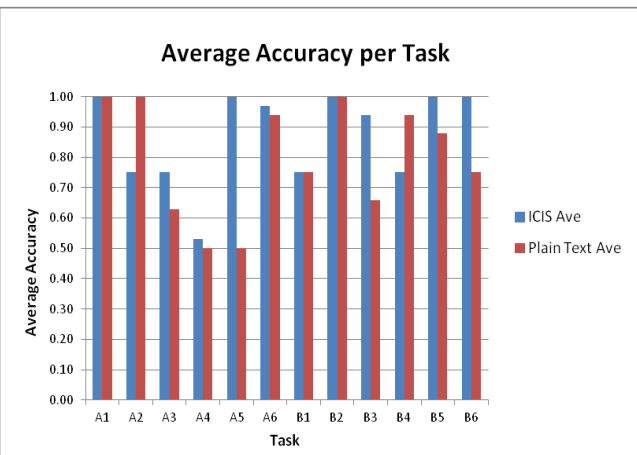
Figure 4: Average Accuracy per Task

Average Time per Participant

The average time spent on all tasks for each participant in ICIS and Plain Text is presented in Figure 5. Six particpants spent more time on ICIS while the other six spent more on Plain Text.
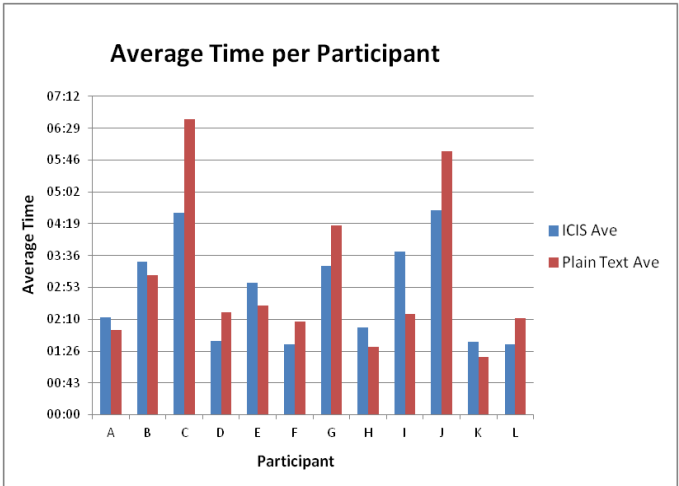
Figure 5: Average Time per Participant

Nevertheless, it is obvious that most participants completed their tasks withing 3.5 minutes or less, with a few participants taking more than 4 minutes especially in the Plain Text file. The range across participants for ICIS was 3: 02 minutes and that of Plain Text was 5:23, with an overall average of 2:47 for ICIS and an 3.01 for Plain Text. A T-Test for statistical significance comparing the average time per participant in both applications had a p-value of 0.35.

Using a 95% confidence interval (0.05), the P-value illustrates that the average time per participant in ICIS compared to Plain Text does not have statistical difference.

Average Accuracy per Participant

Evaluating the average accuracy for each participant across both systems shows that participants found a lot of the answers with most having an average accuracy score of 7 and above. For a breakdown, the graph in Figure 6 shows that two participants had the same score for both systems, four scored higher on the Plain Text file and six did better on ICIS. In spite of this distribution there was not a wide range in the average score between the two systems for most participants. The ICIS overall average for
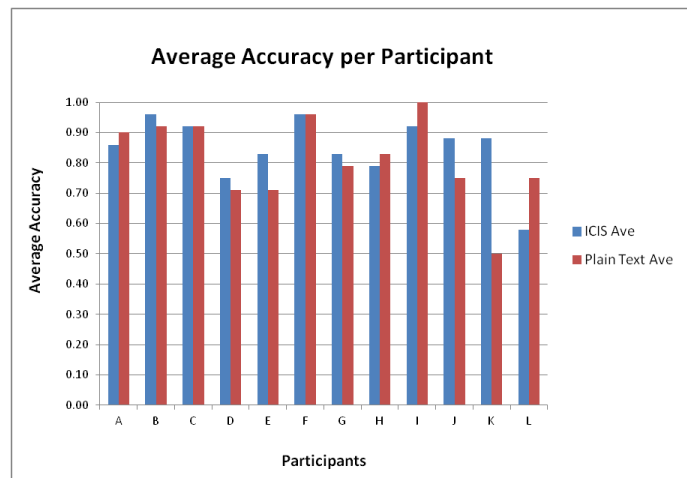

Figure 6: Average Accuracy per Participant

participants was 0.85 and Plain Text was 0.81. A T-test shows no statistical difference between the two systems at a P-value of 0.25 using a 95% confidence interval (0.05).

Average Task Difficulty

Analysis of the average task difficulty for each task in ICIS and Plain Text indicate that most tasks had similar ratings in both systems. Five tasks had a higher rating

of 1 point and above in ICIS as compared to Plain Text, but the other 7 tasks show

minimal differences in their ratings. Figure 7 shows the average task difficulty for both

systems with ICIS scores

between 2.9 and 5 and Plain

Text between 2 and 4.5. The

overall average task difficulty

for ICIS was 4.07 and Plain Text

was 3.49. A T-test for statistical

significance had a P- value of

0.03, meaning that there was a
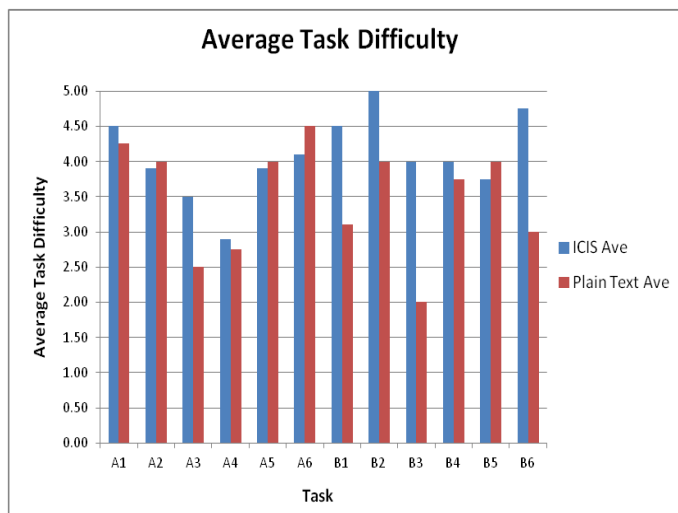
statistical difference between

Figure 7: Average Task Difficulty

ICIC and PTS for task difficulty using a 95% confidence interval (0.05).

Facet Usage

In the Plain Text file, users were limited to search and scrolling, but ICIS's

faceted schema, facet filters and search functions afforded users more options in

performing the given tasks. These functions translated to 8 retrieval options available to

the users. They could drill the faceted schema in combination with the other methods or

just view all comments for the selected filters. These options and their definitions and

functions are:

Default facet: refers to the Comment Type and Library facet filters. By default, these are

all selected.

Modify facet: user checks/unchecks Comment Type and/or Library facet filters.

Show All: this function button displays all comments that are retrieved based on the selected facet filters and search term. It prevents users from drilling the nodes of the schema.

Search: comments were retrieved using a search term.

Drill: user is navigating the hierarchical schema.

To answer questions, participants in most cases utilized a combination of the individual actions described above. These combination sequences and their frequency of use are shown in Figure 7. Three of the eight combination sequences were used more than the others: Modify
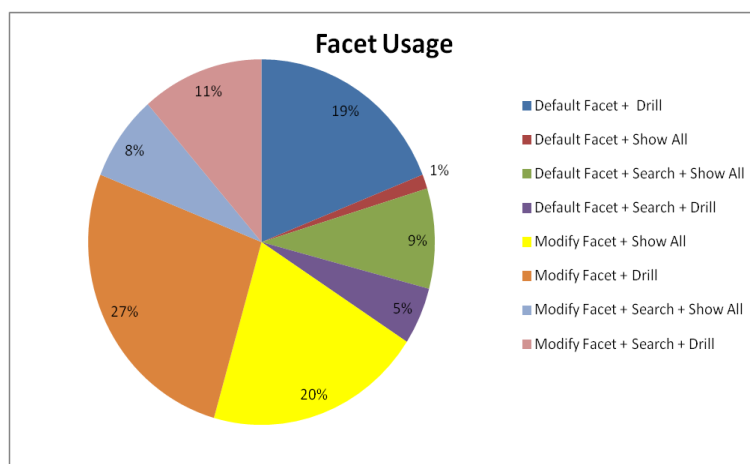

Figure 8: Average Task Difficulty per Task

Facet+Drill (27%), Modify Facet + Show All (20%), Default Facet+Drill (19%). In Modify Facet + Drill, users changed the default facet filters and navigated the schema for results. Using Modify Facet + Show All, they changed the faceted filters and displayed all comments to browse the result set. With Default Facet + Drill, participants did not change the facet filters, but used only the schema to navigate to the results. Most participants employed one method for a given task, while a combination of these methods was used in a few instances. In only one instance was all of the comments in the system displayed using the Default Facet + Show All.

System Usability Scale (SUS)

Results from the system usability scale showed that ICIS received higher usability rating from participants for the study tasks compared to the Plain Text document. The overall score was 72.08 for ICIS and 42.92 for the Plain Text file. The Plain Text score reflects that the file was difficult to use and is not the best system for comment analysis. Users had only the search and scroll functions, and although the comments were divided into comment type (negative, positive, wish), search was not limited within a section and some comments were out of context. As for the ICIS score, it shows that the system worked well for many of the tasks, but also had some drawbacks. Some users thought the schema was overwhelming since they had no experience with it. And without an easy understanding of the schema, it was difficult to drill down several levels in the hierarchy. Participants also said the system had a lot of white space and they sometimes didn't know where they were in the schema.

System Preference and Comparison

All 12 participants preferred ICIS to the plain text file. One possible reason was that participants felt they achieved more accurate answers with the ICIS interface. However, even participants that performed better in accuracy in the Plain Text system still preferred ICIS. Participants stated that the facet and schema made it easier to evaluate comments in ICIS, but the Plain Text file lacked the tools that would make it appropriate for comment analysis. They indicated that there were more ways to view the data using the schema and the facets, they could narrow their searches or look in specific subcategories. Below is a summary of users' responses to the comparison of the two

systems. They obviously liked ICIS and its many functions that made the comment

analysis tasks easier and faster.

ICIS Pros	ICIS Cons	ICIS Improvements
Easier to navigate, read and find information.	Too much nesting in the schema, user can miss some subcategories.	Add more faceted filters and remove some schema categories.
Facets good at filtering/limiting results.	System is too plain with a lot of white space	Make it more visually appealing.
Comments already analyzed using the schema organization.		
Don't have to search or rely on correct spelling.		
Several ways to find information.		

PTC Pros	PTC Cons	PTC Improvements
Easier to scroll through the comments.	You have to read more.	Separate the comments with some spacing.
Already familiar with pdf and searching.	It is raw data with no context.	Needs more organization and context.
You can easily get to results, don't have to drill down.	You have to know exact search term or keep trying different terms.	Don't use it. Use ICIS or something else.

Figure 7: Average Task Difficulty per Task

Discussion

This study was aimed at investigating if ICIS and such faceted interfaces can be used for simple comment analysis, and how effective this interface would be over a standard search interface. The major finding from this study is that faceted search interface can be appropriate for simple comment analysis. Users were able to explore the system, and answer questions for the given tasks. In comparison to a simple search interface, ICIS was a little more effective for comment analysis. Although it provided users with several means of finding information from the collection, ICIS overall average time per task was merely 11 seconds less than PTC and the average accuracy was 0.07 more than PTC. There were not statistically significant differences between the two systems when averaged across participants for average time to answer, and average accuracy. There was a difference in usability, where the ICIS tool did score more (72.08) than PTC (42.92). Users also indicated that the tasks were more difficult in Plain Text than ICIS, and a T-test illustrated that there was statistical difference (0.03) in the perceived difficulty of tasks between the two systems.

Descriptive analysis indicate that overall, participants spent a little less time on ICIS than the Plain Text file, showing that the organization and facets helped them in performing their tasks in a timely manner. The task accuracy was also higher for ICIS with participants finding more correct information than the Plain Text file afforded. Perceived task difficulty was higher for ICIS and it had an overall average 0.58 points higher than Plain Text. These show that participants had more confidence in using ICIS

as they often felt they did not find all of the answers in the plain text file regardless of the length of time spent on a task.

Analysis of the facet usage for ICIS shows participants used various methods combining the facet filters with search and drilling the schema or showing/browsing all comments. Users found it easier to use ICIS given that they could select or modify their method for finding the desired information. The system was designed with faceted browsing and refining, giving the user the option to find information without formulating a query. They also liked the organization and grouping of comments in the schema as it enabled them to focus on a given category. Although all of the methods were used, the results show that users favored a combination of two functions like Default Facet + Drill instead of the combination of three like Modify Facet + Search + Drill. The use of facets in this system supports findings from previous studies which have found that users can filter their search results, find relevant information and explore the information space. Using the facet did not require a lot of training and users employed it whenever they wanted to. They also employed different search strategies like using the comment count or the related facet colors on the comments.

Although participants liked the organization of the schema, a few thought it was overwhelming considering it is three levels deep with a total of 4 main categories and 50 subcategories at the second and third levels. In some cases users did not find the answers because they were in the wrong category or unaware of the category that would have their desired results. This issue meant the expanded schema sometimes caused the users to be lost while navigating the system. Probably one of the ideal ways to utilize the tool was to search for a string, and then examine the categories where the term occurred.

However, many participants did not use this combination of search and browse. When using search, the results were in various subcategories with the comment counts indicating where the results were. Some found this feature helpful as they knew where to drill for the comments, however a few were confused by the number of comments and the total comments for a given category or subcategory.

The lack of smart search feature like similar word search made it difficult for users to find answers in the Plain Text file. They had to think of various versions of a term that would be appropriate for keyword search. This was also an issue in ICIS as the system supports only exact match keyword search. In this case participants had to rely on terms used in the comments and if their search terms were not stated, they could not find the right answers. There was no concept representation and some comments were out of context in the Plain Text file, so it was difficult to know what they really meant or were referring to. A comment like "great location and staff" would make sense in ICIS since it is in the 'Library Infrastructure -> Building Space -> Access -> Convenience of location' subcategory. It is also a positive comment for the Health Sciences Library, meaning a participant can use the facets and filter the results to easily find this comment. In Plain Text however, this comment might be in the Positive Comments section, but there is no indication as to which library it is related to or how useful it is. This shows that a simple search can be useful when aided by other features that provide contextual information as a user might not always have the right keyword to lookup some information.

Overall, participants liked ICIS better as it allowed them to filter and view a subset of the comments. They were able to learn the system and discover answers to other tasks they had performed previously or spend less time on a task because they knew

where the answers were located in the schema. Exploring the dataset give them an idea of the content in that they did not have to read every comment but could infer the general theme in such situations.

Limitations

The limitation of this study is that it was not designed to compare two equal interfaces for comment analysis. The ICIS system was designed to work with comments that had been coded to a specific organizational system. The Plain Text System did not have this and as a result direct comparison is like apples/oranges comparison. It is more important to listen to the qualitative comments provided by participants. Comparing ICIS to the plain text system did suffice for one of the aims of this research, which was to evaluate the effectiveness of the ICIS interface, in order to determine where it would be worthwhile to have available at UNC. The plain text system without any organizational structure was inherently limited, and all participants found it lacking and incomparable to ICIS. They in turn gave ICIS a 12 out of 12 ranking for preference as compared to a 0 out of 12 for the plain text file. Moreover, we also see that the usability rating is higher for ICIS since it has more functionality and features. A study design to evaluate how two faceted interfaces support comment analysis will have more comparable results based on the features and how those functions support comment analysis. In any case, a static document is insufficient for a fair comparison.

Conclusion

This paper reports on a research study intended to show that open comments can be coded and a faceted interactive interface designed to handle them can be used successfully for simple comment analysis. We encounter facets in library catalogs and online shopping sites, allowing us to limit our search and retrieve only a desired subset of the results. They show us an overview of the types of information in the underlying system. Whether it is a link based facet used to navigate to a given dataset, or the checkbox version allowing users to filter retrieved categories, we have become familiar with facets and understand how they work. The Interactive Comments in Schema tool combines facets with comment analysis, allowing users to easily evaluate the comments in the system.

The results show that overall users were able to complete the comment analysis tasks using both systems with ICIS performing better on average time, accuracy and task difficulty. Users liked ICIS because of its flexibility and features that made it easier to review the comments. The facet filters were especially helpful in narrowing comments based on library and comment type while the faceted schema helped users in focusing on a given category. The system was appropriate for simple comment analysis, and if used by librarians in reviewing user feedback, they it will answer their questions about patrons' feedback about the libraries' services.

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