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COMS W4170 – User Interface Design
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Assignment 1

Part 1: Heuristic Analysis
Heuristic Analysis of LionSHARE
Problems:

1. "Loading results…" Dialogue Box Issue when on "Job Search" Page
On the "Job Search" page, the user is prompted to enter keywords for a basic job search (Figure 1), or open the "Advanced Search" pane (Figure 2) for additional search operators and options. When the user clicks the green "Search" button, the page immediately "jumps" (the page automatically scrolls the user down) to the results (Figure 3). However, the results are not usually available instantaneously, which can cause confusion for the user. Eventually, I discovered a "Loading results…" (Figures 4 and 5) dialogue box at the top of the page where the user inputs their search queries. Because clicking the search button brings the user down to the results, I did not originally see this "Loading" alert. An improvement to this problem might be to have the loading results alert display on top of whatever section of the page the user is on, or to remove the "jump down to results" action from the search button.

This problem does not meet these heuristics:
Visibility of system status - Although an alert does appear, it does not appear where the user can easily see it initially, which could cause unnecessary confusion for the user.

Consistency and standards - On both the Employer Search and Job Search pages, the "Loading results…" alert appears in different locations on each page, and different location if the user has selected basic or advanced search (Figures 4-6). This inconsistency can break the interface and cause the user to have a negative usability experience.

I would rate this problem as a 3 on the Nielsen scale. Although the advanced user knows that the loading alert appears off screen, many new users were initially confused by the apparent lack of acknowledgement of the system for their search. This is a steep hurdle for new users, and some experienced users I polled had no idea the alert even existed.

2. Text Alignment and Formatting Issues
I noticed several text formatting issues and inconsistencies on the LionSHARE site. Two I'd like to discuss were on the Edit Profile page specifically. The first has the Profile Information text element overflow out of its column and overlaps with the My Profile subheading (Figure 7). The second is in an alert box that appears if the user does not enter a piece of required info properly. The bullet point for the item

that I did not enter is outside of the alert box created to alert the user of their mistake (Figure 8). These two text formatting issues could be fixed by editing the page HTML, or switching to a better design which users HTML 5 and CSS.

This problem does not meet this heuristic:
Aesthetic and minimalist design – These alerts allow the user to recognize and fix errors, however incorrect or confusing formatting can have a negative impact on the user experience by confusing the user.

I would rate this problem as a 1 on the Nielsen scale. Although text formatting issues may initially scare new users, advanced users become used to this type of error and may be able to navigate the interface without further issue. This issue is purely cosmetic and does not break the interface.

3. Discrepancy in Displaying Search Results
When displaying zero results on various pages and search queries, there is a discrepancy between the listed result number on the My Activity page compared to other search pages. Even if there are zero records to be returned on the My Activity page, the query still returns 1-0 results (Figure 9). The Referrals and Job Search pages return their zero result queries correctly (Figures 10 and 11).

This problem does not meet these heuristics:
Visibility of system status – If there are zero results to display to the user, yet the page still lists a single, non-existent result, there is an issue going on with the system behind-the-scenes that needs to be addressed.

Match between system and real world – If the system is displaying zero results properly for all other search pages, but not for the My Activity page, the system is not consistent.

Consistency and standards – Similar to the heuristic above, the way the site prints the result should be consistent over the various search pages.

Help users recognize, diagnose, and recover from errors – The user doesn't know if they actually have an alert on the My Activity page, or if this is a system error. Either way, the system should be handling errors differently than just returning a non-existent element or value.

I would rate this problem as a 2 on the Nielsen scale. Although this may appear as simple as a cosmetic issue, if the user is continuously exposed to this "false result" issue, they may miss actual results in the future.

4. Authorization Issues after User Session Expires
If a user is inactive for a set period of time, their LionSHARE session will expire to protect the user and account from unauthorized use. However, when trying to re-authenticate using the error page on the myinterfase domain (Figure 12), I could not

log back in despite entering the correct credentials (my UNI and password) (Figure 13). After several tries with the correct credentials, I eventually followed the link to the CCE authentication page (Figure 14) where I was able to successfully log back in to LionSHARE.

This problem does not meet these heuristics:
Match between system and the real world – If the page on the myinterfase domain says the user should be able to log back in and re-authenticate their session, then they should be able to do it on that error page, and not have to navigate back to the CCE Columbia.edu authentication page.

Consistency and standards – If the user is prompted to enter their UNI and password, they should expect to be able to do so without error. In this case, entering your credentials on the error page does not re-authenticate the user session, which is inconsistent with other areas where the user is prompted to enter their UNI.

Help users recognize, diagnose, and recover from errors – This page successfully prevented the user from seeing an error code, but the user was not able to gracefully resume their LionSHARE experience.

I would rate this problem as a 4 on the Nielsen scale. An error page should allow the user to easily resume what they were doing previously. This particular issue forces the user to leave their current experience, re-authenticate outside of LionSHARE, and returns the user to the main page, rather than the page they were trying to access. If this error page is used for other errors besides a session expiring, many users may visit this page every day, and the UNI and password inputs errors should be given a high priority on the bug list.

Ten Usability Heuristics

1. Visibility of system status

I found that one of the greatest visibility strengths of LionSHARE was the Account Summary view on the Student Homepage (Figure 15). This text box shows when the user's profile was last modified, the user's current email address, when their resume was last modified, and their LionSHARE access level. All of this information is very useful to a user looking for employment, except for the "Access Level" value, which is not explained in detail. Another benefit is the "Loading results…" popup that alerts the user when a search is in progress. Even though because of the page layout the user may not always see this alert, with a properly fixed implementation, this could continue to improve the LionSHARE user experience.

Another downside is the discrepancy with displaying zero search results (as described in issue three above). Returning improper results will not only confuse the user and create a negative user experience, but if a user is used to these errors, they may miss actual important results that are shows on a page incorrectly.

2. Match between system and the real world

The language used on the LionSHARE site matches that of a job recruiter, so the site performs well in that regard. The calendar matches the United States date format (MM-DD-YEAR) and all the time listed are in Eastern Time, the correct time zone for New York.

However, I found that there were a few aspects that did not meet the specifications listed in Nelsen's list. The error page not accepting valid credentials is a huge usability roadblock. If a user sees a form where they can enter their UNI and password, they expect that form to work properly and not have to navigate away from the error page in order to proceed back onto the site. The error page is supposed to gently bring the user back into LionSHARE, and it doesn't do that properly. Besides the issue mentioned previously with the search query returning the wrong result value, I noticed another system aesthetic issue. On the "Resource Library" page, the icons used for each type of document (web links and PDFs) are antiquated icons from previous versions of Adobe Acrobat and Internet Explorer that are no longer the industry standard (Figure 16). These icons should be replaced and updated to newer, industry standard icons for web page links and PDF files.

3. User Control and freedom

When editing a user profile, if the user makes a mistake or leaves a required field blank, the system will highlight the error, but keep the rest of the values entered values saved. This allows the user to correct an error without having to re-enter the values for all the other input fields. There are also easily-accessible clear buttons to immediately clear a search filed, allowing for the user to quickly change searches without having to manually delete the contents of each form.

4. Consistency and standards

For the most part, all the search pages use the same style forums and same green "Search" button, so their style is consistent across the site. However, the "Loading results…" dialog box is in a different location for each search page, and always out of the user's view. There are also some small text formatting inconsistencies across the site. The biggest inconsistency I found was on the error page. The UNI and password forms not returning properly is not consistent with the rest of the LionSHARE site or any authentication forum on the Columbia.edu domain.

5. Error prevention

As mentioned previously, the LionSHARE site does a good job of covering "scary" error codes and messages with more friendly text. However, there are some issues with the way the system handles these errors. Re-authentication fails on the error page, and some of the text in the error alert boxes is not formatted correctly.

6. Recognition rather than recall

The information detail screen for a job posting (Figure 17) and an employee/company (Figure 18) posting is presented to the user in a similar way, with a summary at the top, and details and address information following. Also note that the user is warned if they are missing any documents the job posting requires, such as an updated resume or contact info. Instructions and tips are usually always available and clearly visible on search screens as well, reminding the user of search functions they may be unfamiliar with (Figure 1).

7. Flexibility and efficiency of use

Overall, I noticed that LionSHARE was not easy to use. Many shortcuts I was used to, such as using the keyboard to jump to a specific element in a drop-down list, did not function as I would have expected. I had to manually scroll down and click my desired element. Not having shortcuts for frequent actions or selections can create a negative user experience by having user take long periods of time on certain screens, lengthening the time it takes to, for example, perform a simple job posting search (Figure 19).

8. Aesthetic and minimalist design

I don't believe the LionSHARE site is particularly well designed. In a 1680px x 1050px Google Chrome window, there appeared to be a lot of wasted space on the sides. It does not appear that the LionSHARE site is optimized for modern browsers and resolutions. In fact, according to the Admin Login page (https://www.myinterfase.com/columbia/admin/), the LionSHARE system still supports older versions of browsers, such as Internet Explorer 6 and Firefox 1.5. This support for older browser versions restricts the web technology the site can use, which explains the lack of modern CSS and JavaScript present throughout the system. There are also dropdown menus on the main menu bar which contain only one item (Figure 20). I think this is a waste of a dropdown menu and not an optimal design for this system.

9. Help users recognize, diagnose, and recover from errors

All the errors I found were caught gracefully, and no error codes were shown to the user. However, as mentioned previously, the error page that is supposed to re-authenticate the user's LionSHARE session does not work correctly. Although this helps the user recognize and diagnose the error, it does not allow them to recover from this authentication failure in a simple way. The error dialogue boxes used throughout the site do make it easier for the user to catch errors by presenting them in red and sometimes a different font or formatting.

10. Help and documentation

The LionSHARE site does have visible and easy to read documentation on every search screen, alerting the user of useful search tips, and gives the user the opportunity to report any errors or inconsistencies. There are also blue question mark hover buttons, which help the user define any terms related to the workplace or unemployment that may be unfamiliar to them (Figure 21).

Images:
Higher resolution images also available in the Images directory in my ZIP archive.

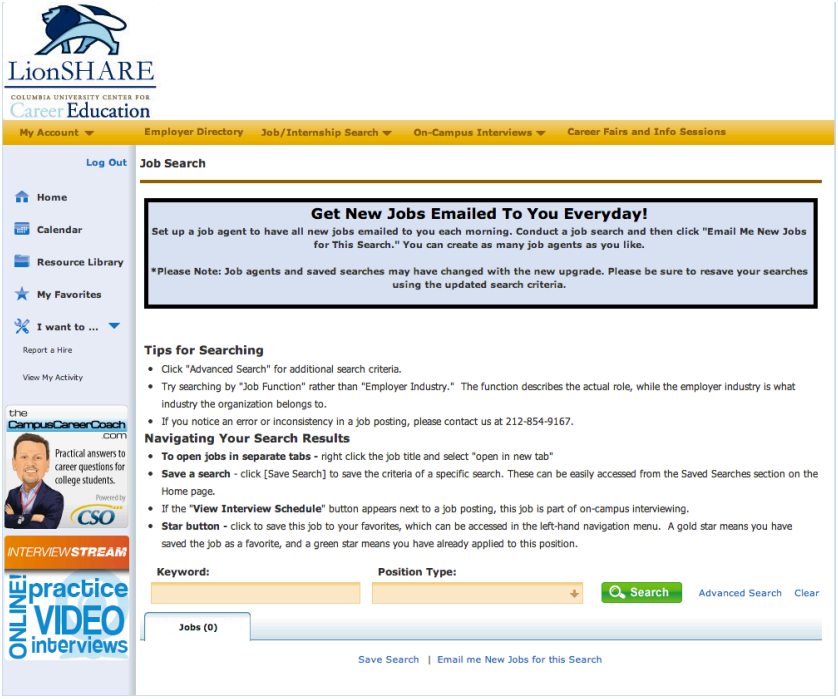

Figure 1: Initial Basic Search page

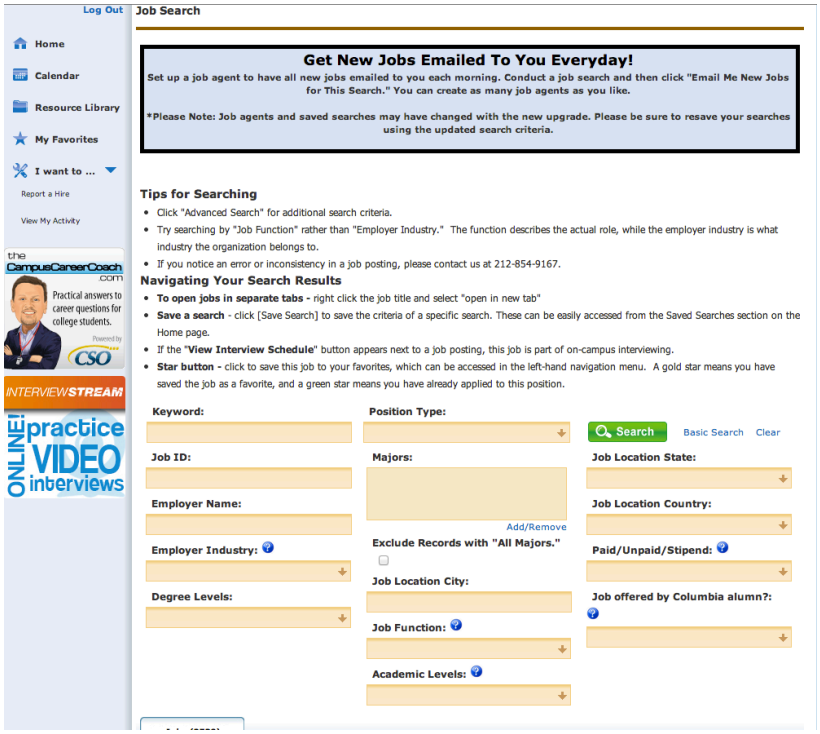

Figure 2: Initial Advanced Search page

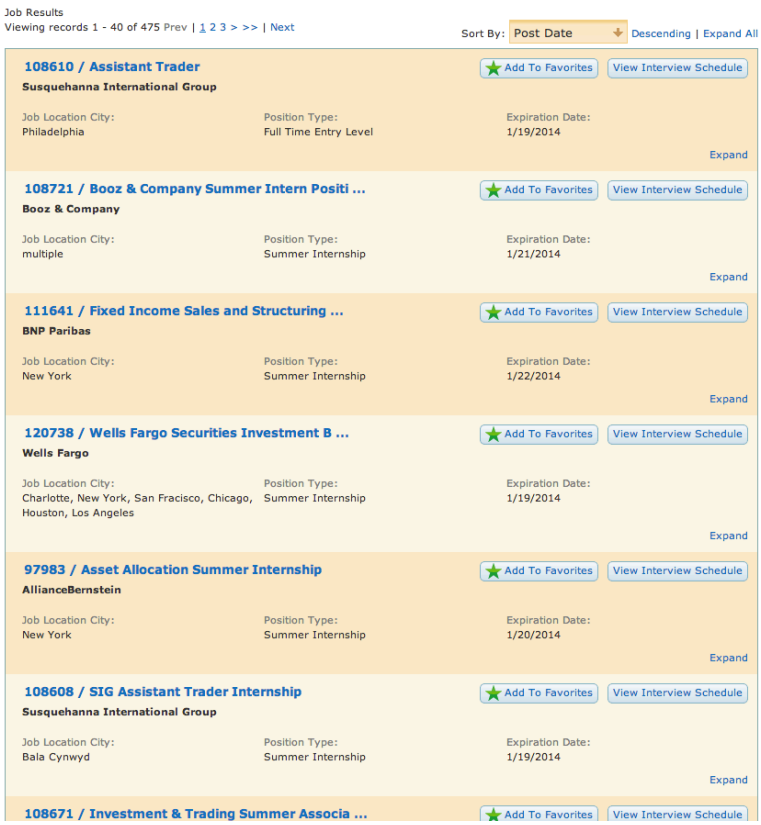

Figure 3: Screen position for results after user clicks the Search button.

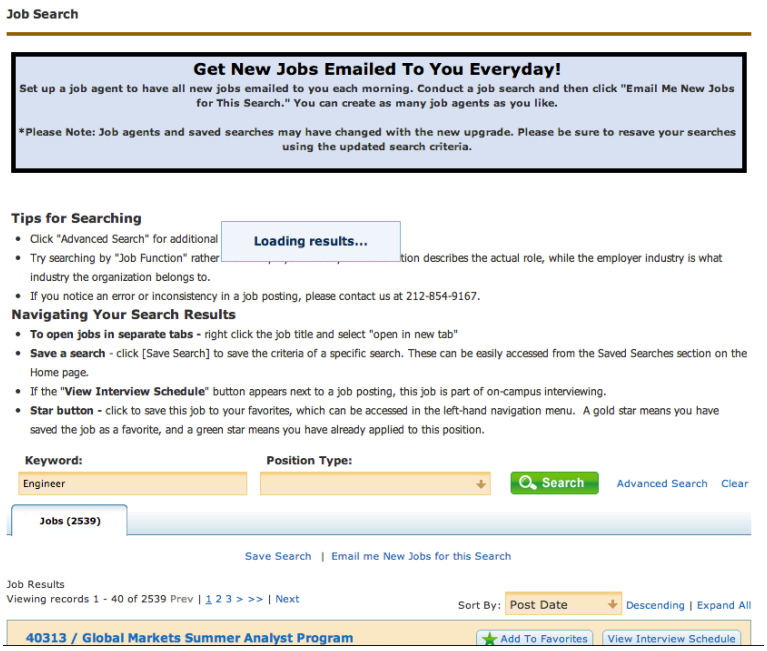

Figure 4: Actual position of "Loading results..." alert on Basic Search page

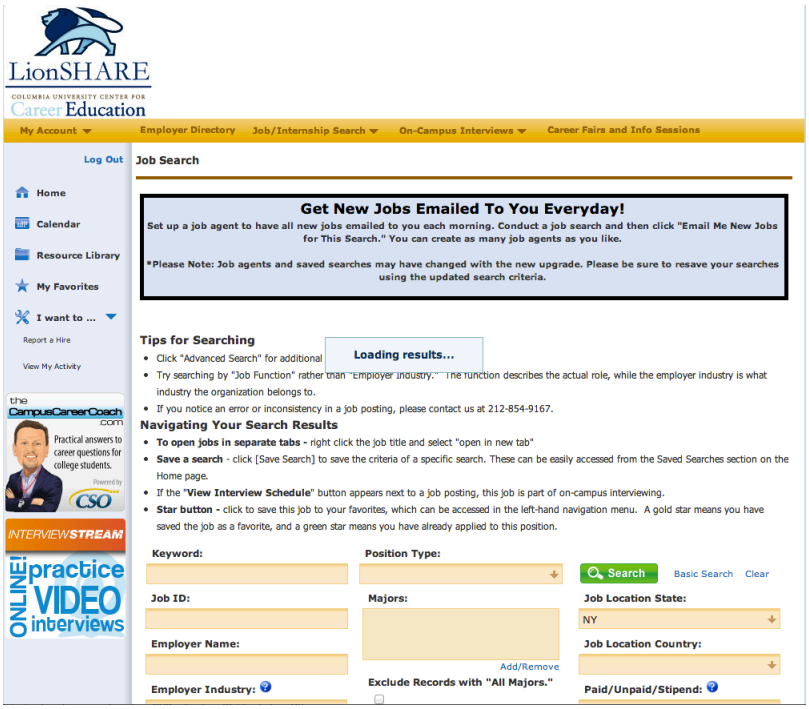

Figure 5: Actual position of "Loading results…" alert on Advanced Search page

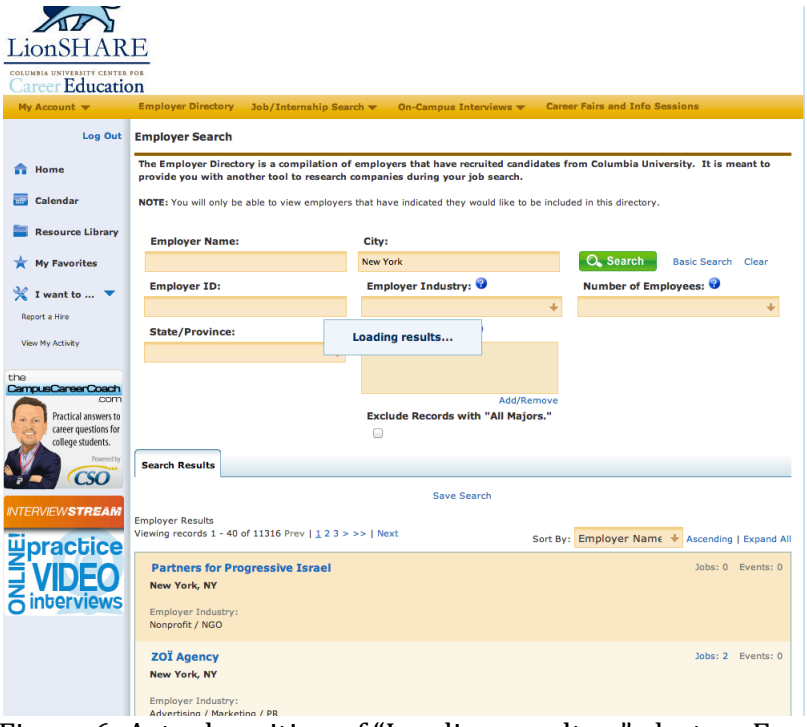

Figure 6: Actual position of "Loading results…" alert on Employee page

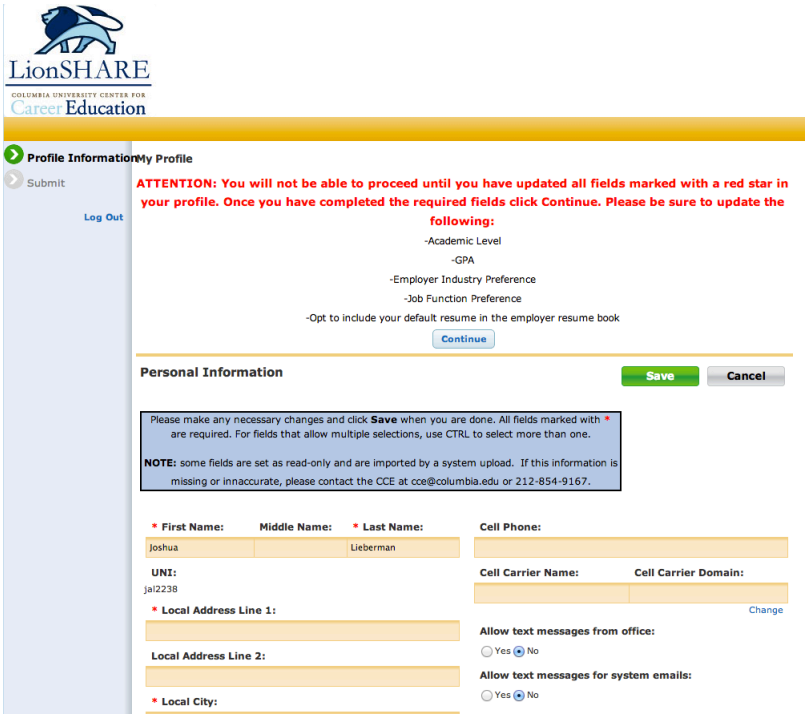

Figure 7: Text formatting issue with the “Profile Information” value in My Profile

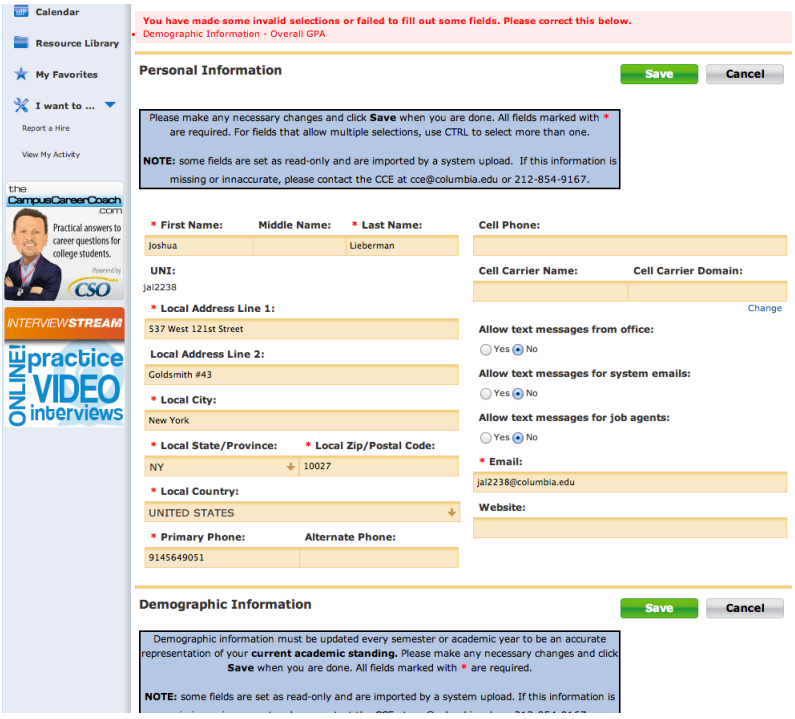

Figure 8: Text formatting issue with a second error alert in My Profile

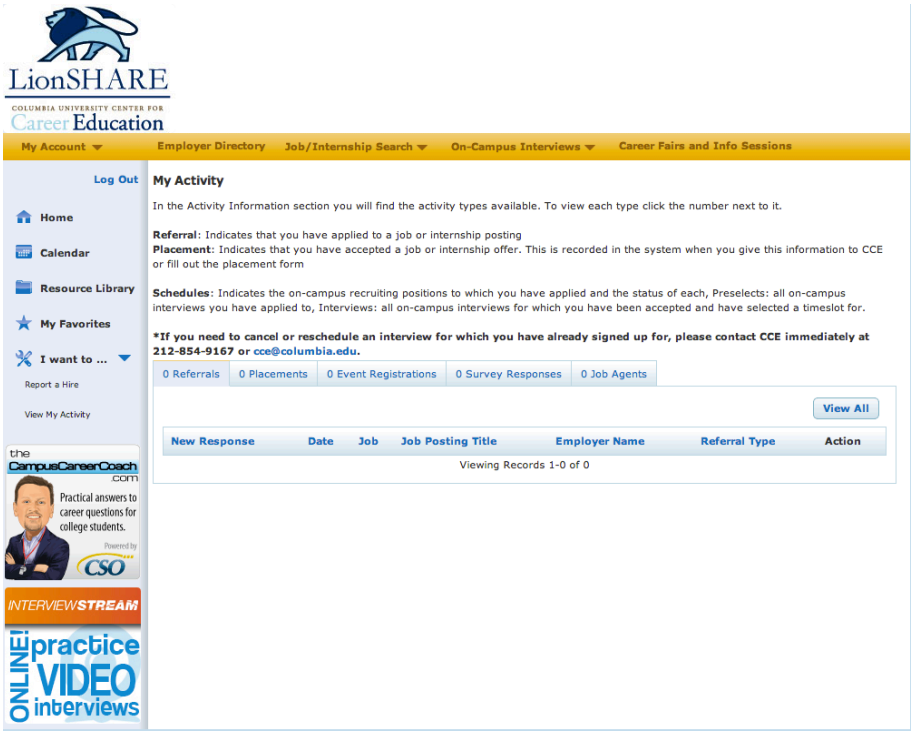

Figure 9: My Activity page

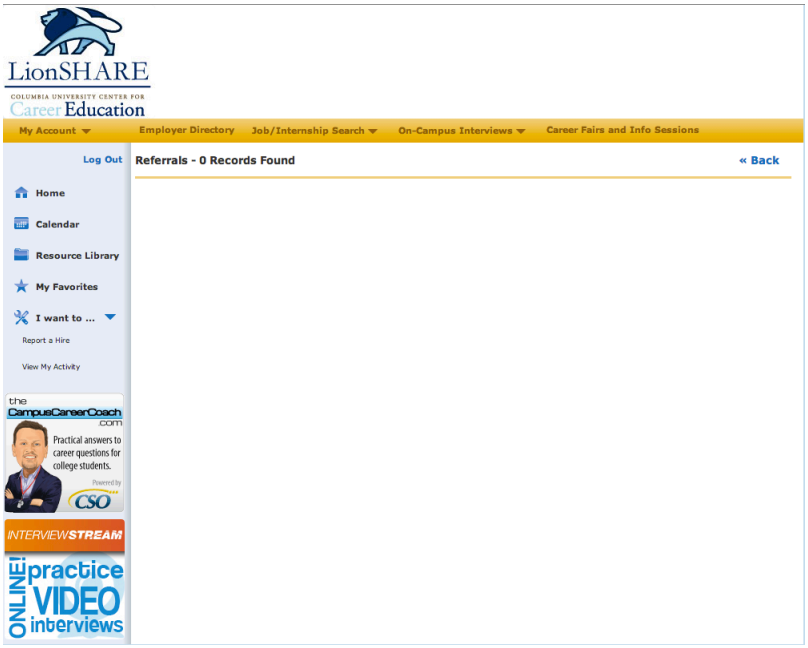

Figure 10: Referrals page

Figure 11: Job Search results page with zero returned results

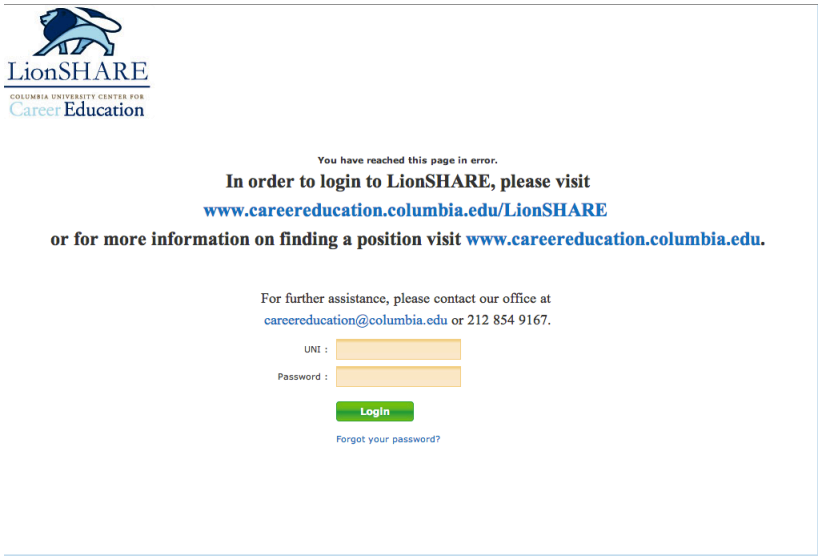

Figure 12: LionSHARE error page

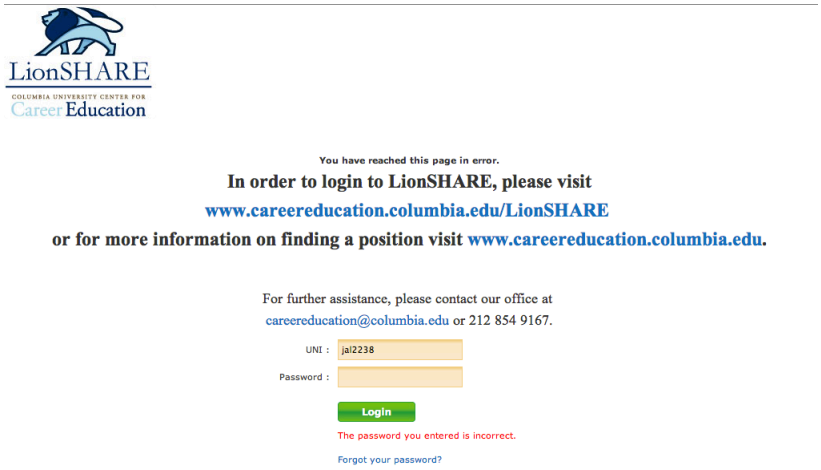

Figure 13: Authentication failure on the LionSHARE error page

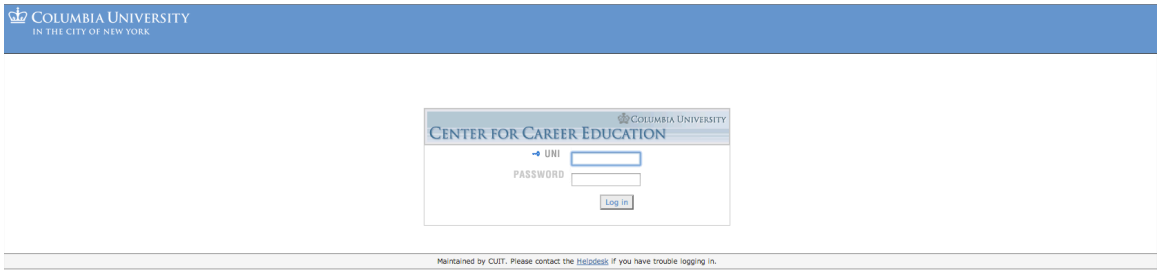

Figure 14: CCE LionSHARE authentication page on the Columbia.edu domain

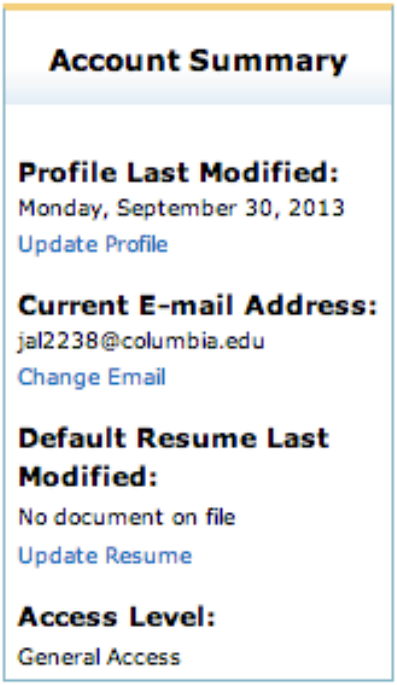

Figure 15: The Account Summary view on the Student Homepage.

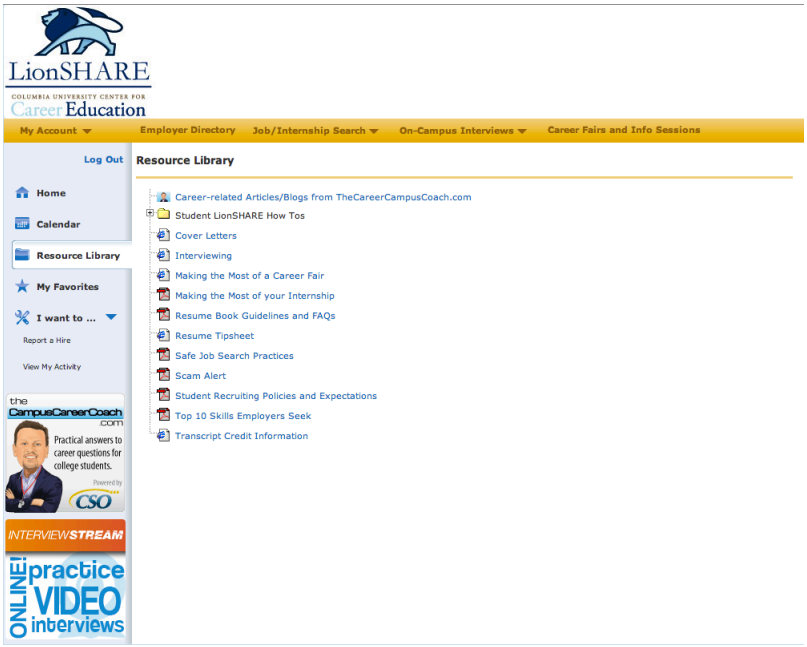

Figure 16: The Resource Library page

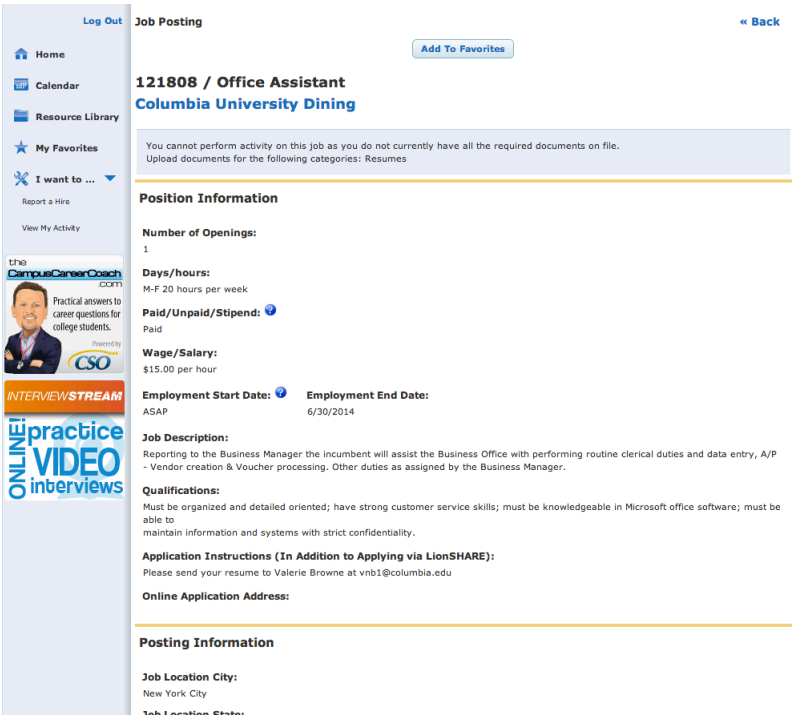

Figure 17: A job posting information detail screen

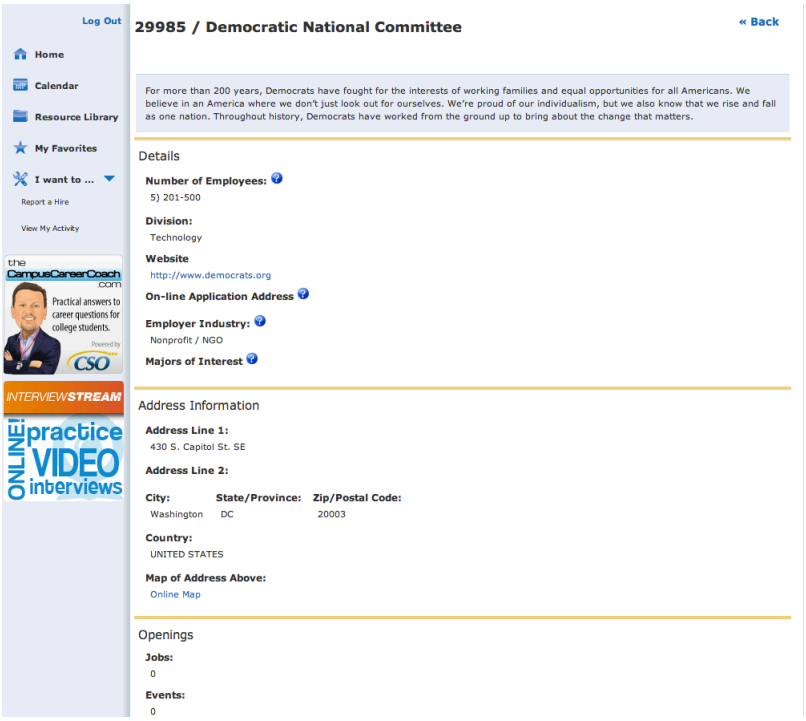

Figure 18: A company information detail screen

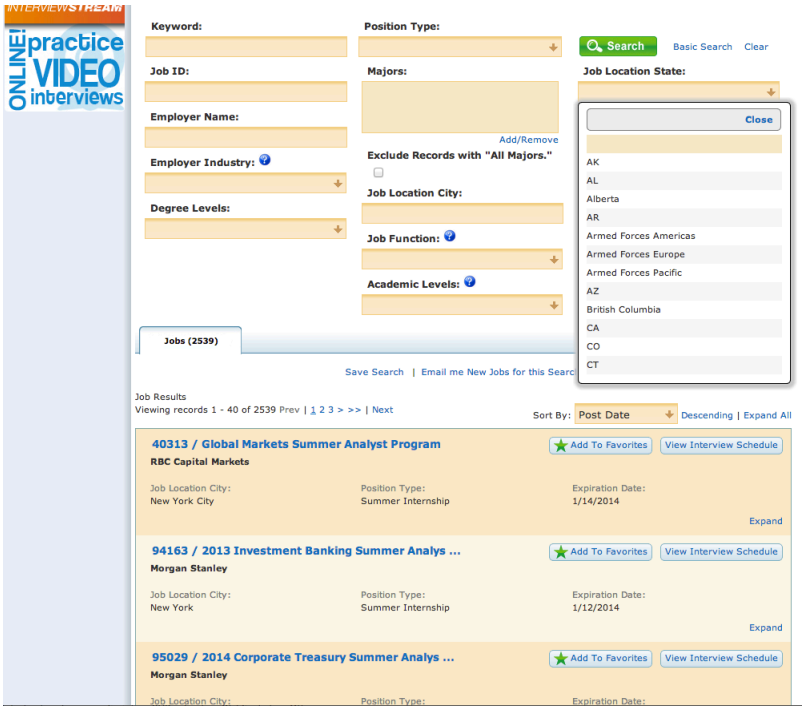

Figure 19: A drop down menu on the Job search screen

Figure 20: A drop-down menu containing only one item

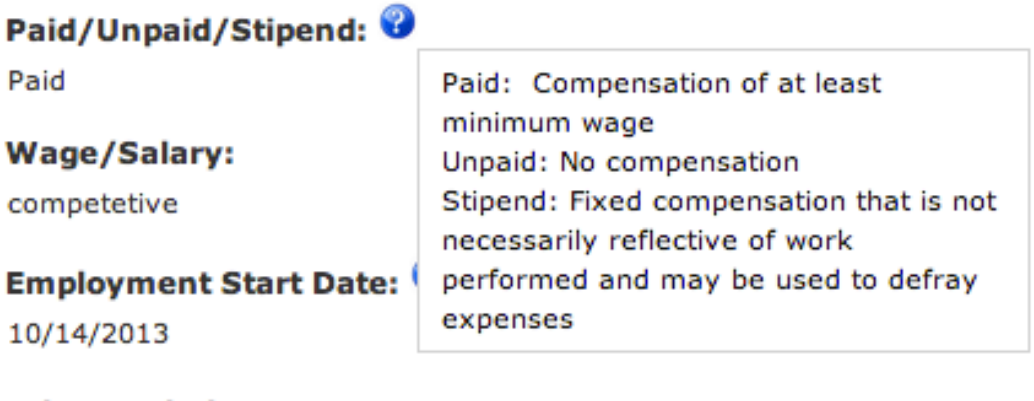

Figure 21: Question Mark help button

Part 2: Keystroke-Level Model Analysis
CogTool Chrome Bookmark

There are two ways to bookmark a web page in Google Chrome. The first entails the user using their mouse to navigate to the menu bar, selecting "Bookmarks," then "Bookmark This Page…" from the dropdown menu, and finally "Done" on the "Bookmark Added" popup. The second requires the user to simultaneously type Command-D (⌘D, or Ctrl-D on Windows machines), and then the Carriage Return or Enter (<CR>) key to save the bookmark. According to CogTool, the estimated time to bookmark a webpage with the mouse is 5.6 seconds, and 3.7 seconds using keyboard input. The time to complete this action is quicker using the keyboard for a few reasons. Using the keyboard, the user can skip navigating to the menu bar and selecting an option from the dropdown menu. The time it takes an expert user to press ⌘D is much shorter than the time it would take to move the mouse to the menu bar, select "Bookmarks," and then select "Bookmark This Page…" There is also less user input required to bookmark a page using the keyboard. Two quick combinations, ⌘D and <CR>, can be performed quicker in sequence then three mouse clicks, with time to think about each menu option between each click.

I was initially surprised that CogTool calculated the bookmarking action to take 3.7 seconds for an expert user, when I could perform the action in a fraction of that estimate. Upon further investigation, I saw in the user guide that there are two reasons why this calculation appeared slow. KLM assumes all keystrokes are done in sequence, even for keys held down together (⌘D in this example), and that the ACT-R architecture provides a simple model of typing, where the user's fingers return to the home keys after typing a single key. But the overall results are clear, bookmarking a page in Google Chrome with the keyboard is faster than using the mouse for the reasons listed above.