Online Job Search: A Study on OptimizingOnline Platforms to Facilitate Effective Job Search

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ABSTRACT

Technological advancement along with the expanding number of users and internet-based businesses have created a worldwide market for both job recruiters and job seekers. This has drastically changed areas of job searching and job recruiting. Traditional methods of recruiting and job hunting have been obsoleting since the introduction of digitalized platforms to perform these tasks, leading to better results when matching the intents of job recruiters to job seekers. There are numerous online job search platforms but everyone one of them contains some major issues. We have examined the related studies and identified that these issues exist in the areas of screening job applications, optimizing job search queries, and demographic inequity in candidate selection. Although these topics have been researched independently, there is a lack of implementational solutions available to address all these issues together. As a result of our study on this deficiency, we have come up with a practical solution implemented as a web application addressing these issues and providing job seekers and job recruiters with an online platform with enhanced accuracy and user experience.

Keywords-- Job Seekers, Job Search, Screening, Social Media, Demographic Features

I. INTRODUCTION

Job recruiting is a constantly evolving area and recruiting top talent in a candidate-driven market is a challenge for every company. Career sites are no longer just static web pages [1]. A good functioning career site will help both companies and job seekers to find their relevant needs. Also, a solid career site is a hiring organization's best tool for creating and nurturing its employer brand. As a newly launched job search site, we intend to provide a quality experience for our users.

To do so, we intend to include multiple features. This includes developing a Job recruiting site that serves dedicatedly to apply for jobs and hire applicants only. By filtering out unnecessary data we are planning to display relevant and specific details only. In addition, we are presenting job applicants with the status of their applications. Therefore, job applicants will be notified of their applications constantly.

Although there are hundreds of career sites, most of them have disadvantages [2]. This includes popular sites like LinkedIn, Glassdoor, and Monster. To illustrate above, LinkedIn is very much similar to a social media platform rather than being a dedicated job-searching platform. Because of that, there will be data that is not necessary for Job recruiting sites. Screening is a major issue that occurs on many Jobs search sites [3] [4]. To put it in simpler terms; screening is the process used to determine a job applicant's qualifications and potential job fit for a position to which they have applied [5]. Because of the large number of job applications received; many recruiting companies have to filter out the applications manually, leading to a waste of time.

As a new and upcoming website, we intend to solve most of the common drawbacks that occur in existing systems. To name a few we are using the best security mechanics possible to protect users' privacy. In addition to that, the development team is filtering out unnecessary data as much as possible so that users will be able to search and apply for relevant content only and provides system admins the ability to view all ongoing activity and tasks. So that they can get a clear idea about their client base. As for the screening issues, the development team intends to add more restrictions while applying for a job; enabling the hiring companies to hire top talent and the most suitable candidates.

In the methodology section, we have explained the main tools and technologies that we used to develop this system. Apart from that, we have diagrammatically displayed the backend process of the main functionalities in this system.

In the proposed system section, we briefly explain about main functionalities of this system with the use of images.

In the discussion section, we have discussed the key findings and the expected result of this system. For further analysis, we have included tables, charts, and testing methods that we used to test major functionalities.

II. ABBREVIATIONS AND ACRONYMS

URL	Uniform Resource Locators
DB	Database
JS	JavaScript
JWT	JSON Web Token
JSON	JavaScript Object Notation
UI	User Interface

III. LITERATURE REVIEW

This section highlights the work done by scholars which tie in with the pertaining research. Related literature with the highest significance will be discussed with their relevance and contribution to the current research work.

A. Impact of user search behavior and search engines on online job search

The rise of the internet has created a global marketplace for both employers and job seekers. Despite this, there is still little insight into how online job searches are different from general web searches. Online job search is now preferable than traditional methods - leading to better matches between job seekers and employers. A study [6] conducted to distinguish online job search from general searches using the user search behavior and search engine query logs unveil that job searches consist of distinctive keywords which can be used by search engines to increase the efficiency and quality of the search results produced.

The study revealed that job searches consisting of constraints gender, location, and job type yielded better satisfactory results compared to general searches. This discovery in turn has questioned the ability of popular search engines of providing satisfactory job search results. Their [6] analysis shows that search engines do not meet stringent constraints, which are frequent in job searches compared to general searches.

This finding has been accumulated into the proposed system to maximize the efficiency of the search algorithm of the web application in order to provide accurate results for job searches.

B. Use of online platforms for employment

A survey [7] conducted on job seekers in the United States by the University of Michigan demonstrates the significance of online resources for job search. The study suggests that online marketing strategies used by jobseekers differentiate significantly based on their income and education. In addition, the study reveals that men and young adult's frequent online platforms, and more frequent use of non-career-oriented social media platforms is associated with less perceived social support.

The researchers [7] examined the nature of companies searching for applicants online using social media and other platforms and discovered that this practice may perpetuate racial and ethnic disparities in selecting candidates.

The development team has taken this issue into consideration and has implemented the proposed system, with user-friendly user interfaces and easy-to-use features; minimizing these demographic inequities to provide users with a convenient platform to seek employment irrespective of demographic factors.

C. Social media's impact on job search

Frequent use of social media in job hunting is related to interview invitations. A study [8] shows that social media is an important knowledge that informs career policy.

Facebook, Twitter, and LinkedIn are the most popular job search social media platforms among young adults [8]. They provide an environment for actively and passively consuming information related to job hunting. Active use of social media when looking for a job is usually positively associated with an invitation to a job interview.

To accumulate this advantage into the proposed system the development team has planned to integrate the system with social media platforms as a future implementation.

IV. METHODOLOGY

The proposed Job search site implemented as a web application consists of 3 main components: the front end, the back end, and the web server. The front end is implemented using React JS while the back end is implemented using node JS and Express. The back-end system will be connected to the cloud database server developed using Mongo DB.

Job seekers, company (job recruiter), and admin are the main user roles of the system. Admin resembles the user role with the highest authority that will oversee the functionality of the whole system. The Job seeker and company can utilize the system to manage the job searching process. Upon registration, a user profile will be created for the respective user. Job seekers can register to the system by using their personal email addresses. However, the company (job recruiter) can register to the system by using their company email address. Admin account creation will be handled by the development team.

After a successful registration users will be redirected to the login page, then the system will prompt

the user to enter the login credentials. The entered credentials will be submitted to the backend and then after a successful validation process with help of the JWT Authentication, the system authentications and the authorization will be handled. Upon response from the backend server, the appropriate content will be rendered to the relevant user. The user view and the privileges differ for each user role.

Users can execute a variety of actions within the program. These activities might be data submission or a request to the system. Submitted data will be sent to the backend server via the front end and saved in the database's file systems. In the same way, a user request to fetch data is provided to the backend server, and the desired data is fetched from the database, then passed to the backend server and displayed to the front end.

Additional confirmation, validation, and authentication methods are implemented across the system (frontend, backend) by using different security mechanisms. The system uses a cloud-based storage service(firebase cloud storage) to store files and documents.
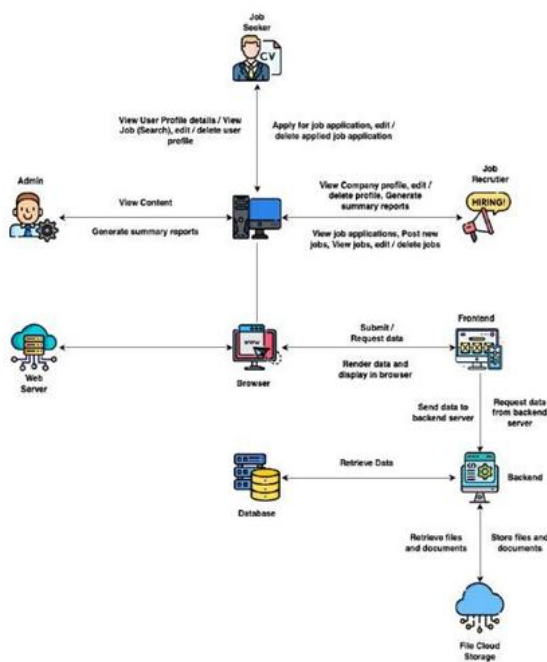

Figure 1: High-level flow diagram of the proposed web application

V. PROPOSED SYSTEM

The main functionalities of the proposed system are User Management, Company Management, Job Application Management, and Job Management.

A. User Management

All administrators and job seekers within the system are managed by User Management. Admin is similar to the user role with the highest power, which will control how the entire system operates. Following the creation of the admin accounts by the development team, the admins will receive the login credentials. Admins can access the system by entering valid login credentials. They can view all user lists, all company lists, all job lists, and all job application lists after successfully logging into the system. Data tables were used to display all the lists. Because of that, pagination, search, and filter features will all be available. Admins can generate reports on users and companies.

All job seekers should sign up with the system. Unregistered job seekers must complete a form with their first and last names, email, phone number, and passwords in order to create an account. Users who enter valid login credentials can access the system. Users who have successfully logged in can view their user profiles. The user can update their user information if they need to make changes to their account. If the user needs to delete their account, they have the authority to do it. Also, the user can change their password.
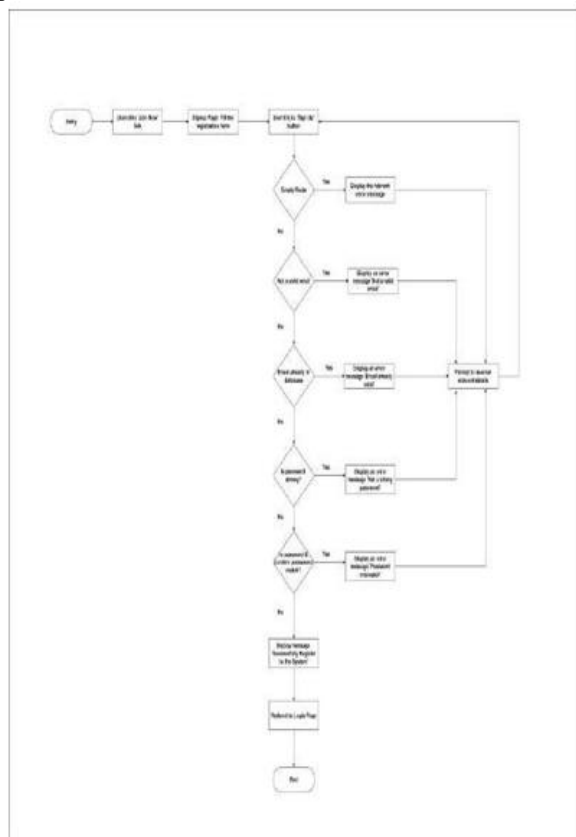

Figure 2: User flow diagram of the user registration process

B. Company Management

All the companies will be managed by this management. All companies should first register in the system. They must fill out a form for that. To create an account, companies must provide their logo, name, address, field type, website URL, email address, and password. Companies can access the system by providing legitimate login information. They can view their company profiles once they have logged in successfully. The companies can update their company details if they need to make changes to their company profile. The companies have the power to delete their account if necessary. The company can also change its password.
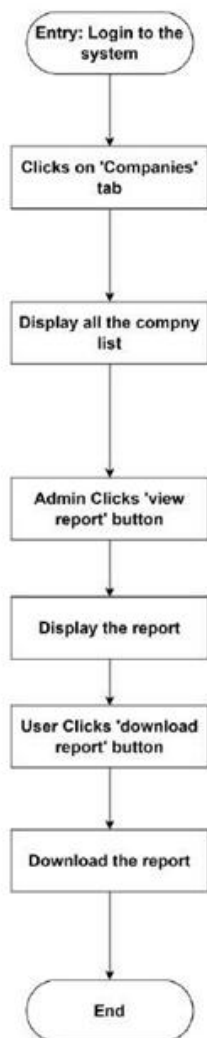
C. Job Application Management

All job applications will be managed through this management. Job seekers can apply for available jobs once they have successfully logged into the system. After applying for jobs, users (job seekers) can view their applied jobs. To improve user experience, a search function is included on the View Applied Jobs page. In addition, after applying, job seekers can edit job applications if necessary. Users can delete their applications after they have submitted them if they decide they are no longer interested in that job.
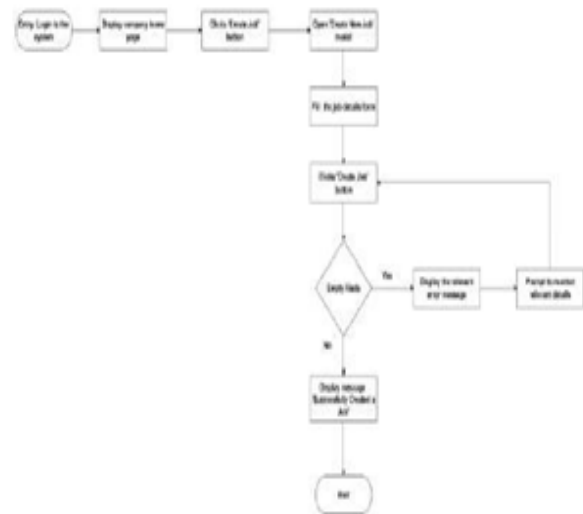

Figure 4: User flow diagram of creating a new job posting process

D. Job Management

All jobs are managed under this management. Companies that recruit employees can post new jobs. Recruiters can add a new job by filling out a form. This form contains information about the job position, the area of development, the type of job, and an overview of the role, responsibilities, requirements, and other requirements. Recruiters can edit job details even after they have been added to the system. Both job seekers and recruiters can view all available jobs after successfully logging into the system. To improve user experience, a search function is included on the View All Jobs page. Recruiters have the authority to remove jobs that they have added.
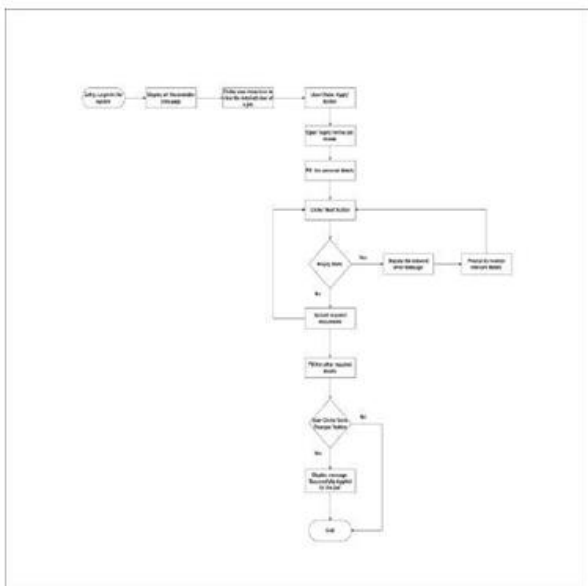

Figure 3: User flow diagram of generating a company report function

Figure 5: User flow diagram of the apply job process

VI.   DISCUSSION

As we mentioned before, there are several drawbacks in most of the existing systems including unnecessary data and Screening. As a newly launched job search site, we intend to solve most of the issues that occur in similar sites and provide users with the best experience that they can have. By doing so we plan to receive good feedback on our system from both companies and applicants.

To provide users with the best experience our system has undergone several test phases. By using "Selenium" we have tested the functionality of the major functions in our system. To put it in simpler terms: Selenium is an open-source automated testing framework that is used to validate web applications across different platforms.
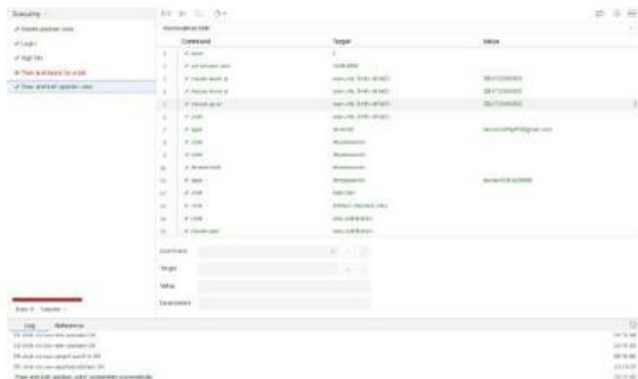

Figure 6: Test script of the system functions I

Figure 7: Test script of the system functions II

VII.   CONCLUSION

To conclude, we conducted a study on the existing issues in online job search platforms and solutions purposed with the aim of optimizing those platforms to yield more effective and accurate results. The study unveils that screening of applications is one of the major issues on online job search platforms due to the large amount applications they are receiving. This issue is coupled with the persisting demographic inequity related to the selection of candidates [7] and the inability of search engines to meet the stringent constraints of job search queries [8]. The system which has been proposed as the result of the study addresses these issues by allowing the users to search and apply for relevant content only terminating ambiguous and redundant data, implementing user-friendly and easy-to-use user interfaces to reduce demographic inequity, optimizing the search algorithm to effectively meet stringent queries, and by implementing improved security to protect user data. Results show that the improved system was able to produce more effective and efficient search results and attract more job seekers and recruiters compared to its counterparts. The proposed system will act as a role model which future job search platforms can be built upon and a basis for further future research on optimizing the effectiveness of online job search platforms.
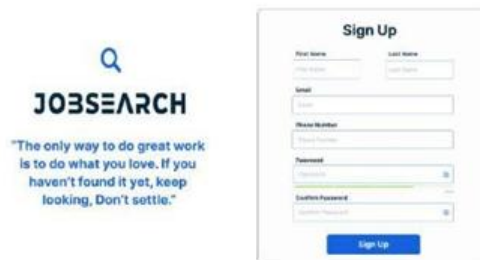
APPENDIX

Figure 8: User registraion UI

Figure 9: View all jobs (user) UI

Figure 10: Create a new job posting UI

Figure 11: Apply for a job (user) UI

Figure 11: View job description (company) UI
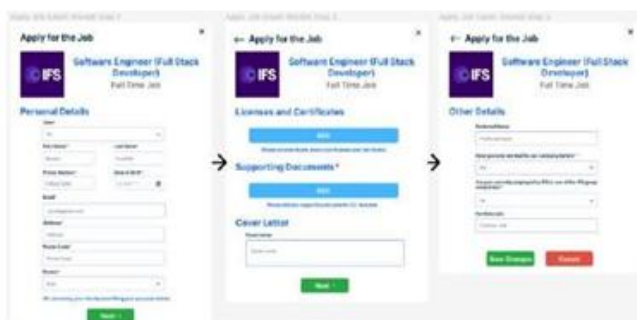
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