CoLabCareers

Computer Science 2 - Crowd Computing

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Introduction

1. Problematic

In a rapidly changing job market, fresh graduates and young professionals often face the daunting challenge of finding suitable job opportunities. The lack of connections and limited exposure hinder their chances of success, leaving many talented individuals feeling discouraged and overlooked. On the other hand, many companies also encounter numerous problems when hiring, including talent shortages and difficulties in finding qualified candidates with the right skills and experience. This is especially challenging in specialized industries or for high-demand roles, as the hiring process can be lengthy and involve multiple stages such as reviewing resumes, conducting interviews, and making final selections.

Moreover, recruiting and onboarding new employees can be expensive. Costs may include advertising job postings, conducting background checks, skills assessments, and providing training. Hiring the wrong candidate can also result in additional expenses.

This is a beta version of our project; we focused only on implementing the jobseekers features and their professional content rating, we are committed to further developing this project and have plans to incorporate features for companies as well.

2. Motivation

The motivation behind this project stems from a deep understanding of the struggles faced by fresh graduates and young professionals in their search for job opportunities. While hiring and looking for good candidates, companies experience firsthand the frustration and uncertainty that arises from limited access to suitable positions, hindering the realization of their aspirations.

Our mission is to address these challenges head-on and create a platform that revolutionizes the way individuals navigate the job market. Through our project, we aim to provide diverse opportunities with leading companies across industries. We firmly believe in the power of collective intelligence and the wisdom of crowds, recognizing that collaboration and shared

wisdom can unlock new possibilities and drive innovation. By leveraging innovative approaches and personalized matching, we connect job seekers with companies that align with their goals and values, ensuring a mutually beneficial partnership.

In this report, we introduce our transformative project, which aims to bridge the gap between job seekers and leading companies, utilizing the power of collective intelligence and personalized matching. We also delve into the details of our project, outlining its objectives, features, and the value it brings to both job seekers and companies. Then, we clarify the methodologies employed to ensure accurate matching and personalized experiences. Additionally, we present testimonials from individuals who have benefited from our platform, showcasing real-life success stories that validate our approach.

3. Research Question

How can we use crowd wisdom to solve our problematic?

Value proposition

With CoLabCareers, we have created a space where jobseekers can discover a diverse range of job opportunities with leading companies across industries. We strive to level the playing field by leveraging the power of collective intelligence.

Our mission is not only to connect job seekers with partners who share the same belief but also to find the ideal candidate for companies using the power of collective intelligence and crowd wisdom for matchmaking.

1. Our Values

Collaboration: We encourage collaboration through coopetition among our users, partners, and the broader community and promote collective intelligence.

Growth: We are committed to nurturing a supportive community that encourages continuous learning and provides guidance on navigating career paths.

Equality: We believe that everyone, regardless of their background or network, deserves an equal opportunity to succeed.

2. Our Competitors

In the competitive landscape of the job market, several prominent platforms have emerged, each with its own strengths and weaknesses. The table below shows the strengths and weaknesses as mentioned by some references or through our own experiences.

Table 1: Strengths and weaknesses of competitor platforms.

Competitor	Strengths	Weaknesses
Linkedin (Momin, 2021)	• Influential ownership (Microsoft) • Large and growing user base • Convenient filtering options • Detailed profiles • Focus on customer relationships	• Limited diversification • Privacy breaches • Fake profiles • Inappropriate behavior
indeed (White, 2022)	• User-friendly interface • Large user base • Skills assessments • Candidate invitation feature • Job alert	• High competition • Limited customization • Duplicate or outdated listings
Emploi.ma By AFRICAWORK.COM	• Localized job listings • Targeted regional requirements • Local talent pool	• Limited international reach
topjobs® recruitment made easy	• Specialized recruitment solutions • Industry-specific targeting	• Smaller user base • Reduced visibility outside targeted industries
anapec (Le Contrat ANAPEC Au Maroc : Ce Qu'il Faut Savoir, n.d.)	• Exemption from CNSS contributions • Professional experience opportunities • Tax exemptions • Government coverage for converted contracts	• Limited coverage for employees • Inability to apply for loans • Maximum salary cap

Business Model

Table 2: Business Model Canva of our platform CoLabCareers.

Key partners	Key activities	Value propositions	Customer relationships	Customer segments
Companies • OCP • UM6P • Startups **Jobseekers** • Students • Fresh graduates	• Communicating different offers (Jobs, Internships..) • Rate professional content. • Rate & review other fellow job seekers • Crowd filtering and recommending only the best candidate **Key resources** • Technological infrastructure to support the platform (data management system, domain...) • Access to job market data and trends. • Collective Intelligence Ressources	• Matchmaking • Providing feedbacks for improvement • Foster a collaborative community through networking events, forums, and mentorship opportunities.	• Provide feedback to improve jobseeker's professional content. • Follow-up surveys with hired candidates. • Crowd wisdom to propose ideal profiles for companies. **Channels** • Online platform accessible through web and mobile applications. • Social media for marketing • Forums and events for collaboration	• Fresh graduates and early-career professionals seeking job opportunities, and job seekers in general. • Companies looking to recruit talented individuals with diverse skill sets. • Educational institutions aiming to provide career support and opportunities for their students.

Cost structure	Revenue streams
• Marketing and advertising expenses. • Operational costs for community engagement, events, and training programs.	• Basic subscriptions plan for partner companies for the service. • Premium subscriptions offering additional benefits and features for users. • Sponsorship and advertising opportunities for relevant companies and organizations.

Methodology

1. Methods and Techniques

a. Multivoting

Multivoting is a technique that allows a team to vote on a long list of ideas into a manageable number of best options or top priorities. In other words, multi-voting is a way for a group to narrow a list of choices down to a manageable few. While multi-voting is not a decision-making tool, it is a great way to achieve consensus on an option that the group most favors.

We wanted to use multi-voting as a form of collective intelligence in our project to make the recruitment process for both jobseekers and companies as easy and collaborative as possible.

b. Bag of Stars (BoS) and Bag of Lemons (BoL)

As seen in our class lectures, the Bag of Stars (BoS) concept is a rating of stars (usually five) which is given by raters as a positive rating. Despite its lower accuracy in comparison with the Bag of Lemons (BoL, i.e. negative rating), we decided to use it as a positive and engaging tool for the job seekers to help each other in a cooperative environment. We also combined it with the comments feature for a more informative and useful rating. The Bag of Lemons was used for the candidate-filtering function, which is planned as future work, for it has more accuracy and creates a competitive environment. Combining the BoS and the BoL, we have effectively created a coopetitive environment that engages jobseekers in the pursuit of their own personal development as well as their community's.

2. Step-by-Step Design

We have chosen to design a platform that utilizes crowd wisdom for the improvement of jobseekers' professional content. The key collective intelligence concepts used here are the Bag of Stars and the Many Eyes concept which is achieved through having multiple people comment and rate the professional content of candidates, almost simulating the Iterative Improvement process. Crowd wisdom is also seen through the functionality of

"candidate-filtering" which companies benefit from as a fee-generating service for our platform (a subscription). This platform is a Collaboration Laboratory for improved Career paths, based on which the name CoLabCareers was chosen.

a. Actors

In this section, we will discuss the different actors using the website and their respective use cases. There are several actors in our platform:

- **Admin:** the person responsible for monitoring the platform (updating, editing, monitoring unacceptable behavior, …).

- **Manager:** the person who posts his company's job offers; he manages the job posts and the applications on our platform.

- **User:** the person who applies for job offers; he can rate CVs or any type of documents

- **Visitor:** a person who can search for opportunities and when she/he registers all the use cases of the user will be inherited by her/him.

The figure below illustrates the various use cases for each actor on the platform. The use case diagram displays a number of use cases that interact with the system and user types the system has (*Wikipedia,* 2023). The first actor is the Manager, who has several use cases. Before performing any of the specific use cases such as posting opportunities, downloading users' CVs, and consulting CVs, the Manager needs to go through an identification process. Additionally, the Manager and the User share a common use case, which involves managing their respective accounts on the platform. The User, on the other hand, has additional use cases including searching and checking available job applications on the platform, rating other Users' CVs or other types of professional documents (resume, motivation letter, …), and applying for jobs. There is also another actor called Visitor, who can browse the platform for job opportunities. If the Visitor decides to register on the platform, they inherit all the use cases available to the User. Furthermore, we have the Admin, who plays a crucial role as the main actor on the platform. The Admin has the authority to manage all the accounts, including the Manager and the Users, as well as oversee the overall functioning of the website.
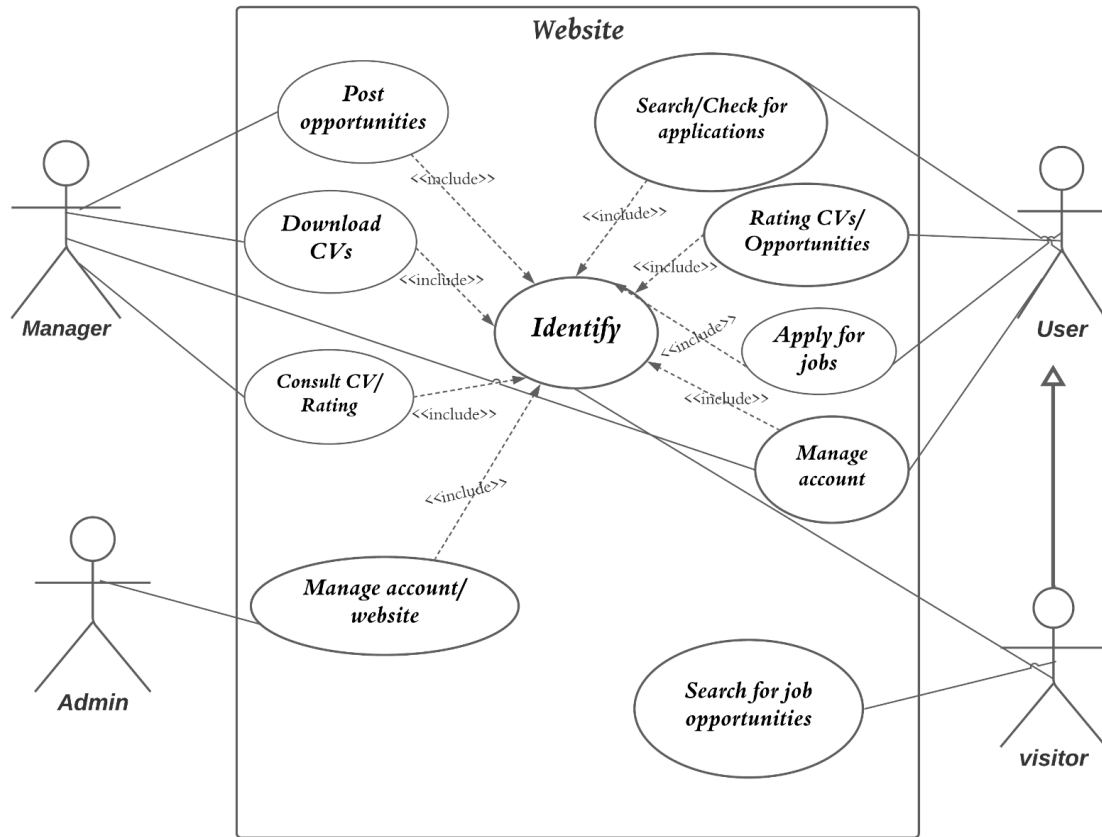
Figure 1: Use case diagram for the website.

b. Platform

The home page contains the following sections: the key features of the platform, about us, our partners, our team, a contact form, and contact information.

The Menu Bar contains the following buttons: Home, About, Job search, Jobseeker, members, login, register, and a search icon. When the jobseeker logs in, a new page named CoLab appears on the navigation bar with two sub-pages: "CoLab - Submit a Draft for Crowd Review" and "CoLab - Review".
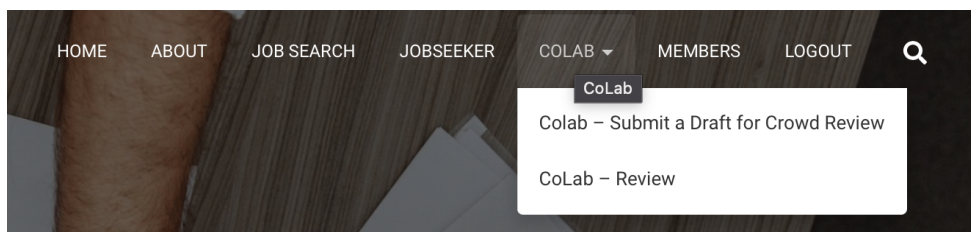

Figure 2: Menu bar after jobseeker logs in.

On the registration page, you are asked to provide some personal information such as your picture, email, username, and password. Once you have done this step, you are now able to log in by clicking on the login button on the menu bar and entering your username and password. Successful authentication allows you to access the pages: the job search, jobseeker, and CoLab as well as its two subpages.

For the rating and the feedback, the jobseeker can click on the page *CoLab - Submit a Draft for Crowd Review* in order to "CoLab with other JobSeekers!". The jobseeker is asked here to submit his own professional content (CV, Resume, Cover letter, …) for review by peer jobseekers. This is in the format of a blog post as seen below in this figure:

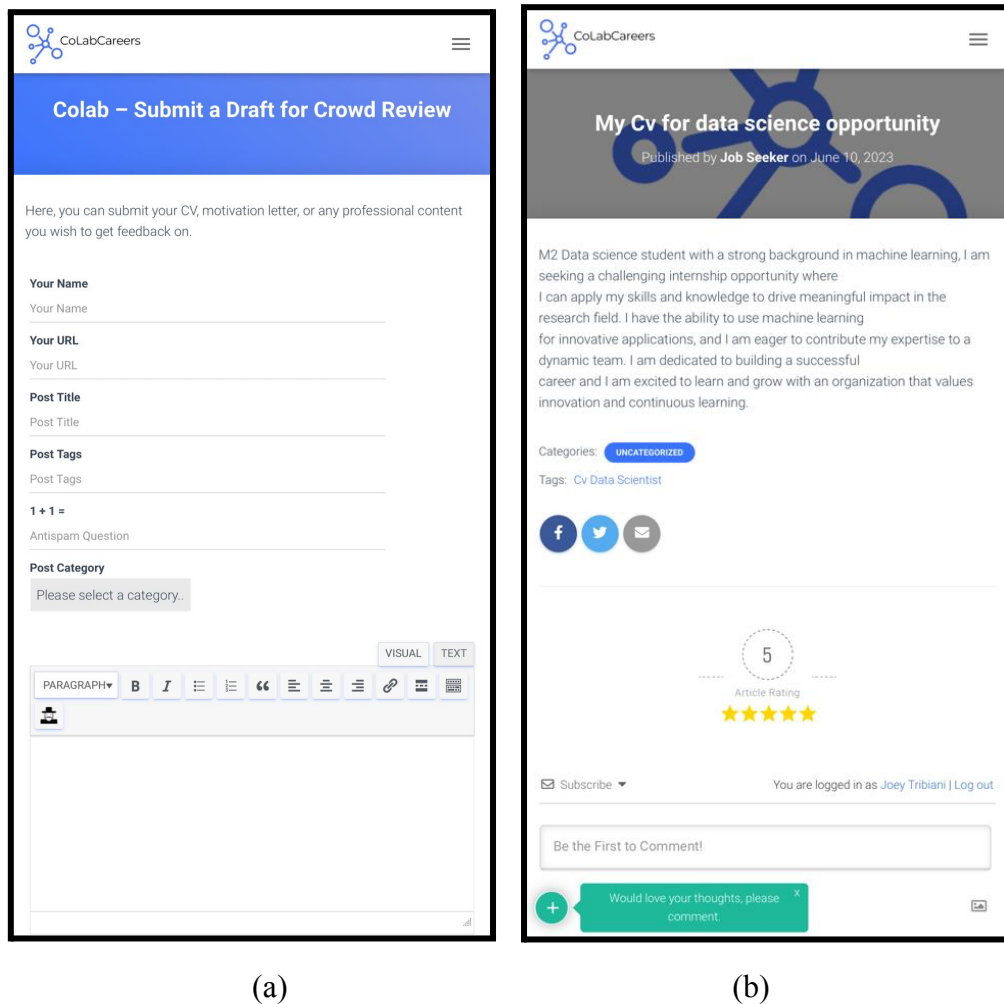(a)   (b)

Figure 3: CoLab page of (a) Submit a Draft for Crowd Review and (b) Review

As seen in Figure 3 (a), jobseekers can post their own content and get it rated and reviewed by other jobseekers. Here, the jobseeker himself/herself can do the same, i.e. rate and review

others' professional content. The mechanisms used here are comments and a five-star rating scale (BoS).

As seen in Figure 3 (b), the posts are then shared anonymously to prevent jobseekers from feeling criticized. After these tasks are done by multiple jobseekers, we can say that we now have a crowd intelligence platform. Jobseekers can incorporate the comments and ratings of fellow jobseekers and have a collectively improved version of their professional content that can be used to apply for jobs/opportunities of interest.

Key Feature and Results

Our first feature is anonymity. The implementation of this feature has resulted in reduced discrimination and inequalities based on personal attributes such as name, gender, nationality, and photo. Additionally, it has created an environment where individuals feel safe to express themselves authentically without fear of criticism.
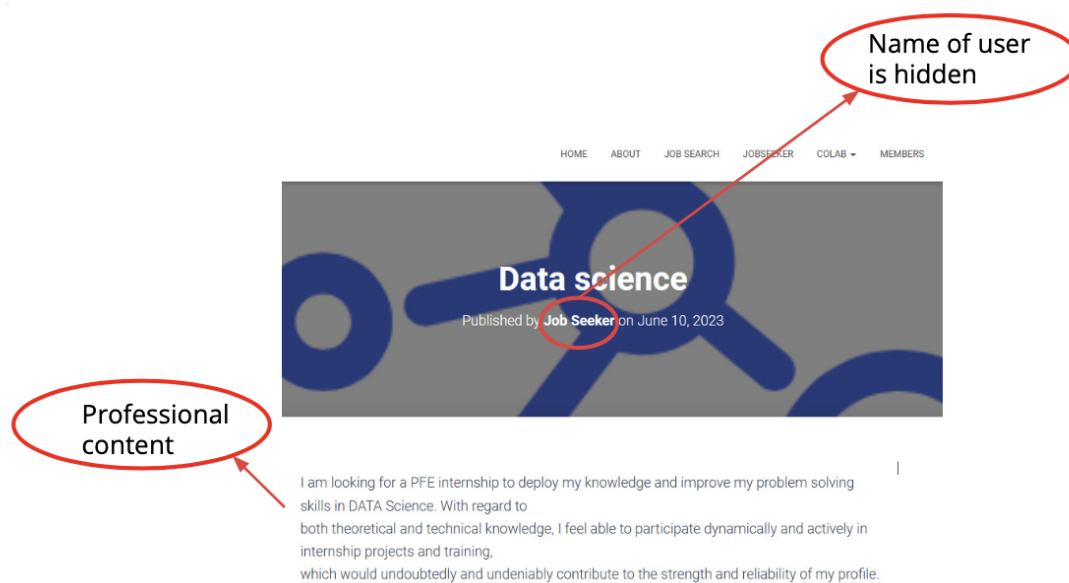

Figure 4: Example of professional content where the name of the user is hidden

The second feature is content review focus. By implementing this feature, our platform emphasizes reviewing content and providing constructive criticism. This approach helps reduce discrimination and inequalities. Users can provide positive ratings through the Bag of Stars system, along with text feedback, promoting a culture of constructive feedback without fear of criticism.
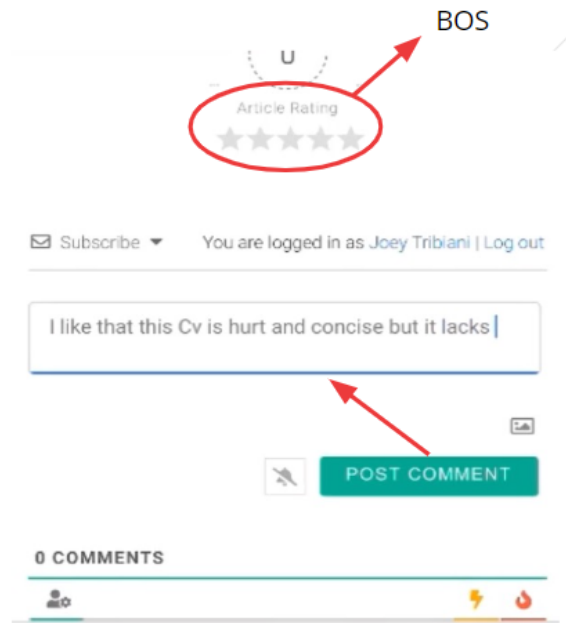
Figure 5: Rating (bag of stars) and text feedback

Our final feature is the competitive environment, which combines elements of cooperation and competition. This implementation has led to a refined definition of community and network. Furthermore, it has fostered self-sustainability by engaging job seekers in reviewing, rating, and exploring others' applications.
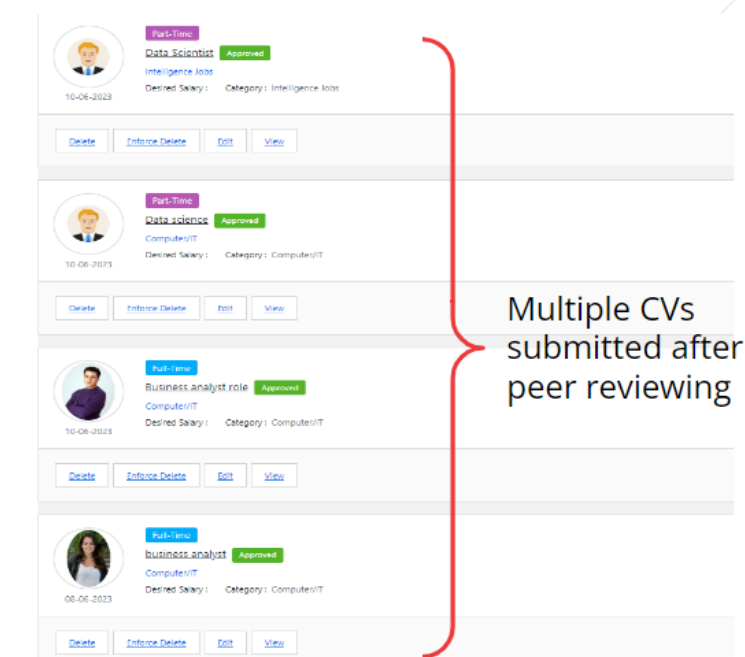

Figure 6: The Admin dashboard showing successful CV submissions after peer review.

Evaluation Criteria

In this step, we will elaborate on the primary criteria of the platform that we intend to assess. Firstly, we will examine the platform's reliability, which encompasses its performance in terms of speed, uptime, and responsiveness. Additionally, we will assess the platform's stability and dependability, as these factors are crucial for delivering uninterrupted services to users. The second criterion is user satisfaction. During this stage, we will evaluate the platform's design, ease of navigation, and overall user experience. Our aim is to create a user-friendly interface with intuitive features that can enhance engagement and satisfaction. The final criterion we will evaluate is cost-effectiveness. We will achieve this by offering value-added services for both parties involved: job seekers can rate each other and post for free, while the company pays a subscription fee facilitated by the platform.

Limitations

The feedback of our users has yielded positive results as seen in the figure below. However, during our in-person interviews, we were able to identify some of the limitations of our platform.
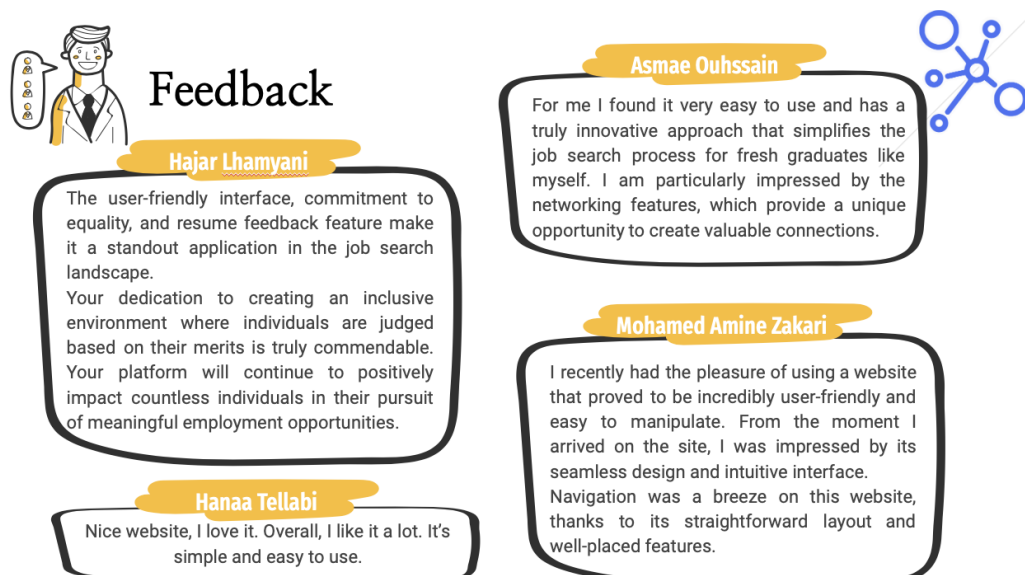
Figure 7: Jobseekers' feedback.

Some of the identified limitations of our platform are the repetitiveness of tasks which could make users lazy to continue with the full process of crowd wisdom in the long run. This can be combated by automating certain parts or adding an AI tool that can automatically fill fields and give suggestions for the repetitive fields. The platform is not fully self-sustaining since the Admins need to continuously monitor users' activities. There is also a risk of low engagement and client fidelity due to the high competitiveness of other older platforms such as Linked In. We may counter this by adding incentives and rewards to the jobseekers after any contribution.

Future Work

As seen in this report, jobseekers' feedback on the platform was positive. That is why we will be looking at the companies' feedback about the candidates that have been recruited. Companies' feedback on recommended candidates plays a crucial role in improving our rating process. Additionally, we are planning to organize events, and workshops and give rewards to loyal users, to incentivize them to actively participate in the rating process. These rewards not only foster engagement but also create a collaborative environment for continuous improvement. Furthermore, iterative improvement of CVs is essential for ensuring that candidates' profiles accurately and properly reflect their skills and qualifications.

Moreover, seeking for potential partners and networking with professional companies holds great potential for candidates as it opens doors to new opportunities and valuable connections. Finally, scaling up the service and leveraging big data can enable us as the platform designers to analyze vast amounts of candidates and job data, leading to more accurate matches and better outcomes.

In the future, by integrating these strategies and continuously refining the process, our platform can establish a reliable and effective process that benefits both companies and job seekers.

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