

Online Hiring Platform

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Abstract- It can be difficult for job seekers to find job openings that best match their interests and skill set. The challenges stem from a lack of understanding of the organization's mission, workplace culture, and open positions. Additionally, finding the ideal individual with the required qualifications to fill their open positions is a crucial duty for every organization's recruiter. Online hiring portals have undoubtedly improved both parties' convenience when looking for work. The aim of this research is to develop an online hiring platform, which brings together recruiters of an organization and job seekers with the goal of satisfying each party's specific needs and reducing the pains involved in the hiring process. They are the quickest and cheapest means of communication, regardless of the distance between audiences they can reach with a single click. The web application "hiring platform" provides an easy, convenient, and user-friendly experience for the job seekers to find and apply to their desired jobs and for the recruiters to find the right candidate for their organization.

I. INTRODUCTION

One of the major societal problems that both developed and emerging nations deal with is unemployment. [1] Amidst the COVID-19 pandemic, unemployment rate in urban areas of India rose to 20.9% during the April-June quarter of 2020, more than double the unemployment rate in the same quarter the previous year (8.9%). One of the causes of this issue, according to [2] Dorn and Naz, is the uneven distribution or absence of information about work prospects, which prevents people from being aware of any new job openings. This implies that despite of a lot of vacancies, the job seekers are unable to find the same. Thus, with the help of technology, an efficient hiring platform may benefit the job seekers to connect with recruiters. Through the proposed online hiring platform, company admins can securely log in and post details about the current

vacancies in their organization and manage already posted vacancies. Admins can then view the applications received on posted jobs and can easily filter out relevant candidates from a large pool. From a job seeker's perspective, a user can securely authenticate on the hiring platform. After entering relevant academic and career related details, the user would then be able to apply for listed jobs based on his/her preferences.

My aim to make the job search practical and effective led to the creation of an online hiring platform. It is useful to recruiters as a key resource for finding talent. Additionally, it makes it easier for job seekers to browse for open positions in one place. These job portals are an effective way to reach a broad audience due to the advancement of technology and the internet's role as the primary information source for applicants.

II. LITERATURE REVIEW

A. Challenges in hiring

Jobseekers spent a lot of time utilising different strategies to look for job opportunities before the Internet became extensively used as a form of job searching. A few traditional ways which were used to search jobs include employment recruitment agencies, advertising in mass media, job fairs, existing employee contacts, professional referrals, etc. These outdated job search techniques are too cumbersome, demanding, and slow. The candidates also need to think about how much it will cost, how long it will take them to collect the information they need, and any other preparations they need to make. The typical hiring process begins with the processing of application forms, followed by the description of each position's task, application form verification, and evaluation of the best candidate. The entire procedure, from finding a qualified applicant to promoting the position, requires a lot of time and work and has additional flaws. Therefore, in the highly competitive

job market of today, the traditional hiring approach is not the best. Even in the current scenario [3], the following issues were found out to be persisting among recruiters:

- Insufficient communication between the recruiter and job applicant: Poor communication is frequently cited by candidates as their number one complaint and a factor in the negative candidate experience. Candidates expect almost immediate confirmation that their application has been received thanks to today's digital communication and application processing tools.
- Lack of transparency: As job hopefuls research openings, benefits, salaries, and clearly stated thorough job descriptions are all important factors to consider. During onboarding, 44% of job seekers place a high emphasis on wage and benefit transparency. These have a significant impact on candidates' level of engagement throughout the process and are key determinants of an employer's viability.
- Convoluted application process: Applications that are cumbersome and time-consuming, taking up to an hour to complete, sometimes cause applicants to express irritation. Furthermore, 55% of applicants quit up on an online application that forbids them from uploading their resumes and forces them to manually re-enter and reformat it into a form. After 20 minutes, 69% of applicants quit up on a job application.
- Lack of mobile integration: A mobile application process is crucial, according to 33% of HR experts, for keeping prospects interested. This is true given that 90% of job seekers submit their applications via a mobile device. Only 20% of firms claim that their career site is mobile-friendly.
- Unclear hiring timeline: If the employer does not follow up within two weeks, 55% of candidates will get disinterested in the position. A precise timetable of all the processes in the hiring process can help to reduce candidate drop off and disengagement. It is crucial to keep candidates informed about the timeline, especially as the onboarding process progresses.

B. Features of the hiring platform

The goal of this online hiring platform is to make it easier for both job seekers and employers to find

employees for their organisations. A reliable online job portal system is essential for eliminating paperwork, implementing workflows that link job searchers and companies. A hiring platform is a website or platform that is designed to streamline the hiring process for businesses and job seekers. Some common features of a hiring portal include job postings, applicant tracking, resume and profile management, and job matching algorithms. Other potential features could include communication tools for interviews and other hiring-related tasks, as well as analytics and reporting tools to help businesses track and improve their hiring processes. Ultimately, the specific features of a hiring portal will vary depending on the specific needs and goals of the business or organization using it. The proposed software will have functionalities to ease the hiring process both for recruiters as well as job seekers. The platform will have two levels of access:

- Admin: This level of access and permissions will only be available to the company staff. Admins can log in to the platform using pre-defined admin credentials securely with the help of JavaScript Web Token (JWT) architecture. Post login admins would have the following permissions:
 1. Post jobs: Admins can post information about the current openings in their company with the required role, compensation, and other details to invite applications.
 2. View applications: Admins can then filter and view all the received applications along with candidate profiles to select or reject candidates. To improve communication between recruiters and users, automatic emails would be triggered on application status updates along with a feedback message from the recruiter.
 3. Logs: All the generated logs would be made available to track admin activities.
- Job Seeker (User): By default, any user visiting and registering on this hiring platform will be having user or non-admin level of access. The user would have access to view all the available vacancies along with the details of the same including role, location, compensation, responsibilities etc. The user would also be having flexibility to search and filter jobs based on role, category, and location. To apply for a

specific job, the user must be logged in the hiring platform. Once logged in, the user would be prompted to create a profile where he/she must enter general, contact, academic and career related details. Once the profile is created, the user is now eligible to apply for any job based on his/her preference just by a single click. Upon successful submission of a job application, the user immediately receives an automated confirmatory email, thus, keeping the user engaged with the platform. The user can then view, track, and manage all his job applications at one single place.

III. METHODOLOGY

When planning this hiring platform, there were several key factors to consider. First, it was necessary to determine the purpose and goals of the portal, such as whether it would be used to post job listings, accept applications, or conduct interviews. It was also necessary to decide on the target audience for the portal, such as job seekers, employers, or both. Next, the technical requirements for the portal needed to be considered. This may have included deciding on the platform and technologies to be used, as well as the hosting and security considerations. In addition, the user experience and design of the portal needed to be thought about. This included creating a user-friendly interface, making the navigation intuitive, and providing clear instructions for users. It was also necessary to consider the features and functionality of the portal, such as job search and filtering capabilities, application and resume submission, and communication tools. For the ease of development, I decided to split the development process into two main parts:

A. Design and prototype

UI (user interface) designing is the process of creating the visual and interactive elements of a software application. The goal of UI design is to make the application easy to use, visually appealing, and intuitive for the user. UI design is an important aspect of software development, as it plays a critical role in determining the user experience and the success of the application. High-fidelity wireframes of the hiring platform were made using the Figma application and following are a few of them.

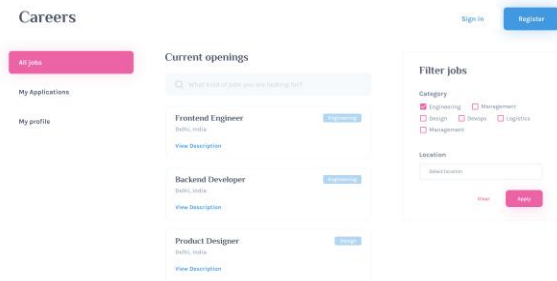


Fig. 1. Application home screen with the list of available jobs

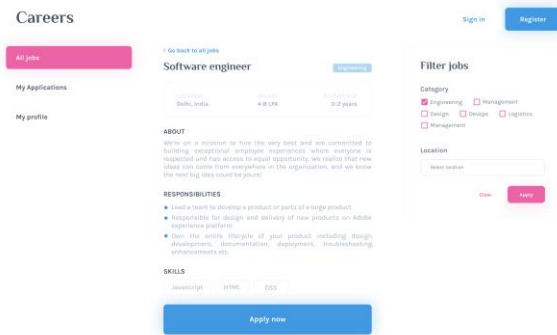


Fig. 2. Page displaying job details and a CTA to apply for job

C. Development

For the development of this hiring platform, I chose MERN stack (MongoDB, Express.js, React.js, Node.js). The MERN stack is a collection of technologies used in the development of web applications. It consists of four main components:

1. MongoDB: [4] MongoDB is a cross-platform document-oriented database system. It is classified as a NoSQL database, which means that it does not use the traditional table-based relational database structure. Instead, MongoDB stores data in flexible, JSON-like documents with optional schemas.
2. Express.js: [5] Express.js is a web application framework for Node.js. It is designed to make it easier to build and manage web applications and provides a range of features and tools for building server-side applications.
3. React.js: [6] React.js is a JavaScript library for building user interfaces. It is designed to make it easier to create interactive and dynamic user interfaces and provides a range of features and tools for building complex and responsive UI components.

4. Node.js: [7] Node.js is a JavaScript runtime environment for building server-side applications. It is built on top of the V8 JavaScript engine, which is used in Google Chrome, and allows developers to use JavaScript for writing server-side code.

The entire development of the platform relies on the client-server architecture to fetch data from the database using APIs (Application programming interface) and render the same on the frontend.

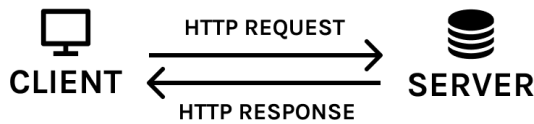


Fig. 3. Client server model

Initially I started with backend development and built API for the application using Node.js. A MongoDB Cluster was integrated with the server where all the data of the application would be stored and fetched from and Mongoose library was used to design database schemas. API endpoints or routes were written using the express.js library for all necessary actions like fetching and posting jobs, submitting and fetching job applications, creating and fetching user profile, selecting/rejecting a job application, fetching admin logs etc, both for user and admin access levels. All the private routes were completely secured using the [8] JWT mechanism wherein each route has a middleware that verifies if the client who is requesting the data is a valid user/admin or not. This was made sure using a boolean isAdmin property in the user object. Following is a sample user object:

```
{
  "iat": 1670939453,
  "id": "6369206c1460a1e4f96eaccd",
  "isAdmin": false,
  "username": "arpthiside"
}
```

The corresponding JWT token (hashed from bcrypt library) to the above mentioned user object is: eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9. This JWT token will be sent as a parameter to all the API

requests to validate authentication. Following is a sample admin route to fetch details of a specific job:

```
router.get("/:id", verifyToken, verifyAdmin, async (req, res) => {
  const { id } = req.params;

  try {
    const jobExists = await Job.findById(id);
    if (!jobExists) {
      return res
        .status(400)
        .json({ status: "error", message: "Job not found"
    });
    }
    return res.status(200).json({ status: "success", data:
    jobExists });
  } catch (err) {
    return res.status(400).json({ status: "error",
    message: "Job not found" });
  }
});
```

After the completion of API, the application's frontend development was initiated. The designed user interfaces in the designing phase were now coded in JSX, CSS and JavaScript using the React.js library. For the ease of implementation and consistency, Chakra UI, an open-source component library was used. The axios library was used to make API calls from the frontend to fetch data. Following is a sample API call made to fetch details of a specific job.

```
export const getSpecificJob = async (jobId) => {
  const response = await axiosInstance
    .get(`/api/user/job/${jobId}`);
  return response.data;
};
```

The entire application code, backend and frontend was successfully developed and deployed on web hosting services namely cyclic.sh and vercel respectively.

IV. RESULT

The proposed online hiring platform that can be used by an organisation to post & manage vacancies and shortlist genuine candidates with a clean, beautiful

user interface and a hassle-free user experience has been developed. Users can register and create their profiles on this platform to apply to jobs and track applications. Similarly, admins can post and manage vacancies and shortlist candidates easily from the list of received applications.

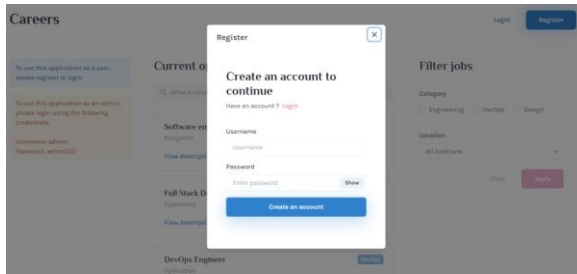


Fig. 4. User (job seeker) registration form

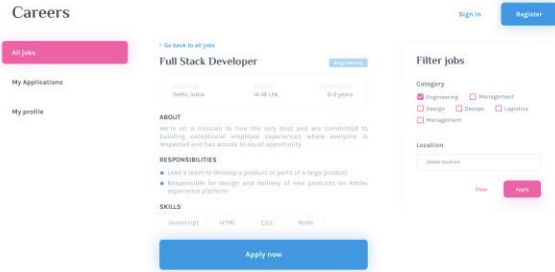


Fig. 5. Users can view and apply to jobs based on their preference with a single click upon creating profile.

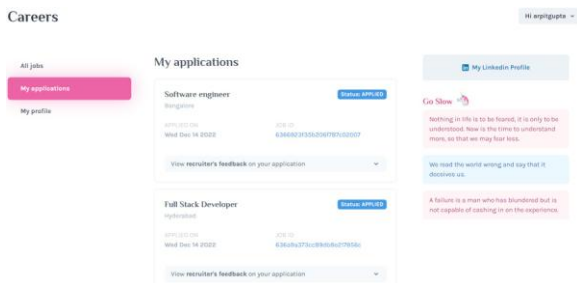


Fig. 6. Users can view and track their applications

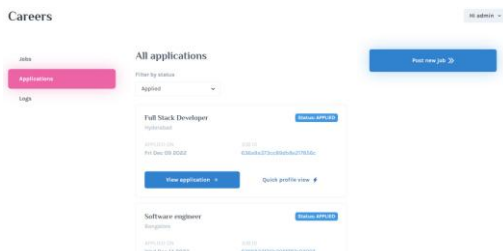


Fig. 7. Admins can post jobs and view received applications.

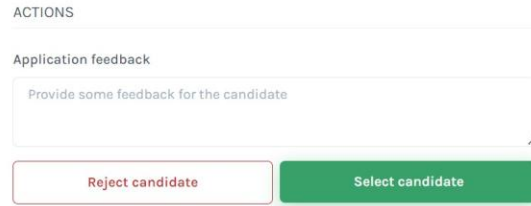


Fig. 8. Admins can select or reject a candidate after providing a feedback message which will be sent to the candidate via mail

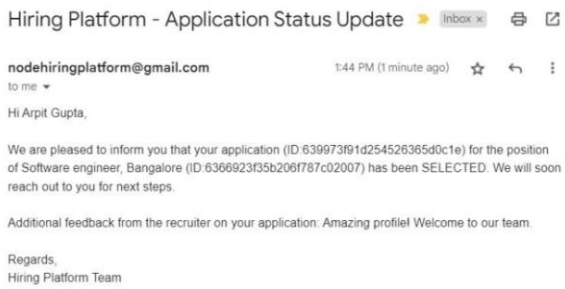
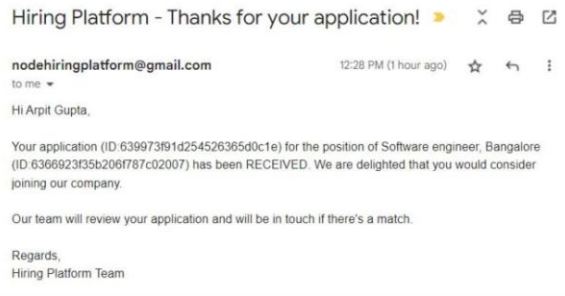


Fig. 9. Automatic notifications to candidates via email on application submission and application status updates.

V. CONCLUSION AND FUTURE WORK

A. Conclusion

Hiring platforms are a disruptive force in the recruitment industry. They facilitate communication between recruiters and applicants by mediating their needs. This tool facilitates both job seekers' extensive job search for positions that fit their interests and organisations' exposure to a larger candidate pool. This application eliminates the discussed challenges involved in online hiring process including insufficient communication, lack of transparency, convoluted application process and lack of mobile integration. It provides a beautiful user interface and offers great user experience to make job searching hassle free.

B. Future work

This application fulfils the primary requirements of job seekers and recruiters. However, it can be extended by providing AI based job recommendations to candidates based on their profiles and application history. The gathered data from job applications can be processed and analysed using relevant machine learning algorithms to predict necessary statistics for company admins. Tools related to interview scheduling can be directly integrated with this hiring platform to automate interviewing process and provide further ease to the recruiters.

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- [7] <https://nodejs.org/en/>
- [8] <https://jwt.io/>