

SkilBill: Reimagining skill development and recruitment through the lens of gamification

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Abstract

In a rapidly evolving job market, the conventional platforms for recruitment and skill development have proven inadequate, often failing to align the multifaceted skill sets of candidates with the dynamic needs of employers. This project undertakes the reimagining of a recruitment platform that seamlessly integrates a skill development feature for software engineers. By infusing gamification into the skill acquisition process, we aim to foster a more engaging experience for candidates, encouraging consistent practice and growth. Concurrently, the platform offers recruiters a sophisticated, data-driven tool to evaluate candidates through a dual-view system, which juxtaposes a candidate's skills against job requirements with a comprehensive spider chart visualization. This report encapsulates the entire design journey, from conceptualization based on thorough needfinding interviews to the realization of a high-fidelity prototype, focusing on creating a symbiotic environment where candidates can thrive and recruiters can efficiently identify the best talent.

1 Introduction

The goal of this project was to address key issues in the job search ecosystem: the mismatch between candidates' presented skills and hiring managers' requirements, and the lack of engagement and personalization in current job search platforms. This report outlines the process undertaken from the selection of the design problem to the creation of high-fidelity prototypes, including the findings from our needfinding interviews and the subsequent iterative design stages.

With a focus on the tech industry, our project identified the need for a platform that better bridges the gap between job seekers' skills and the evolving needs of the job market, while providing a more engaging and productive job search experience.

2 Empathize and define stages

2.1 Insights from the Interviews

From the interviews, we gleaned actionable insights that directly influenced specific features and interactions in our design. Recruiters shared that the current systems' one-dimensional filtering often overlooks candidates with atypical backgrounds who may possess strong transferable skills,

like a data analyst adept in critical thinking yet applying for a software development role. They suggested a more holistic profiling tool that could, for example, highlight a candidate's experience in a high-paced retail environment as indicative of their potential to thrive in fast-paced tech startups.

Candidates revealed frustrations with feeling unseen in their job search, their applications seemingly disappearing into the void. A grad student, despite tailoring their resume for different roles, felt they were shooting in the dark, receiving no feedback. This led us to integrate a feedback loop, similar to interactive learning platforms where users immediately see the outcome of their actions, like an alert that pops up when their skill-set closely matches a new job listing.

These interviews underlined the necessity for a two-pronged design approach: enhance the recruiter's ability to uncover hidden potential through visual tools such as a spider chart comparison of a candidate's skills with job requirements, and bolster the candidate's engagement by making their efforts visible and rewarded—akin to 'leveling up' in a game when they complete skill-building challenges.

These insights were instrumental in steering the project towards solutions that tangibly resonate with users. For recruiters, this meant developing a 'skill depth' meter next to each application, and for candidates, a 'skill tree' progression display that grows with each completed challenge. This detailed feedback not only educated us on the specific pain points but also paved the path for a nuanced, empathy-driven redesign.

2.2 Defining Tasks

These revelations emphasized the need for a more empathetic, responsive, and transparent system, guiding the creation of our tasks. They not only informed the functionality required but also shaped the interaction design to be more engaging and supportive of the user's journey.

- **Skill Matching and Gap Analysis:** Guided by the hiring manager's feedback, this task involves creating an algorithm that can assess a user's skills against the requirements of a job, highlighting strengths and identifying areas needing improvement. For instance, if a job requires expertise in React, but a candidate is stronger in Angular, the system would point out this

gap while also acknowledging the transferable nature of their existing JavaScript skills.

- **Gamified Skill Development:** Addressing the lack of engagement reported by the student, this task involves incorporating gamification. For example, completing a Java challenge or attending a networking event could earn points that contribute to a candidate's visibility or unlock additional platform features. [8][1]
- **Progress Tracking:** This task is about providing tangible progress indicators. Rather than sending applications into the unknown, candidates can see how many views their applications have garnered or how they're advancing towards their skill goals, much like a fitness app shows steps or calories burned. [7]
- **AI-Driven Personalized Guidance:** Derived from the call for personalized feedback, this task involves developing a virtual assistant that can offer advice ranging from which networking events to attend, based on the user's industry and location, to recommending specific online courses that align with trending skills in their field. [3]
- **Nuanced Job Posting and Candidate Filtering:** This task for the recruiter's view is influenced by the hiring manager's wish for a more discerning filtration system. It will enable recruiters to fine-tune their candidate searches, perhaps placing greater importance on collaborative skills for a team-oriented project, even if the technical skills are not a perfect match.[2]

The development of these tasks leads to an interface that directly addresses the needs and pain points surfaced during the interviews, with a design focused on clarity, personal growth, and a richer connection between candidates and recruiters.

3 Problem Selection

The initial problem was identified through user research and industry analysis, pinpointing the inefficiency in how current job search platforms handle skill representation and job matching. The platforms lacked mechanisms to capture the nuanced skills and potential growth areas of candidates, particularly in tech roles requiring a diverse set of abilities.

An in-depth analysis of platforms such as LinkedIn, Indeed, and Glassdoor revealed shortcomings in personalization and user engagement. They provided limited support for candidates to showcase their evolving skills and for recruiters to identify potential beyond keyword matches.

4 Ideate and prototype stages

In crafting the initial low-fidelity prototype, our design decisions were guided by the foundational insights extracted from the needfinding interviews. These insights informed

the primary tasks our platform was built to support, bridging the divide between candidate skills and recruiter needs.

4.1 Recruiter View

Informed by the qualitative data from the needfinding interview with the hiring manager, the recruiter view of our lo-fi prototype (see Figure 1(c) & 1(d)) facilitates a simplified yet powerful interaction with candidate profiles. While acknowledging the current limitations of Workday's filtration system, our prototype introduces a spider chart visualization that enables recruiters to juxtapose a candidate's skills against job requirements. This visual tool (see Figure 1(c)) is designed to address the hiring manager's concern for a more nuanced evaluation of candidates' capabilities, specifically highlighting the transferability of skills across domains. Although our initial design included skill weighting sliders, feedback and heuristic evaluation suggested they might complicate the interface; thus, they will be streamlined in future iterations. However, this feature's conceptual inclusion (see Figure 1(d)) underscored the need for customizable criteria in the recruitment process and established the groundwork for a more sophisticated algorithm-driven approach to candidate assessment.

4.2 Candidate View

Parallelly, the candidate view (see Figure 1(a)) embodies the principles of engagement and personal growth, addressing the grad student's call for a job search experience that is both interactive and rewarding. The interface presents daily coding challenges through visually appealing, candy-like icons, designed to entice the candidate into regular practice—an approach directly rooted in the gamification strategy the student highlighted. A noteworthy feature is the "refresh" option, empowering candidates with choice and control over their learning trajectory. The task interface (see Figure 1(b)) mirrors the straightforwardness of platforms like LeetCode, offering an uncluttered space for users to engage with coding problems and submit their solutions, fostering a direct and intuitive engagement with the task at hand. Despite its simplicity, this aspect of the prototype was pivotal in fulfilling the candidate's desire for an interactive and responsive system that acknowledges and rewards effort.

The creation of this prototype encapsulated our understanding of the users' needs and our commitment to developing a responsive and engaging platform that harmonizes the job search and skill development journey for software engineers.

5 Internal and external testing

5.1 Incorporation of Heuristic Evaluation Insights

The insights from Nielsen's heuristic evaluation had a profound impact on our design direction. For instance, the feedback led us to eliminate the skill weighing sliders from the

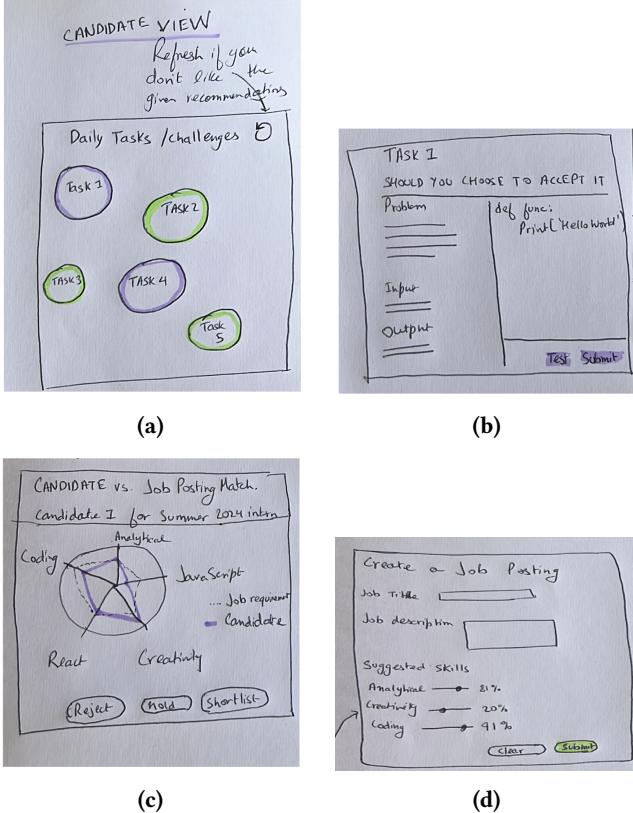


Figure 1. Initial Lo-Fi Prototype for SkilBill. Subfigures (a) and (b) representing candidate's view. Subfigures (c) and (d) representing recruiter's view.

recruiter view (formerly seen in Figure 1(d)). This change addressed the heuristic of simplicity and user control by reducing complexity in favor of a more streamlined interface, as reflected in the final high fidelity prototype (see Figure 4). The revised design focused on clarity, employing an F-pattern layout to align with natural reading behaviors and ensure that critical information is easily accessible. [6]

Another aspect refined through heuristic evaluation was error management. The original lo-fi prototype allowed for a high potential of user error due to its more complex interaction design. By simplifying this (evident in the transition from Figure 1 to Figure 4), we reduced the likelihood of errors during job posting creation, aligning with the heuristic of error prevention.

5.2 Integration of User Testing Feedback

External user testing with graduate students provided actionable insights that informed our grid arrangement of task icons, moving from a scattered to an organized presentation (compare earlier designs with Figure 3). This was based on the feedback emphasizing the importance of a clean, minimalist layout that could facilitate focus and reduce cognitive load.

Feedback highlighted the users' desire for clear progress indicators, which led us to include Lines of Code and XP metrics on the candidate's dashboard (see Figure 3), and comprehensive progress details on the profile page (see Figure 3). These additions serve to gamify the experience and offer candidates a tangible measure of their development, meeting the heuristic of visibility of system status.[8]

To address the desire for time-efficient skill practice, a significant timer was added to each task (see Figure 3), encouraging users to enhance their problem-solving proficiency within a set timeframe. This feature aligns with the heuristic of matching between the system and the real world, as it mimics the time constraints often found in actual coding interviews and work environments.

Finally, the platform was optimized for mobile use (evident across all Figures), with the ability for users to focus and zoom in on different parts of the application as needed. This optimization was critical, considering the feedback on usability and accessibility, particularly for users who engage with the platform on-the-go.

Overall, the final high fidelity prototypes demonstrate a thoughtful application of insights from both heuristic evaluations and user testing, showcasing a platform that is not only user-friendly and engaging but also tailored to the specific needs and behaviors of its audience.



Figure 2. Recruiter's view in Hi-Fi Prototype for SkilBill.

6 Final High Fidelity Prototype

6.1 Recruiter View

The recruiter interface has been honed into an intuitive dashboard that provides a clear and efficient recruitment process. At its core is the candidate evaluation screen where a spider chart visually represents how closely a candidate's skill set aligns with the job requirements. The design of this screen supports quick comparisons and informed decision-making, crucial for busy recruiters. The direct actions available—'Reject,' 'Hold,' and 'Shortlist'—streamline the recruitment workflow, each button immediately updating the candidate's status in the hiring pipeline.

The recruiter view now also includes a 'Recommended Modules' section, suggesting areas where a candidate could improve to better fit the role. This feature not only informs the recruiter's understanding of the candidate's potential but also provides actionable feedback that recruiters can pass on to candidates, fostering a more developmental interaction between the two parties.

6.2 Candidate View

The candidate side is a vibrant, gamified environment that encourages skill development through daily coding challenges, visually enticing with a clean, organized grid layout. Each challenge is represented by a colorful icon that, when selected, expands into a detailed task with a code editor and problem statement (Figure 5), emulating a real coding environment. The inclusion of a timer adds an element of urgency and practice for real-world scenarios, like timed coding tests or hackathons.

The candidate's home screen provides immediate feedback on their weekly goals and current session, using gamified metrics such as XP and lines of code to track progress. This continuous feedback loop keeps candidates informed and motivated, and the progress tracking aligns with a commitment to skill growth and job readiness.

6.3 Affordances

The final high fidelity prototype introduces several unique affordances that set it apart from conventional job search and skill development platforms:

- **Dynamic Skill Visualization** One of the standout features for the recruiter view is the dynamic spider chart (Figure 2), which does more than just compare skills—it also provides a visual representation of the candidate's potential for growth. This interactive graph allows recruiters to see not just where the candidate is now, but where they could be with development, thus fostering a forward-looking recruitment strategy. [4]
- **Stacked Progress Bars for Skill Levels** The stacked progress bars are designed to provide a dense, informative snapshot of a candidate's proficiency in various

skills. They efficiently use screen space and help users immediately recognize discrepancies in skill levels, contributing to a quick understanding of qualifications (Figure 2).

- **Color-Coded Recommended Modules** The use of consistent color-coding in skill proficiency modules provides a visual representation of a candidate's skill levels, making it easy to identify areas for improvement and align with job requirements (Figure 2). [9]
- **Interactive Challenge Engagement** For candidates, the gamified challenges are not static tasks but are designed to mimic interactive game levels (Figure 3). Each challenge can be expanded for more detailed information, and completion contributes to a sense of progression within the app. This approach to skill development through task completion is engaging, offering a richer and more immersive learning experience than traditional problem-solving practices.
- **Refreshable Task Selection** The ability to refresh the list of daily challenges (Figure 3) gives candidates autonomy over their learning pathway. This feature caters to the varied interests and skill levels of users, promoting a personalized and user-directed approach to professional development.
- **Real-Time Skill Tracking** The progress tracking system incorporates XP points and lines of code as real-time metrics (Figure 3). Unlike typical progress bars, these metrics introduce an element of gaming that can enhance motivation and commitment to continuous learning and improvement.
- **AI-Personalized Recommendations** Building on the concept of an AI-driven mentor, the system suggests targeted modules for skill improvement within the recruiter view (Figure 3), translating data-driven insights into actionable advice. This affordance reflects a leap from static job boards to a more dynamic, AI-powered career development tool.
- **Simplified Decision-Making Interface** The simplified trio of action buttons—'Reject,' 'Hold,' and 'Shortlist'—within the recruiter view streamlines the decision-making process (Figure 4). This reduces cognitive load and decision fatigue, allowing recruiters to make quick yet informed decisions, a unique departure from the typically complex interfaces of recruitment tools.

These affordances, derived from careful consideration of user feedback and heuristic evaluations, reflect a commitment to providing a tailored, interactive experience for both job seekers and recruiters. They emphasize the tool's aim to be not only a platform for job matching but also a catalyst for skill enhancement and career growth.

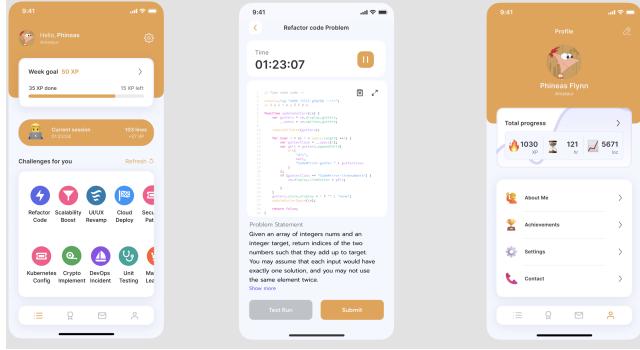


Figure 3. Candidate’s View Final prototype (<https://tinyurl.com/skilbill-figma>)

7 Pitfalls of Candidate Ranking Systems

Implementing a candidate ranking system could inadvertently pressure candidates to optimize profiles for algorithms rather than skill development, mirroring how influencers shape content to game social media algorithms for maximum visibility. Such a system risks prioritizing candidates who know how to manipulate these algorithms over those with true merit, potentially overshadowing genuine qualifications with algorithm-friendly buzzwords. To ensure fairness, transparency in how rankings are determined is crucial, and human oversight remains essential to recognize the value beyond what an algorithm can quantify. [5]

8 Conclusion

Through rigorous user-centric research and iterative testing phases, the platform has been refined to bolster engagement and operational efficiency. It presents a bifurcated interface—one for recruiters and another featuring gamified challenges for candidates. This innovative method employs visual representations, such as spider charts, to accurately align candidate skills with job prerequisites, thereby enriching the job search experience with greater interactivity and reward.

Subsequent enhancements, guided by heuristic evaluations and user feedback, have been instrumental in optimizing SkilBill’s functionality and user accessibility. The incorporation of distinct features like real-time skill monitoring, AI-enabled personalized coaching, and dynamic skill visualization underscores the platform’s dedication to fostering a mutually beneficial environment. Here, candidates can perpetually refine their abilities while recruiters can more effectively pinpoint optimal talent. Collectively, these attributes distinguish SkilBill as a revolutionary instrument within the domains of recruitment and skill development.

9 Future work

Future enhancements for the SkilBill platform are meticulously planned to significantly improve the recruitment

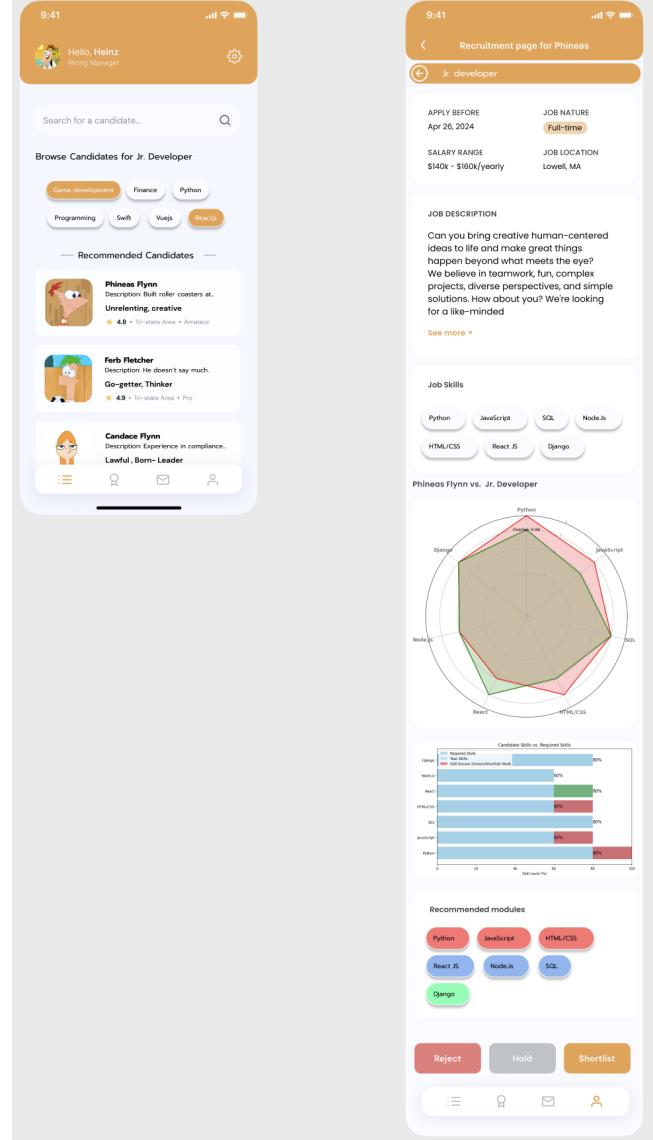


Figure 4. Recruiter’s View Final prototype (<https://tinyurl.com/skilbill-figma>)

and skill development experience by integrating cutting-edge technologies and user feedback. One major upgrade involves the integration of Large Language Models (LLMs) to streamline the job posting process. These models will assist recruiters in quickly generating precise and effective job descriptions based on inputted job requirements and qualifications, dramatically increasing the efficiency and accuracy of job postings. Additionally, to boost user engagement and incentivize continuous improvement, a competitive leaderboard system will be introduced, ranking candidates based on metrics such as completed challenges and skills acquired.

Moreover, the candidate selection process will be reimagined using a Tinder-like swipe interface, providing a more dynamic and intuitive user experience. This approach will allow recruiters to rapidly screen candidates with simple gestures, enhancing the efficiency of the initial selection process. These future developments aim to not only enhance the functionality of SkilBill but also to ensure it adapts to modern digital interaction trends and meets the evolving needs of users in a competitive job market. By leveraging innovative technologies and thoughtful design, SkilBill is set to redefine the norms of recruitment and professional growth.

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