SkillBridge: Empowering Small Businesses with Skill-Based AI Job Matching

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Abstract

Small and medium-sized businesses (SMBs) often face significant challenges in hiring the right talent due to limited HR infrastructure and the high cost of intelligent recruitment tools. Most existing platforms rely heavily on keyword and title-based filtering, often overlooking skilled candidates without conventional credentials. SkillBridge is an AI-driven job matching platform designed to solve this problem by enabling skill-based, explainable, and affordable hiring.

By leveraging AI, SkillBridge extracts key skills from resumes and job descriptions, embeds them, and generates skill-match scores and gap analyses.

Built on open-source, scalable tools, and supporting a freemium and API-based business model, SkillBridge bridges the gap between talent and opportunity for businesses underserved by traditional hiring platforms. It promotes faster, smarter, and more inclusive recruitment practices in emerging markets.

1. Problem Statement

Traditional recruitment platforms are largely built around resumes, academic degrees and job titles, making them inefficient for small businesses that need agile, skill-focused hiring. With shifting skill demands and non-linear career paths, many qualified candidates are overlooked. Small businesses, especially in Tier 2–3 cities or remote settings, lack the infrastructure to process hundreds of applications efficiently. They often lack the tools and expertise to identify and recruit the right talent efficiently.

Thus, there's a strong need for a tool that democratizes hiring — prioritizing skills over credentials, and simplifying recruitment through AI and skill match % scores.

2. Market and Customer Needs Assessment

2.1 Market Need Assessment

- **Global SMBs**: Over 300 million SMBs globally, most using informal or manual hiring.

- **India**: 63 million+ MSMEs, accounting for 30% of GDP, yet lacking scalable recruitment tools.

- **Online Hiring Growth**: Post-COVID, even microenterprises have shifted to digital hiring. There now exists a highly mobile workforce which needs to mapped properly to enable their hiring by the small and medium businesses.

2.2 Customer Need Assessment

- **For Employers**:

o Want fast, skill-relevant candidate suggestions. Employers are looking for suitable, job-ready candidates to shorten their hiring cycle time and enable uninterrupted operations.

o Cannot afford LinkedIn Premium or ATS systems. Though there are other job match service providers in the market, often their services are priced at a premium, putting them out of reach of startups in Tier 2 & 3 cities, working on shoestring budgets.

- **For Candidates**:

o Want visibility without inflated credentials. Candidates often get confused by the variety of job titles, experience levels and educational credentials to accurately understand their match for the job role. However, by focusing on the proficiency on essential skills in addition to the other information, the candidates' resumes will get a visibility boost if it carries the required skills.

o Need suggestions for skill gaps and career direction. In case the candidate resume is not 100% match on the required job skills, they can level up to make themselves job ready by exploring the job courses featured on the site for corresponding skills.

3. **Target Specifications and Characterization**

User Type	Traits
Employers	Cost-sensitive, time-limited, role-specific hiring
Job Seekers	Skill-rich but low in brand visibility or degrees
Partners	EdTech firms, bootcamps, micro-lenders (for job-linked loans)

4. **External Search**

- NSDC Skills Gap Reports
- IndiaSkills 2024 Framework
- LinkedIn Future of Work Report
- Technical Skills Framework by Linjith Kunnon on Medium.com

5. Benchmarking Alternate Products

Platform	Limitation
Naukri	Keyword-based filters, limited SME tools
Internshala	Student-centric, not optimized for employers
LinkedIn Jobs	Expensive, title-centric matching
Apna, Hirect	Strong for blue-collar but weak in upskilling paths

Differentiator: SkillBridge uses skill-to-role match, local job feeds, and predictive career mapping.

6. Applicable Regulations

- **India PDPB 2023**: User data handling and retention
- **IT Act**: Secure digital storage, AI explainability
- **Equal Opportunity Guidelines**: No algorithmic bias
- **Employment Codes**: Transparent job matching without paid bias

7. Applicable Constraints

Constraint	Notes
Budget	Limited cloud costs using Firebase free tier
Technical	Matching accuracy for diverse resumes
Operational	Manual job post verification for local partners
Legal	Resume data usage permission and consent

8. Concept Development

SkillBridge web app allows:
- Candidates to upload a resume or enter skills.
- AI parses and suggests jobs and skill upgrades.
- Employers input job role → platform shows best-fit candidates + upskillable profiles.
- Upskilling API connects to Coursera/Udemy/etc.

9. Business / Monetization Model:

A. **Employer Subscriptions**: Charge recruiters or companies for tiered subscription plans based on features and usage.

Underlying ML / DL models:
- Top talent recommendations (candidate ranking models)
- Resume parsing and screening automation (NLP / BERT-based)

Example Tiers:
- Free: Limited job posts with manual search
- Pro: Unlimited posts with smart matching
- Enterprise: Custom ML dashboard, ATS integration, priority support

B. **Pay-Per-Hire:** Charge companies only when a qualified candidate applies or is hired.

Underlying ML / DL models:
- Model checks Match% of candidate-job fit before sending
- Removes duplicates and screens applicants automatically

C. **Resume & Profile Boost for Job Seekers:** Basic job search, application and ATS score check is free, paid plans include:

- Resume optimization and ATS ready using NLP
- Getting featured profile and higher rank in company search results for visibility boost

Underlying ML / DL models:
Candidates receive personalized job suggestions ranked using collaborative filtering or DL (e.g., BERT for job description matching).

D. **Candidate Course recommendation**: During candidate skill match, if a gap if found on one or more skills critical for the job, makes recommendations to the candidate for certified courses that can bridge the gap and make them skilled for the job.
- Job site gets paid a fee equal to a percentage of the course fee by the Edtech companies providing the upskilling courses if the candidate clicks through the course link featured on the job site to subscribe to the course.

E. **API Licensing (B2B Data Services)**: License parts of the ML system as APIs:
- Smart job matching engine
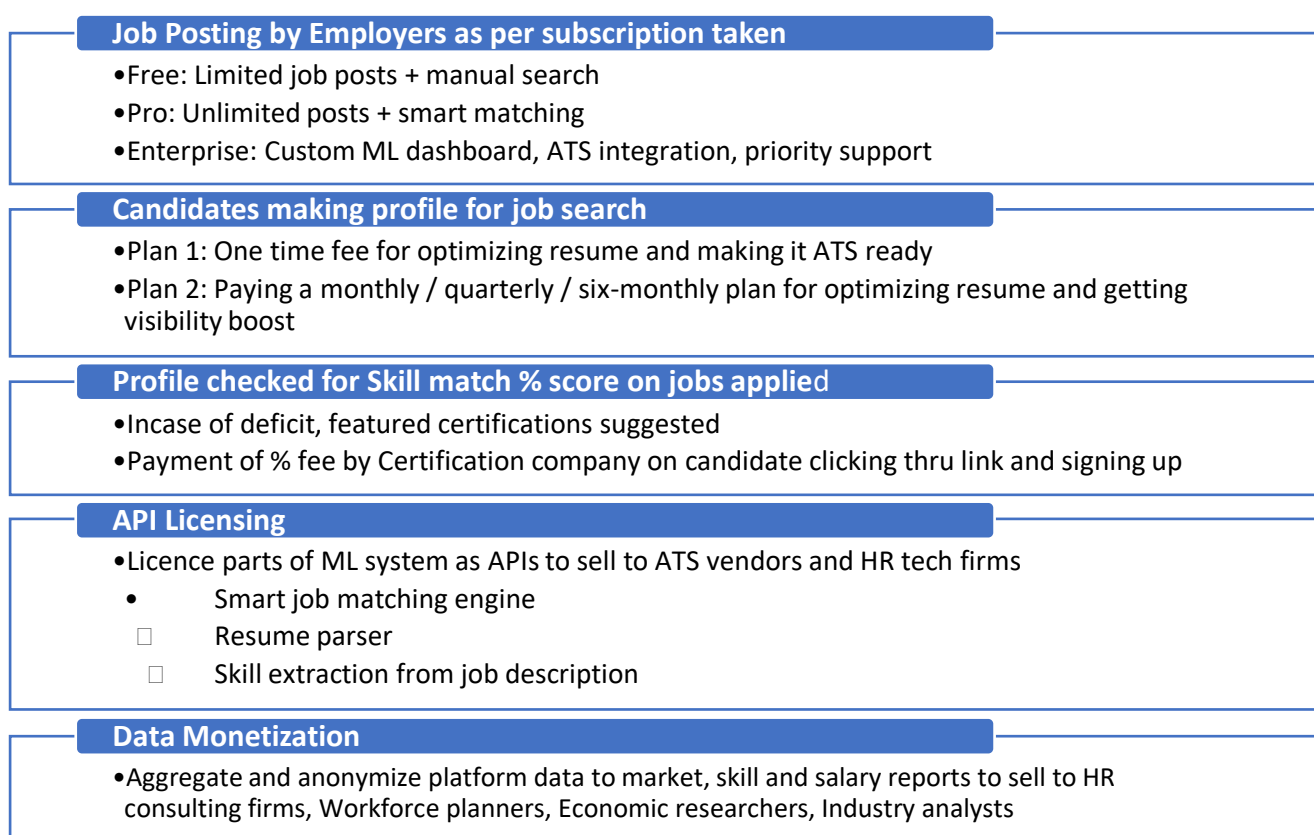- Resume parser
- Skill extraction from job descriptions

Clients: ATS vendors, HR tech firms

F. **Data Monetization:** Aggregate & anonymize platform data by removing any candidate or company identification details to extract:

- Market trends reports
- Salary benchmarks reports
- 'Hot' skills trends reports

Clients: HR consulting firms, Workforce planners, Economic researchers, Industry analysts

10. Final Product Prototype (Abstract Product Design)

Job Posting by Employers as per subscription taken
- Free: Limited job posts + manual search
- Pro: Unlimited posts + smart matching
- Enterprise: Custom ML dashboard, ATS integration, priority support

Candidates making profile for job search
- Plan 1: One time fee for optimizing resume and making it ATS ready
- Plan 2: Paying a monthly / quarterly / six-monthly plan for optimizing resume and getting visibility boost

Profile checked for Skill match % score on jobs applied
- Incase of deficit, featured certifications suggested
- Payment of % fee by Certification company on candidate clicking thru link and signing up

API Licensing
- Licence parts of ML system as APIs to sell to ATS vendors and HR tech firms
  - Smart job matching engine
  - Resume parser
  - Skill extraction from job description

Data Monetization
- Aggregate and anonymize platform data to market, skill and salary reports to sell to HR consulting firms, Workforce planners, Economic researchers, Industry analysts

11. Product Details

How Does It Work?

- **Input**: Resume text or skills → NLP parser extracts keywords

- **Job Ingestion**: Job posts are embedded semantically

- **Matching**: Skills aligned to roles using cosine similarity

- **Prediction**: Top 5 matching roles + 3 upskilling options suggested

Data Sources:

- Analysing the jobs posted by the SMB customers on the site

- Scraping the existing Job boards for posted job opportunities

- Scanning the resumes submitted by the users who have signed up on the site/app

- Udemy 2024 global learning skills trends report

- Learning catalogues (Coursera, Simplilearn APIs)

Algorithms, Frameworks, Tools:

- Sentence-BERT (skill embeddings)

- FastAPI + Firebase for backend

- FAISS for fast retrieval

- Twilio for WhatsApp messaging

Team Required:

- 1 ML engineer

- 1 Backend dev (FastAPI/Firebase)

- 1 UX/UI Designer

- 1 Business dev & partnerships

Estimated Cost:

Item	Monthly Cost Estimate
Firebase Hosting	Free to $25/month
OpenAI/API credits	$50–$100
Developer Cost	Variable (freelancer or internal)
Marketing	₹10K–₹20K to start

12. Conclusion

SkillBridge is an AI-powered job matching platform aimed at simplifying hiring for SMBs through skill-focused recommendations and explainable AI. It democratizes hiring, reduces hiring time, and increases candidate-employer alignment. With scalable infrastructure, low-cost implementation, and value-driven design, it is built to serve emerging business ecosystems in India and beyond.