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Title: SkillsBridge: An AI-Powered Job Readiness Platform

1. Preface

In today's competitive job market, employability is not merely determined by academic qualifications but by the alignment of one's skills with dynamic industry requirements. Many job seekers, especially students and early-career professionals, struggle to transition from education to employment due to skill mismatches, lack of interview preparedness, and limited understanding of real-world job expectations. Traditional job portals only serve as listing platforms, failing to guide candidates on how to become truly job-ready.

To address this challenge, **SkillsBridge** was conceptualized as an **AI-powered job readiness platform** designed to bridge the gap between candidates' current capabilities and employers' expectations. The platform leverages advanced Natural Language Processing (NLP) using **Sentence-BERT (SBERT)** to extract and analyze skills from resumes, automatically mapping them to the most relevant job descriptions sourced from platforms such as LinkedIn and Internshala.

Once a user selects a preferred job role, the **Ollama Mistral model** dynamically generates personalized interview questions aligned with the chosen job profile. An **AI-driven avatar** conducts an interactive mock interview, simulating real-world interview experiences. The evaluation process is handled by **Google Gemini**, which assesses communication skills, technical accuracy, and overall readiness, providing comprehensive feedback and a personalized upskilling roadmap.

By integrating cutting-edge AI models with career development, SkillsBridge not only enhances employability but also empowers users to continuously improve through actionable insights. This project supports national initiatives such as **Skill India** and **Digital India**, fostering a technologically advanced ecosystem where every learner can evolve into a confident, industry-ready professional.

Through its fusion of **intelligent automation, NLP, and guided learning**, SkillsBridge redefines job preparation—transforming the traditional job search into a personalized journey of growth, readiness, and success.

2. Objectives of the Proposed System

1. To build an **AI-powered platform** that bridges skill gaps between candidates and employers.
2. To use **NLP-based resume analysis** for accurate job matching from major platforms.
3. To enable **AI-driven mock interviews and feedback** for personalized upskilling

3. Concept Deployed

AI-Powered Job Readiness Platform

SkillsBridge is an intelligent mock interview and job readiness platform designed to revolutionize how candidates prepare for professional opportunities. Unlike conventional job portals that only display listings, SkillsBridge actively analyzes user resumes, matches them with relevant roles, conducts AI-driven interviews, and recommends personalized upskilling paths. The system integrates multiple AI models and modern technologies to create an adaptive learning and evaluation ecosystem that enhances employability and confidence among job seekers.

Key features:

1. **Unified Authentication and Resume Data Management (Clerk, Supabase, MongoDB)**

The system integrates Clerk, Supabase, and MongoDB to provide a seamless and secure user experience. Clerk manages user authentication, sign-up/sign-in, and role-based access, ensuring account-level security and identity verification. Supabase handles resume uploads and file storage, offering reliable and scalable object storage with built-in access control. Meanwhile, MongoDB stores dynamic user-related data — such as parsed resume content, skills, progress tracking, and personalized recommendations — ensuring flexibility and fast retrieval. Together, these technologies create a cohesive backend that is secure, scalable, and optimized for real-time updates.

2. **AI-Powered Resume Parsing and Skill Extraction**

Once users upload their resumes, the system leverages SpaCy and SBERT (Sentence-BERT) to automatically extract and classify key skills, experience, and education details. These extracted skills become the foundation for personalized job recommendations, upskilling suggestions, and performance tracking. This eliminates manual data entry while ensuring contextual accuracy in understanding user expertise.

3. **Intelligent Job Fetching and Ranking Engine**

The platform employs web scraping techniques to extract real-time job listings from leading platforms such as Naukri and Internshala. Once job data is collected, the ranking engine uses a combination of TF-IDF and semantic similarity (SBERT) to evaluate how closely each job description aligns with the candidate's extracted resume skills. This hybrid approach ensures that users receive highly relevant job recommendations based on true skill-to-role matching, rather than superficial keyword overlaps, thereby improving both job discovery and user engagement.

4. Personalized Upskilling and Learning Roadmap (Ollama, Gemini)

Using Ollama and Gemini, the platform generates personalized learning paths based on the user's interview performance and identified skill gaps. The system analyzes areas where improvement is needed and suggests a structured roadmap of concepts and topics to master. This ensures that every user receives a targeted upskilling journey, helping them continuously improve and become job-ready with focused learning progression.

5. Interactive Dashboards and Progress Tracking:

Built with Next.js and Tailwind CSS, the platform offers responsive, intuitive dashboards. Users can view extracted skills, matched jobs, learning recommendations, and application status in real time. A Progress Tracker monitors each user's growth journey — from learning new skills to applying for relevant roles — helping them visualize career progress effectively.

6. Secure Storage and Resume Management:

User resumes, profile pictures, and supporting documents are securely stored in Supabase Storage. Files are encrypted and easily retrievable, ensuring privacy and compliance with modern data protection standards while maintaining fast access for backend processes.

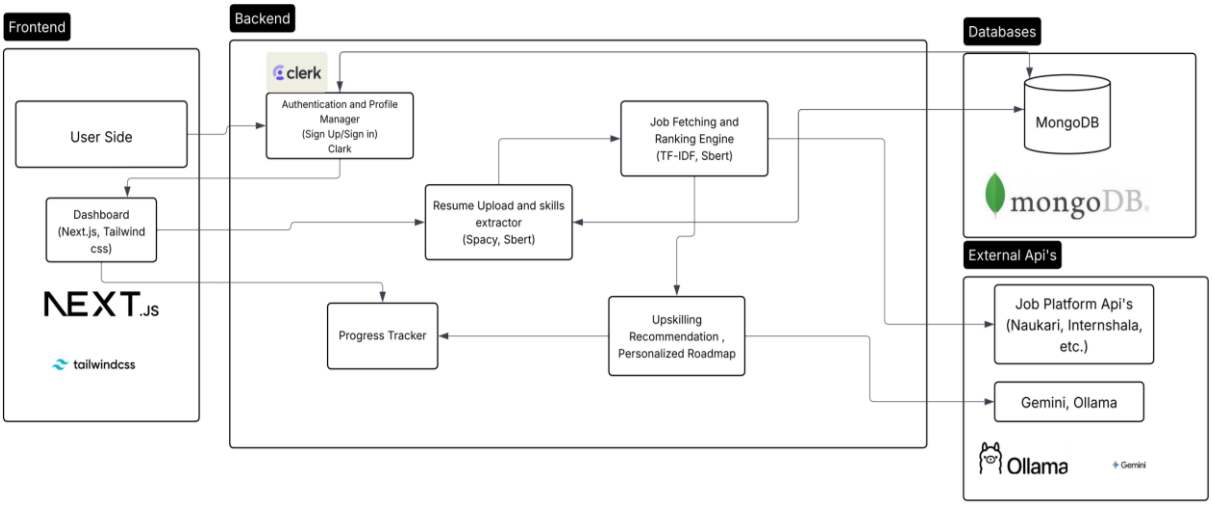
7. Real-Time Performance Tracking and Analytics:

The platform includes a real-time analytics dashboard that visualizes user progress, skill growth, and interview readiness. By leveraging Supabase real-time listeners and dynamic data visualization tools, users can track their improvements after each mock interview or learning session. This continuous feedback loop helps users understand their strengths, monitor weaknesses, and make data-driven decisions for career development.

8. Scalable, Modular Architecture:

The entire system follows a modular high-level design:

- **Frontend:** Next.js, Tailwind CSS
- **Backend:** Supabase Functions, Python APIs (SpaCy, SBERT)
- **Databases:** Supabase PostgreSQL
- **External APIs:** Job APIs (Naukri, Internshala), Gemini, Ollama



4. Distribution:

1. User Interface: Job seekers access the platform through a responsive web interface where they can upload resumes, receive matched job descriptions, attend AI mock interviews, and review performance analytics.

2. AI Processing Layer: Ollama (Mistral) and Gemini handle interview generation, evaluation, and personalized learning path creation through integrated AI workflows.

3. Backend Infrastructure: Supabase manages authentication and real-time data updates, while MongoDB stores user resumes, interview data, and job listings fetched via web scraping from platforms like Naukri and Internshala.

5. Key Technologies:

1. Clerk Authentication: Used for secure sign-up and login. It manages user sessions and roles smoothly, keeping data safe and access controlled.
2. Supabase: Handles real-time updates, resume data, and user progress tracking. It also supports quick API calls and ensures smooth backend communication.
3. MongoDB: Stores user profiles, resumes, interview records, and job listings scraped from platforms like Naukri and Internshala.
4. Next.js (Frontend): The main user interface is built with Next.js for fast, responsive, and SEO-friendly performance. It ensures users get a smooth and modern web experience.
5. Python (Backend): Manages core logic for NLP processing, job matching using TF-IDF and SBERT, and integration with AI models like Ollama and Gemini.
6. Ollama (Mistral Model): Creates AI-generated mock interview questions tailored to the chosen job description and skill set.
7. Gemini API: Evaluates user interviews and generates personalized learning paths based on identified skill gaps.

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