

SkillBridge

Introduction:

In a developing nation like Bangladesh, employment opportunities and skill alignment are crucial factors for economic growth and individual progress. Despite the presence of platforms like BDJobs and LinkedIn, there remains a significant gap between job seeker's actual skills and employer's expectations. Many individuals lack the ability to craft effective resumes, identify suitable roles, or understand their true potential. Moreover, hiring processes often suffer from bias, inefficiency, and outdated matching systems.

SkillBridge aims to revolutionize the employment ecosystem in Bangladesh by introducing an intelligent AI-driven talent platform that not only helps users build optimized resumes but also guides them on career paths, provides personalized upskilling opportunities, and assists employers in bias-free candidate shortlisting. This project blends AI, modern web technologies to bridge the gap between talent and opportunity.

Scope:

The scope encompasses job seekers seeking AI-enhanced application materials and employers looking to streamline recruitment through intelligent candidate matching. The platform focuses on professional industries where skills-based matching is crucial, providing comprehensive career tools for candidates and sophisticated talent acquisition solutions for employers.

Core AI capabilities include dynamic resume generation, job-specific optimization, intelligent skill assessment, and predictive candidate-job matching with continuous learning algorithms that improve based on successful placements and user feedback.

Users and Their Roles:

Anonymous User:

- Anonymous users can browse public job listings and view general company information
- They can register on the platform to access full features and become job seekers
- They can view sample resumes and take basic skills assessments to understand platform capabilities

Job Seeker (Registered User):

The primary features available to job seekers include:

- Create comprehensive profiles with education, experience, skills, and career objectives
- Generate AI-powered resumes automatically based on their profile information
- Receive job-specific resume suggestions optimized for each application
- Take AI-driven skill assessments to validate their competencies
- Apply for jobs with tailored application materials
- Track application status and receive feedback from employers
- Follow companies and receive notifications about relevant job openings
- Build and maintain a professional portfolio with project showcases

Employer (Registered User):

Employers have access to comprehensive AI-powered recruitment tools:

- Automated resume parsing, skill extraction, and candidate ranking with compatibility scores and red flag detection
- Role-specific question generation, automated coding assessments, and behavioral evaluations
- Intelligent job description generation, keyword optimization, salary suggestions, and multi-platform publishing
- Post detailed job openings with AI-suggested improvements
- Access filtered candidate recommendations with AI compatibility scores
- Manage hiring pipelines and track candidate progress through AI analytics
- Build talent pools with AI-assisted candidate sourcing and scoring

Admin User:

Administrative users manage the platform and ensure quality control:

- Monitor user accounts and handle violations of platform policies
- Manage job categories and skill taxonomies
- Oversee AI model performance and accuracy
- Handle disputes between job seekers and employers
- Maintain system security and data privacy compliance
- Monitor platform-wide analytics and reports

Use Cases of the System:

1. User Registration: A **job seeker** or **employer** and **the system** are the actors. The user provides required information including **professional background**, and the system creates a verified account with appropriate **role permissions**.

2. AI Resume Generation: A **job seeker** and **the AI system** are the actors. The job seeker inputs their **professional information**, and the AI analyzes this data to generate a professionally formatted **resume with optimized content, keywords, and structure** based on industry standards.

3. Job-Specific Resume Optimization: A **job seeker**, **specific job posting**, and **the AI system** are the actors. When applying for a position, the AI analyzes the job requirements and **automatically adjusts the user's resume** to highlight relevant skills and experience, improving application relevance.

4. AI Skill Assessment: A **job seeker** and **the AI assessment system** are the actors. The system presents **adaptive questions and scenarios** to evaluate the candidate's technical and soft skills, providing a **comprehensive skill profile** for employers.

5. Job Posting and Management: An **employer** and **the system** are the actors. The employer creates detailed job postings with requirements, and the system uses AI to **suggest improvements** and **automatically matches potential candidates**.

6. Candidate Screening and Matching: An **employer**, **job posting**, and **the AI system** are the actors. The system analyzes candidate profiles against job requirements and provides **ranked recommendations with compatibility scores** and detailed matching explanations.

7. Application Tracking: A **job seeker**, **employer**, and **the system** are the actors. The system **tracks application status**, **sends notifications**, and **facilitates communication** between parties throughout the hiring process.

8. AI Interview Preparation: A **job seeker** and **the AI system** are the actors. The system generates **mock interview questions** based on the specific job and industry, providing **feedback on responses and improvement suggestions**.

9. Talent Pool Building: An **employer** and **the system** are the actors. The system **identifies and saves promising candidates** for future positions, creating a **curated talent database** for ongoing recruitment needs.

10. Performance Analytics: An **employer** and **the system** are the actors. The system provides insights on job posting performance, candidate quality, and hiring success rates to **optimize recruitment strategies**.

Technology Stack:

Backend:

- **Spring Boot** - Main application framework
- **Spring Security** - Authentication and authorization
- **Spring Data JPA** - Database operations and ORM
- **Hibernate** - Object-relational mapping
- **PostgreSQL** - Primary database for relational data
- **Redis** - Caching and session management
- **OpenAI API / Hugging Face** - AI services integration
- **Docker** - Containerization and deployment
- **Elasticsearch** - Search and analytics engine

Frontend:

- **Next.js** - React framework for server-side rendering
- **TypeScript** - Type-safe JavaScript development
- **Tailwind CSS** - Utility-first CSS framework
- **Chart.js** - Data visualization and analytics
- **React Hook Form** - Form management and validation