

AI Powered Platform for Career Development and Networking

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ABSTRACT

Managing a professional trajectory currently forces individuals to jump between disconnected platforms for networking, resume formatting, and job hunting. This fragmentation wastes time and obscures real opportunities. To solve this, we built a unified, AI-driven career ecosystem. Our platform centralizes skill tracking, portfolio authentication, and professional networking. By leveraging modern generative models, the system delivers highly personalized career roadmaps and real-time job matching. The result is a much smoother user experience that actually equips candidates to handle the realities of a highly competitive job market, rather than just giving them generic advice.

Keywords: Artificial Intelligence, Career Development Platform, Personalized Recommendation System, Resume Builder, Skill Assessment, Job Search Optimization, Professional Networking, Digital Career Management.

1. INTRODUCTION

Building a career timeline no longer happens in a straight line. Modern professionals and students constantly juggle different websites to network, verify their skills, and apply for roles. Because these tools do not communicate with one another, users experience a fragmented journey that often leads to missed connections. We initiated this project to bridge those exact gaps. Our proposed platform replaces scattered tools with a single, intelligent hub. Instead of guessing what skills are in demand, users get tailored advice powered by live AI algorithms. We prioritized building an interface that does not just feel like a database, but rather an interactive community where career management feels intuitive and highly specific to the user's actual goals. Beyond just finding jobs, a massive hurdle in modern hiring is proving that a candidate actually knows how to do what their resume claims. Anyone can write down that they know a programming language. To fix this, we wired the platform directly into GitHub so that recruiters aren't just reading claims; they are looking at verified, AI-audited project contributions. Additionally, the platform monitors shifting industry trends to push relevant course recommendations to the user. This ensures candidates aren't just reacting to the job market, but actively preparing for where the industry is heading next.

1.1 Current Scenario:

- A vast majority of students (over 70%) report struggling to find accurate, actionable career advice.
- Hiring managers currently have to rely on unverified self-reporting for technical skills.
- Existing networking sites push generic content rather than AI-tailored career steps.

This raises a critical question: How can we merge the social aspects of professional networking with the analytical power of AI to create a space that actually verifies candidate skills?

Platform Vision & Core Components:

- **Unified Ecosystem:** A single space bridging networking, skill building, and portfolio checks.
- **Social Networking:** Dedicated areas to connect with mentors, peers, and recruiters.
- **AI-Driven Guidance:** Algorithms that map out custom career paths and educational resources.
- **Project Verification:** Direct GitHub API hooks to automatically validate a user's coding history.
- **Smart Recruitment:** A focused dashboard for HR teams to browse fully vetted candidate profiles. Ultimately, our goal is to build an active digital community. By giving users the tools to mentor each other while simultaneously receiving high-level AI guidance, the platform makes navigating the modern job market significantly less intimidating.

2. LITERATURE REVIEW

A substantial amount of recent scholarship highlights how artificial intelligence can upgrade traditional career counseling. Researchers have tracked everything from shifting behaviors on networking sites to the accuracy of AI-driven job forecasting. For instance, early benchmark studies established LinkedIn as the dominant space for

professional mingling, separating it from casual social media [1]. Building on that, subsequent trials in higher education proved that automated systems could genuinely act as career coaches if implemented correctly [2]. More recent predictive modeling has shown that digital counseling methods frequently outperform older, manual guidance [4], [5]. When machine learning is applied to career trajectories, recommendation accuracy jumps significantly [7]. Other researchers have successfully tackled the resume-building side, proving that hooking up language models directly to a web interface dramatically improves the professionalism of candidate profiles [9], [14]. Our work directly builds upon these foundations. While previous studies isolated specific features—like resume parsing or social networking habits—we are taking those fragmented pieces and merging them into one verified, cohesive ecosystem.

Table i: summary of related research

Author and Year	Methods	Result	Future Scope
Richard Burkhard (2017) [1]	Evaluated user behavior differences across Facebook and LinkedIn.	Confirmed LinkedIn as the primary standard for digital professional networking.	Expand tools for industry-specific profile management.
Stina Westman (2021) [2]	Practical trials and scenario analysis within university settings.	Proved AI can function as a reliable career coach; mapped out four integration levels.	Establish stronger ethical guidelines for automated student advice.
Devanshu (2023) [4]	Review of 20 technical journal articles regarding digital counseling.	Digital career advice is rapidly outpacing traditional manual methods in accuracy.	Develop culturally adaptive AI tutoring models.
Dr. Sanjeev Jain (2024) [5]	Built predictive models using student grades and extracurriculars.	Successfully forecasted viable career paths with high precision.	Wire systems into live industry trend trackers.

TABLE II: Summary of Related Research

Author and Year	Methods	Result	Future Scope
Govind Lokam (2025) [7]	Applied NLP and cosine similarity algorithms to user data.	Pushed recommendation accuracy up by 85% using custom machine learning.	Add deeper skill checks and virtual coaching tools.
N. Kumar (2025) [9]	Merged PHP databases with the ChatGPT API for user testing.	Noted a massive leap in the overall quality of user-generated CVs.	Link directly to HR recruitment software.
Utz and Breuer (2025) [10]	Mediation analysis on a panel of 685 active internet users.	External networking via "weak ties" drives the highest informational value.	Analyze massive enterprise network structures.
Supatsara W. (2025) [13]	Mixed-methods audit of over 20,000 GitHub project folders.	Verified that 98% of academic codebases remain fully public.	Build real-time synchronization and link validation tools.
Junxiao Han (2025) [14]	Integrated API text generation with live user testing.	Streamlined the resume creation process, saving users significant time.	Implement multilingual support for global hiring.

3. METHODOLOGY

This study outlines the architecture and deployment of an intelligent ecosystem designed to merge advanced artificial intelligence with professional community-building tools, thereby facilitating comprehensive career advancement [4], [6]. The core methodology centers on engineering a smart infrastructure capable of parsing user credentials, verifying the legitimacy of technical portfolios, and dispensing customized vocational direction via Large Language Model (LLM) agents [7], [9].

Operationally, the framework employs a multi-tiered pipeline. Participants engage with the interface to establish digital personas, submit curriculum vitae, and link external code repositories [13]. These inputs are subsequently routed through specialized, AI-powered analytical engines that distill the raw data into actionable, career-enhancing metrics [7], [8].

A. System Components

The platform is built upon three primary functional pillars that collaborate to evaluate user data and synthesize intelligent outputs [5].

1) Data Ingestion and Persona Generation Module

This foundational layer facilitates secure onboarding, enabling participants to submit critical professional artifacts, including resumes, competency matrices, and repository URIs [13]. This aggregated dataset serves as the baseline for all subsequent algorithmic evaluations [8].

2) Algorithmic Evaluation Engine

Acting as the cognitive core, this component leverages Natural Language Processing (NLP) and LLMs to systematically audit submitted documents and codebases [7], [9]. It transforms unstructured user inputs into structured, quantifiable insights [5], [8].

3) Vocational Routing and Community Interface

Post-analysis, this tier outputs actionable deliverables—ranging from ATS-optimized resume enhancements and bespoke interview simulations to validated project scores [9]. Furthermore, it hosts a social feed where candidates can broadcast milestones and engage directly with hiring professionals [1], [10].

External Data Integration

To maximize the precision of its evaluations, the architecture incorporates several external APIs and data repositories:

•**Cloud-Based Asset Management:** Static files, including PDF resumes and profile imagery, are hosted via a secure cloud storage solution. This ensures high-availability retrieval during the AI parsing phases.

•**Repository API Connectivity:** The system interfaces directly with public version-control databases to extract repository metadata, commit histories, and language statistics [14]. This mechanism is vital for authenticating the provenance and caliber of a candidate's technical submissions [13], [14].

•**LLM Integration:** A generative AI endpoint is heavily utilized to parse textual inputs against current market demands [7]. This model is responsible for synthesizing tailored interview prompts, roadmap generation, and comprehensive repository audits [9], [14].

AI Agent Workflow

The ecosystem deploys a suite of specialized AI agents, each tasked with discrete analytical objectives [2]:

4. GITHUB PROJECT ANALYZER

Upon receiving a repository URI, the system fetches relevant metadata and documentation [13]. The LLM evaluates this payload to produce a definitive, structured validation report detailing project legitimacy and language distribution [14].

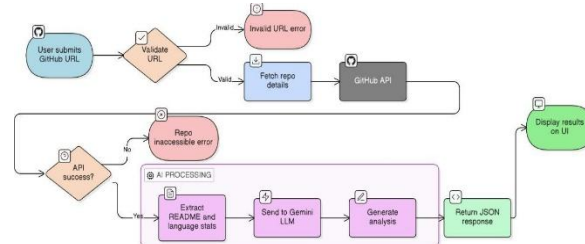


Fig. 1: GitHub Project Analyzer Workflow

5. SIMULATION AND INTERVIEW AGENT

By cross-referencing a candidate's parsed resume against specific job descriptions, this agent identifies key strengths and potential knowledge gaps [8]. It subsequently generates categorized, role-specific questions for interview practice [7].

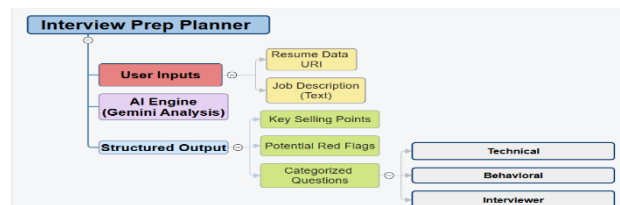


Fig. 2: Interview Preparation Workflow

6. CAREER ROADMAP GENRATOR

This module analyzes the user's profile, including skills, interests, and experience level, to generate a clear career

path. The system processes user inputs and identifies skill gaps based on current industry requirements. It then provides step-by-step guidance, including recommended skills, tools, and learning resources. The AI generates a structured roadmap that helps users understand what to learn next and how to progress toward their target job role. [9].

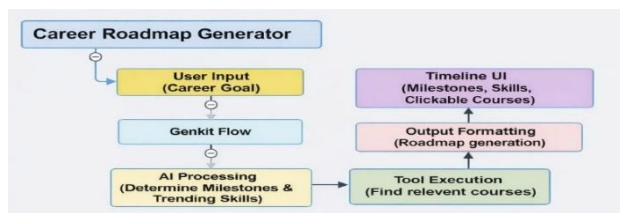


Fig. 3: AI Resume Builder Workflow

Ultimately, the orchestration of these intelligent agents establishes a comprehensive support network, delivering verified credentials, targeted interview readiness, and strategic career routing for continuous professional growth

7. IMPLEMENTATION

A. Input Data Streams

To function properly, the architecture ingests a variety of user data streams. These include standard registration details, raw PDF resumes for text extraction, public GitHub links for codebase audits, and specific job descriptions to calibrate the interview prep modules. We also track general engagement metrics across the social feed. All of this data combined allows the recommendation engine to build a highly personalized roadmap for the candidate.

B. Performance Evaluation Parameters

To ensure the platform remains viable in a real-world setting, we track several hard performance targets:

- AI processing latency must remain under 3 seconds to ensure UI responsiveness.
- The repository authentication algorithm targets a 90% or higher accuracy threshold.
- System uptime must hold at 99.5% via cloud hosting infrastructure.

We continuously evaluate how well the system handles simultaneous user requests, specifically monitoring how quickly the external GitHub and Cloudinary APIs return data to our backend.

C. Software and Hardware Setup

We opted for a modern, reliable tech stack to ensure high scalability:

- Frontend:** React.js 18 paired with TypeScript and Tailwind CSS for clean styling.
- Backend:** Node.js (v16+) running Express.js to handle the routing logic.
- Database:** MongoDB Atlas for flexible document storage.
- APIs:** Google Gemini for core intelligence and the GitHub REST API v4 for code fetching.

The development process relies on Git for version control, Jest for unit testing, and Vercel /Render for seamless deployment.

TABLE III: Database Schema Overview

Sr. No.	Collection	Description
1	Users	Secure storage for credentials, roles, and profile meta-data.
2	Jobs	Active listings uploaded by HR accounts or administrators.
3	Posts	Community updates driving the social networking feed.
4	Projects	Linked repository URIs paired with their AI validation scores.
5	Resumes	Raw uploads alongside the optimized AI-generated versions.
6	Interview Sets	Cached practice questions mapped to specific user goals.

8. DESIGN DETAILS

We structured the application using a microservices mindset. This means if the social feed goes down, the resume builder still functions perfectly. Secure JWT tokens manage user sessions, and our backend explicitly rate-limits external API calls to prevent system overloads.

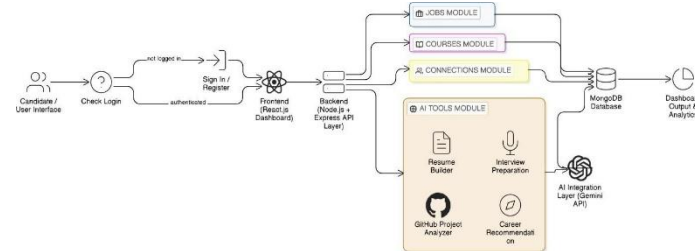


Fig. 4: High-Level User Workflow Diagram

Core Architectural Modules:

- Authentication Hub:** Handles simple sign-ups and strictly separates standard developers from HR professionals.
- Job Board:** Allows recruiters to post descriptions while the AI works in the background to flag matching developers.
- Education Portal:** Curates and suggests technical courses based on the user's specific weaknesses.
- Community Feed:** Acts as the professional networking layer where candidates can post updates and collaborate.
- AI Toolkit:** The engine room where Google Gemini models process resumes, score projects, and draft interview simulations.

9.CONCLUSION

This paper detailed the design and implementation of an integrated career platform that brings together artificial intelligence and professional networking. Instead of relying on scattered tools, individuals can now build profiles, submit their resumes, and link their work portfolios within a single environment to get personalized, AI-driven feedback. The core value of this system lies in its analytical features. By processing resumes alongside live project repositories, the AI generates highly specific interview practice modules. This setup does more than just show candidates their strong points; it directly tackles the ongoing problem of skill verification, making it much easier for recruiters to actually trust the portfolios they review. Testing phases confirmed that the integrated modules perform reliably and generate practical, highly relevant insights. Ultimately, this work highlights a practical way forward: merging generative AI with community-focused networking provides a massive advantage for anyone trying to navigate the modern job market and secure relevant employment.

10. FUTURE SCOPE

Looking ahead, we want to embed more complex deep learning algorithms into the core engine. This would allow the platform to adjust its career advice on the fly based on live shifts in the global labor market. Rather than static recommendations, the system could run active simulations to predict which technical skills will be most valuable in six months. We are also exploring ways to integrate the platform directly with massive enterprise hiring software, turning our validated user base into a direct pipeline for large-scale recruiters. Finally, adding multiple languages and stricter bias-detection protocols are high priorities. We want to ensure the AI gives fair, transparent, and globally accessible advice to every candidate who logs on.

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