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Intellipath AI: Generative Platform For Career And Mental Readiness

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Abstract

IntelliPath AI is an intelligent career guidance platform designed to improve employability, confidence, and mental preparedness among students, particularly those from Tier-3 institutions. The system integrates Generative AI, semantic similarity models, resume parsing, job-fit evaluation, and mental wellness support into a unified ecosystem. The platform analyzes user resumes and compares them with job descriptions using transformer-based models such as BERT and Sentence-BERT to determine semantic alignment. Based on this analysis, the system generates ATS-optimized improvement suggestions, personalized cover letters, and structured career roadmaps tailored to individual skill gaps.In addition to technical guidance, IntelliPath AI incorporates a mental health support chatbot that provides motivational feedback, stress management suggestions, and confidence-building interactions during the job preparation process. Gamification features such as quizzes, badges, and leaderboards further encourage user engagement and continuous learning. By combining career analytics, personalized recommendations, and emotional support, IntelliPath AI offers a scalable web-based solution that bridges the gap between academic learning and industry expectations, ultimately improving student readiness and employability outcomes.

Keywords *— Generative AI, Semantic Similarity, Resume Parsing, Job-Fit Scoring, Natural Language Processing, BERT, SBERT, Career Recommendation System, Skill Gap Analysis, ATS Optimization, AI Chatbot, Sentiment Analysis, Mock Interview, Career Roadmap, Gamification, Web Platform, Employability Enhancement.*

Introduction

Career preparedness remains a significant challenge for students, especially those studying in Tier-3 colleges where access to structured career guidance is limited. Many students struggle with unclear career goals, poor resume quality, and insufficient confidence during recruitment processes. Conventional career guidance methods rely heavily on manual review, generic suggestions, and limited placement support, which often fail to provide role-specific insights. As a result, students receive inconsistent feedback and face difficulty understanding how well their profiles match industry requirements.To overcome these limitations, this work proposes IntelliPath AI, an AI-powered career development platform that integrates Generative AI, semantic similarity techniques, and natural language processing for intelligent resume analysis and job-fit evaluation. The system compares resumes with job descriptions, identifies missing skills, and generates actionable recommendations. Additionally, it produces ATS-friendly cover letters and personalized career roadmaps to guide students in improving their profiles.Beyond technical guidance, IntelliPath AI also emphasizes emotional well-being by including a confidence support chatbot that offers motivational responses and stress-management guidance. The platform is designed with a user-friendly web interface, combining career analytics and mental readiness features into a single scalable ecosystem.

Purpose of the Project

The primary objective of this project is to design and develop an AI-based career readiness system that assists students in evaluating their job suitability and improving their professional profiles. The system analyzes resumes, job descriptions, and skill gaps using semantic similarity models and generative AI techniques. By doing so, it delivers accurate job-fit scores, personalized career recommendations, and interview preparation guidance.

The platform aims to automate resume evaluation, provide tailored suggestions, and enhance decision-making related to skill development. Furthermore, it incorporates mental readiness support to boost confidence and reduce stress during the job search process. This integrated approach improves employability and promotes data-driven career planning.

Existing System

Current career guidance approaches typically depend on placement cells, peer feedback, or general job portals. These methods provide limited personalization and often lack alignment with specific job requirements. Resume reviews are frequently subjective and do not consider semantic relevance to job descriptions. Additionally, traditional platforms mainly focus on job listings without analyzing candidate suitability.

Another major limitation is the absence of structured mental support. Students often experience stress and uncertainty during job preparation, yet most systems do not address emotional well-being. The lack of real-time skill gap analysis and career roadmap generation further reduces preparation effectiveness. These shortcomings highlight the need for an integrated AI-driven career guidance solution.

Proposed System

The proposed IntelliPath AI platform leverages artificial intelligence and NLP techniques to provide personalized career guidance. The system automatically analyzes resumes, job descriptions, and user skills to compute job-fit scores. It identifies missing competencies and generates improvement suggestions, cover letters, and structured career roadmaps.A transformer-based semantic similarity model using BERT and Sentence-BERT enables accurate comparison between resumes and job requirements. Generative AI modules create ATS-friendly content, while an integrated chatbot provides motivational and stress-relief support. This unified architecture enhances decision-making, improves job-fit accuracy, and supports mental preparedness.

Related Work

Recent developments in digital career guidance have led to the emergence of various platforms that utilize Artificial Intelligence to support job seekers. These systems typically offer services such as resume creation, interview practice, and job recommendations. However, most existing platforms focus on isolated functionalities rather than providing an integrated solution. Resume builders generally emphasize formatting and template design, while interview preparation tools rely on static question banks and lack adaptive feedback mechanisms. Consequently, users must depend on multiple platforms to meet different career preparation needs.With the rapid advancement of Artificial Intelligence and machine learning technologies, some systems have introduced intelligent features including automated resume generation, skill gap identification, and job matching. Generative AI models are capable of producing resumes, cover letters, and interview questions based on user inputs. Although these advancements enhance automation, many solutions still operate independently and fail to deliver a unified experience. Moreover, limited attention has been given to real-time performance evaluation and interactive interview simulations that mimic actual hiring scenarios.Recent studies also emphasize the significance of personalization in career guidance applications. AI-based recommendation engines can analyze user profiles and provide tailored suggestions for skills, certifications, and job opportunities. Despite these improvements, most platforms overlook psychological aspects such as confidence building, stress management, and emotional preparedness for interviews. The proposed IntelliPath AI system addresses these gaps by integrating multiple career development features into a single platform. It combines resume analysis, cover letter generation, interview simulation, career roadmap planning, and mental readiness assistance using advanced AI technologies. This integrated approach enhances usability and provides a comprehensive career support solution compared to existing systems.

Requirement Analysis

Functional Requirements

The functional requirements describe the primary operations that the system must perform to deliver AI-driven career guidance and mental readiness support. The system includes resume parsing and job-match scoring, where user resumes are analyzed to extract skills, education, and experience. These details are compared with job descriptions to generate a compatibility score that helps users understand their suitability for specific roles. In addition, the platform provides AI-based career recommendations by identifying skill gaps and suggesting relevant job roles, certification programs, and learning pathways tailored to individual profiles.The system also supports automated cover letter and CV generation. Using generative AI models, it produces ATS-friendly documents customized to specific job roles while allowing users to edit content before submission. Interview preparation support is another key feature, offering mock interview sessions, technical and behavioral questions, and AI-generated feedback to improve candidate performance. To enhance user well-being, the platform integrates a mental readiness chatbot that delivers motivational messages, stress management guidance, and emotional support using sentiment analysis. Furthermore, user authentication and role management ensure secure access and enable different user roles such as students, administrators, and recruiters to interact with the system effectively.

Non-Functional Requirements

Non-functional requirements define the performance characteristics and quality attributes that ensure efficient and reliable system operation. Scalability is essential for supporting a growing number of users without degradation in performance. The system architecture must handle increased AI processing demands and concurrent requests effectively. Performance requirements emphasize fast response times, ensuring that resume analysis, recommendations, and document generation are completed with minimal delay.

Reliability is another critical factor, requiring consistent system availability and robust error-handling mechanisms. The platform should operate continuously without unexpected failures and

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ensure uninterrupted access to user data. Security measures must protect user information through encrypted communication, secure authentication mechanisms, and controlled data access. Maintainability is also important, as the system should be designed with modular components and clear documentation to facilitate updates, debugging, and future enhancements without affecting core functionalities.

Computational Resource Requirements

The computational resource requirements define the software and hardware environment necessary for system development and deployment. The software requirements include support for operating systems such as Windows, Linux, and macOS. The system is developed using JavaScript and TypeScript, with frameworks such as Next.js and Node.js for backend and frontend integration. Database management is handled using Prisma with NeonDB or PostgreSQL. Additional libraries and services include Clerk for authentication, Tailwind CSS for styling, and AI APIs such as Gemini and Groq for generative capabilities. Frontend development utilizes React and Shadcn components, while Visual Studio Code is used as the development environment.

The hardware requirements are divided into client and server configurations. For client systems, a minimum Intel i3 or Ryzen 3 processor, 4GB RAM, and 100GB storage are sufficient, although 8GB RAM and SSD storage are recommended for optimal performance. On the server side, a quad-core Intel Xeon or AMD EPYC processor with at least 16GB RAM and 512GB SSD storage is recommended to handle AI processing and concurrent user requests efficiently.

System Architecture

The proposed IntelliPath AI system follows a layered architecture that enables efficient interaction between users, application services, and AI-driven components. Users access the platform through a web-based interface, which communicates with the backend server responsible for processing requests and coordinating system operations. When a resume or job description is uploaded, the backend forwards the data to the AI module, where parsing and semantic similarity analysis are performed. Transformer-based models extract relevant skills, qualifications, and experience, and compute job-fit scores by comparing user profiles with job requirements.

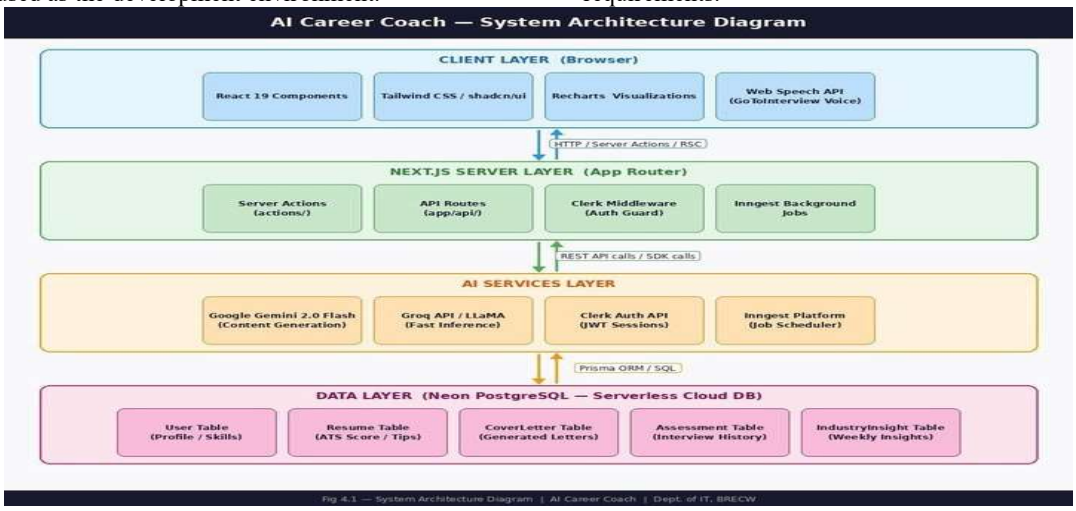

Fig. 1 System Architecture

Technical Architecture

The technical architecture of the IntelliPath AI platform integrates modern web technologies with AI-driven services to ensure scalability and performance. The frontend is developed using Next.js and React, with Tailwind CSS and Shadcn UI components providing responsive and user-friendly interfaces. This layer handles user interactions, including resume uploads, dashboard visualization, and chatbot communication. The backend is implemented using Node.js, which manages core system functionalities such as resume parsing, job-match scoring, AI content generation, and application logic.

AI modules connect to external services to perform semantic similarity analysis, generate cover letters, and produce interview preparation content. These services enhance system intelligence by enabling dynamic and personalized outputs. Visualization libraries such as Recharts or Chart.js are used to present career insights, analytics, and performance metrics in an intuitive graphical format. The backend communicates with a secure PostgreSQL or NeonDB database using Prisma, which manages user profiles, resumes, reports, and activity logs. Authentication and role-based access control are implemented to ensure secure user operations and data protection.All system components, including the frontend, backend, AI services, and database, communicate through encrypted channels. This architecture supports secure data exchange, efficient processing, and real-time response delivery.

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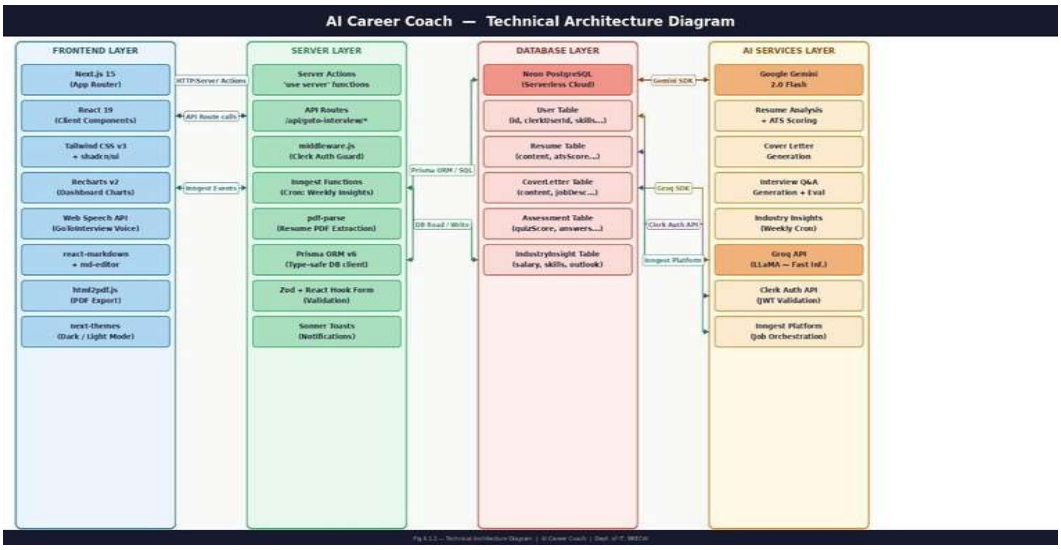

Fig. 2 Technical Architecture

Implementation

Artificial Intelligence and Natural Language Processing

The IntelliPath AI platform incorporates advanced Artificial Intelligence and Natural Language Processing techniques to provide intelligent career guidance and resume analysis. Transformer-based language models, including Bidirectional Encoder Representations from Transformers and Sentence-BERT, are employed to perform semantic similarity analysis between resumes and job descriptions. This approach enables contextual understanding of candidate profiles and improves job-fit scoring accuracy compared to traditional keyword-based methods. Generative AI services are utilized to automatically create ATS-compatible resumes, cover letters, interview questions, and career recommendations based on user inputs. Additionally, sentiment analysis is integrated within the chatbot module to identify user emotions during interactions and generate supportive responses aimed at enhancing confidence and reducing stress. These AI-driven capabilities enable the system to deliver personalized and adaptive career assistance.

Frontend Interface

The frontend interface of the IntelliPath AI system is developed using modern web technologies to ensure responsiveness and usability. The application utilizes Next.js and React to build a dynamic user interface, while Tailwind CSS provides consistent styling and layout management. The interface supports resume upload, job-fit score visualization, career recommendations, and chatbot interaction within a unified dashboard. Modular component architecture and reusable UI elements are implemented to improve scalability and maintainability. Furthermore, data visualization libraries are incorporated to present skill gap analysis, performance insights, and progress tracking in graphical formats. These visual elements enhance user understanding and support informed decision-making during career preparation.

Backend and Data Handling

The backend of the system is implemented using Node.js, which manages core application logic including resume parsing, job matching, and integration with AI services. The backend processes user inputs, communicates with external AI APIs, and returns structured outputs to the frontend interface. Prisma ORM is used for database communication, enabling efficient storage and retrieval of user profiles, resumes, analytics reports, and activity logs. The system employs a PostgreSQL-based database to ensure reliable data persistence. Secure data handling practices are implemented throughout the backend to maintain confidentiality and integrity of user information. This architecture ensures efficient execution of operations such as recommendation generation, semantic comparison, and document creation.

Screenshots

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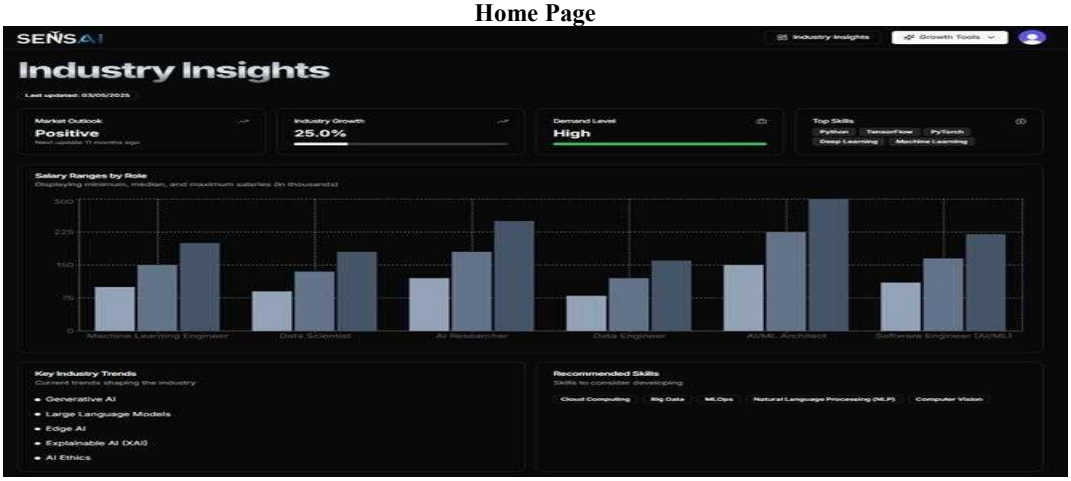
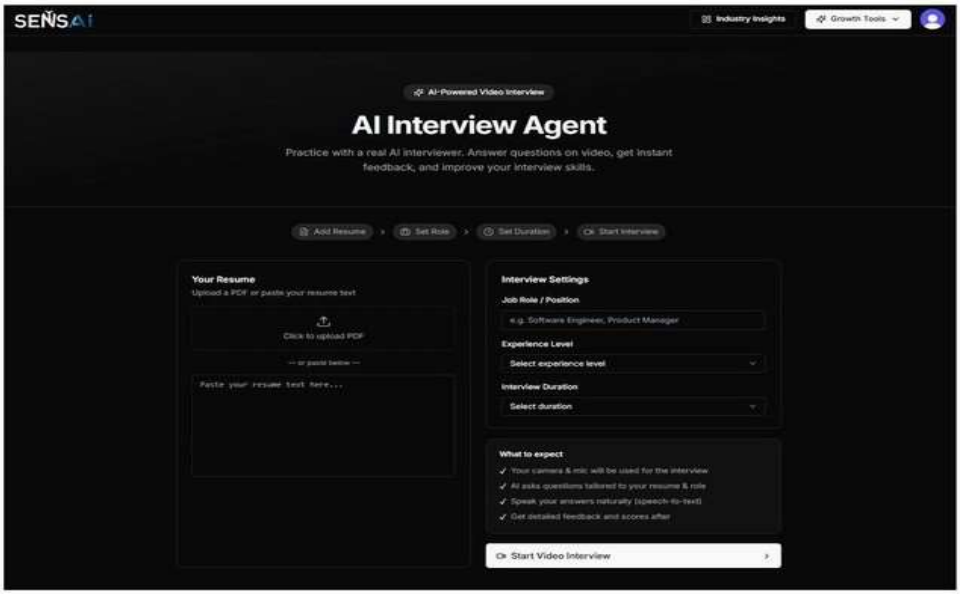
Home Page



Industry Insights



AI Interview Agent

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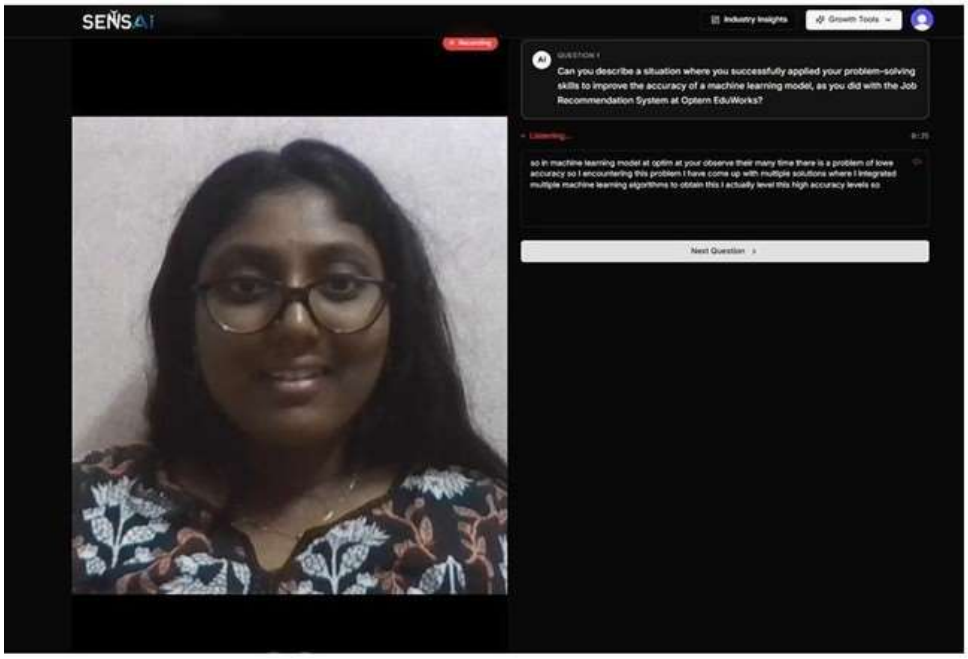
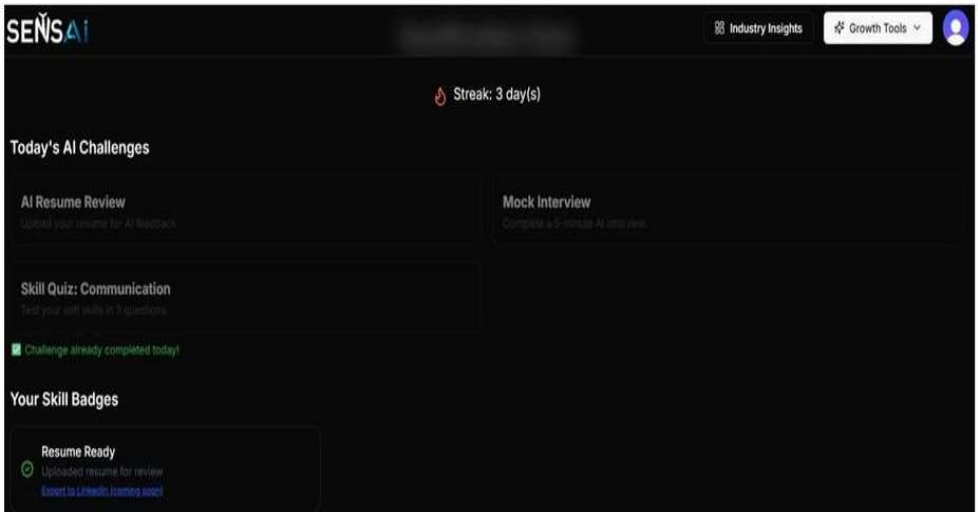


AI Interview Agent Mock Interview



Gamification

Conclusion

The AI Career Coach system effectively addresses the challenges faced by students and job seekers by providing an integrated and intelligent platform for career preparation. The system combines essential features such as resume building, cover letter generation, interview preparation, and personalized career guidance into a single unified solution, eliminating the need for multiple tools. By leveraging Artificial Intelligence, the platform delivers tailored recommendations and real-time feedback, which enhances user performance and boosts confidence.The inclusion of advanced functionalities, such as the AI Interview Agent, further improves the learning experience by simulating realistic interview scenarios. This practical exposure helps users develop communication skills and prepares them for real-world recruitment processes. Overall, the system enhances efficiency, reduces time consumption, and offers a scalable and smart solution for modern career development. The project successfully meets its objectives and demonstrates the potential of AI-driven tools in supporting professional growth.

Future Scope

The IntelliPath AI system offers significant opportunities for future enhancements and expansion. One key improvement is the introduction of multi-language support, which would allow users from diverse linguistic backgrounds to access the platform easily, thereby increasing inclusivity and

usability. Another valuable enhancement is the implementation of video-based interview simulations, enabling users to practice non-verbal communication skills such as body language, eye contact, and facial expressions for a more realistic interview experience.Developing a dedicated mobile application is also an important future direction, as it would improve accessibility and allow users to engage with the platform anytime and anywhere. Integration with job portals and recruitment platforms can further enhance functionality by enabling direct job applications using AI-generated resumes and cover letters. Additionally, the system can incorporate intelligent job recommendations based on user profiles, skills, and career interests to streamline the job search process.Advanced AI personalization can also be implemented to analyze user behavior and provide more accurate and dynamic recommendations. Furthermore, the inclusion of real-time industry analytics and predictive insights would help users stay updated with market trends and make informed career decisions. With continuous improvements, the system has the potential to evolve into a comprehensive career development ecosystem that supports users in achieving long-term professional success.

References

[1] Vercel. (2024). *Next.js 15 App Router Documentation*. Available: https://nextjs.org/docs/app

[2] Google DeepMind. (2024). *Gemini API Reference*. Available: https://ai.google.dev/gemini-api/docs

[3] Google DeepMind. (2024). Gemini 2.0 Flash Model Documentation. Available: https://ai.google.dev/gemini-api/docs/models/gemini

[4] Prisma. (2024). Prisma ORM Documentation v6. Available: https://www.prisma.io/docs

[5] Neon. (2024). Neon Serverless PostgreSQL Documentation. Available: https://neon.tech/docs

[6] Clerk. (2024). Clerk Next.js SDK v6 Documentation. Available: https://clerk.com/docs/quickstarts/nextjs

[7] Inngest. (2024). Durable Functions for Serverless – v3 Documentation. Available: https://www.inngest.com/docs

[8] Mozilla Foundation. (2024). Web Speech API Specification. Available: https://developer.mozilla.org/en-US/docs/Web/API/Web_Speech_API

[9] TypeScript Team. (2024). TypeScript Documentation. Available: https://www.typescriptlang.org/docs

[10] Tailwind Labs. (2024). Tailwind CSS Documentation. Available: https://tailwindcss.com/docs