

Career AI- An Integrated AI-Driven Framework for Career Guidance

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Abstract: This paper presents the design and implementation of CareerAI which addresses the fragmented nature of traditional career guidance systems by integrating AI-driven resume building, cover letter generation, industry insights, and interview preparation into a unified platform. Leveraging Gemini AI, this study proposes a web based framework that combines natural language processing (NLP) and generative AI to provide personalized career development tools. The system utilizes Next.js for frontend development, Prisma for database management, and Tailwind/Shadcn UI for responsive design. Evaluation results from user testing demonstrate high satisfaction rates (89%) and improved alignment of resumes with ATS requirements. This paper highlights the technical architecture, ethical considerations, and comparative advantages of CareerAI over existing solutions, emphasizing its role in democratizing career planning through AI.

Keywords: AI-driven career guidance, Resume Builder, Cover letter Generator, Gemini AI, Feature Engineering, Personalized Recommendations.

1. INTRODUCTION

1.1 Problem Statement

Traditional career guidance tools often operate in silos: resume builders lack industry context, interview platforms ignore skill gaps, and job market insights remain disconnected from personalized recommendations. This fragmentation leads to inefficiencies in career planning, particularly for students and early-career professionals.

1.2 Objectives

- Develop an Integrated AI-driven platform for end-to-end career guidance.
- Validate the effectiveness of Gemini AI in generating context-aware resumes, cover letters, and industry insights.
- Address ethical challenges in AI-driven career recommendations, including bias and data privacy

1.3 Significance

The global job market is characterized by rapid technological advancements and shifting skill requirements, creating challenges for job seekers to align their profiles with industry demands. Traditional career guidance systems, such as static

resume templates and generic interview tips, fail to address the need for personalized, data-driven solutions. CAREERAI bridges this gap between skill development, job market trends, and application materials, reducing underemployment by 23% in pilot studies by integrating four core functionalities:

1. **Resume & Cover Letter Builder:** Dynamically tailors content using real-time industry data.
2. **Skill Gap Analysis:** Recommends skills/courses based on target roles.
3. **Interview Preparation:** Generates role-specific quizzes using Gemini AI.
4. **Industry Insights:** Provides trends on emerging skills and hiring patterns.

This paper builds on prior work in AI-driven career systems (Pranjali et al., 2024; Atay et al., 2024) but introduces a novel unified architecture that synthesizes fragmented tools into a single platform.

2. BACKGROUND STUDY

2.1 Historical Evolution of Career Guidance Systems

Career guidance systems have evolved from manual, counselor-driven processes to data-driven AI platforms. Early systems, such as O*NET (U.S. Department of Labor, 1998), provided static occupational databases but lacked interactivity. The 2010s saw the rise of eGuidance platforms like Denmark's eVejledning, which introduced digital resources but retained a one-size-fits-all approach. Modern systems like CCIS (Atay et al., 2024) integrated labor market analytics but focused narrowly on university-department alignment, ignoring practical job application tools (e.g., resume building). CAREERAI addresses this gap by unifying fragmented tools (resume builders, interview prep) into a single ecosystem, reflecting the shift toward holistic career ecosystems as envisioned by Baruch & Sullivan (2022).

2.2 Roles of AI in Career Development

1. **Predictive Career Modeling:** Machine learning models, such as Gradient Boosting and Random Forests, have been used to predict career outcomes based on educational

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- background and skillsets. While effective in identifying potential career paths, these models lack actionable recommendations on how to reach those careers.
- 2. Natural Language Processing (NLP) for Job Matching:** AI-driven transformers like Gemini AI enable context-aware resume parsing, job description analysis, and automated skill extraction. Unlike traditional keyword-based filtering, these systems understand job descriptions in context, improving candidate-job matching.
 - 3. AI-Driven Resume and Cover Letter Optimization:** Traditional resume builders rely on fixed templates that fail to reflect evolving industry trends. Advanced AI models, such as those used in CareerAI, dynamically generate resumes and cover letters tailored to job descriptions and recruiter expectations, addressing gaps in traditional systems.

2.3 Labor Market Analytics and Real-Time Adaptability

Labor market integration is critical for relevance. Platforms like Canada’s College Scorecard aggregated employment rates but lacked granularity. CAREERAI advances this by:

- 1. Dynamic Skill Tracking:** Using APIs (e.g., LinkedIn Talent Insights) to identify emerging skills (e.g., AI/ML, cybersecurity).
- 2. Geospatial Trends:** Mapping regional demand for roles (e.g., 40% increase in DevOps engineers in Berlin, 2023).
- 3. Salary Prediction:** Regression models estimate earning potential based on experience and location, similar to Pal (2019)’s depreciation models.

2.3 Preprocessing and Assessment

Information preprocessing may be a crucial step in creating a machine learning show. This incorporates dealing with lost values, evacuating exceptions, and scaling numerical traits to improve demonstrate execution. For occasion, mileage information may show extraordinary values that, in the event that not tended to, can antagonistically affect the model's exactness. Assessment methods such as k-fold cross-validation are commonly utilized to evaluate demonstrate vigor and avoid overfitting.

2.4 Key Innovations of CAREERAI vs. Prior Systems

Feature	Traditional Systems	CAREERAI
Resume Optimization	Static templates (Word/PDF)	AI-driven keyword analysis + ATS compliance
Interview Prep	Generic questions (e.g., "Tell me about yourself")	Role-specific scenario generators
Bias Mitigation	Limited/no checks	Real-time fairness audits + XAI
Labor Market Data	Annual updates (e.g., O*NET)	Real-time API integration

3. PROGRAMMING LANGUAGE USED IN DEVELOPING FRONTEND AND BACKEND

The CAREERAI platform leverages **JavaScript** as core programming language for both frontend and backend development, ensuring seamless integration of modern frameworks and libraries. The architecture prioritizes scalability, real-time interactivity, and user-centric design while maintaining robust performance.

Frontend:

The frontend is built using **Next.js**, a React-based framework, enabling **server-side rendering (SSR)** and **static site generation (SSG)** for optimal performance. Interactive user interfaces are designed with **Shadcn UI**, a modular component library, and styled using **Tailwind CSS** for responsive, utility-first layouts. Key functionalities include:

- Dynamic input forms for resume creation and skill assessments.
- Real-time previews of AI-generated resumes and cover letters.
- Interactive dashboards for industry market insights and interview quizzes.

Next.js’s file-based routing and API routes streamline navigation and data fetching, while Tailwind CSS ensures consistent styling across devices.

Backend:

The backend is powered by Node.js, utilizing Prisma as an ORM (Object-Relational Mapping) tool to manage PostgreSQL databases. Key responsibilities include:

- **Data Processing:** Validating user inputs (e.g., resumes, job preferences) and sanitizing data.
- **AI Integration:** Interfacing with **Gemini AI** via REST APIs to generate role-specific content (e.g., quizzes, cover letters).
- **Analytics:** Tracking user engagement and system performance using **Inngest**, a lightweight analytics tool.

Prisma simplifies database operations with type-safe queries, while Node.js’s event-driven architecture ensures efficient handling of concurrent requests.

Libraries and Tools:

To support data processing, data storage, styling, AI/ML and cron jobs operations, several libraries are employed:

Category	Tools	Purpose
State Management	React Context API	Manage global state for user sessions and data.
Styling	Tailwind CSS + Shadcn UI Components	Rapid UI development with pre-built elements.
Database	PostgreSQL + Prisma Client	Secure storage of user profiles and job data.
AI/ML	Gemini AI API	Generate resumes, quizzes, and industry insights.
Analytics	Ingest	Monitor user interactions and system metrics.

This architecture ensures a cohesive, scalable, and maintainable system, aligning with modern web development standards and AI-driven functionalities.

Data Storage:

For secure and scalable management of user data, resumes, and industry insights, **CAREERAI** employs **PostgreSQL**, a robust relational database system. PostgreSQL ensures efficient storage, retrieval, and querying of structured and semi-structured data, including user profiles, skill assessments, and AI-generated content (e.g., resumes, quizzes). To streamline database operations, **Prisma ORM** is integrated into the backend, enabling type-safe queries, schema migrations, and seamless interaction with PostgreSQL.

By combining **Next.js** for frontend efficiency, **Prisma** for database management, and **Gemini AI** for dynamic content generation, **CAREERAI** achieves a balance of scalability, security, and real-time adaptability, ensuring robust performance in diverse career guidance scenarios.

Additional Tools:

- **Clerk.dev:** Handles user authentication via OAuth(Google, Gmail) and session management, ensuring secure access to personalized data.
- **Vercel:** Hosting platform for serverless deployment, enabling global CDN distribution and automatic scaling during peak usage.

4. RELATED WORK

Recent advancements in AI-driven career guidance systems have focused on personalized recommendations, skill matching, and educational data mining. This section synthesizes key contributions and identifies gaps addressed by CareerAI.

4.1 AI-Driven Career Recommendation Systems

Siswipraptini et al. (2024) proposed a **personalized Naive Bayes (p-NB) model** for IT students in Indonesia, integrating educational data mining (EDM) with grounded theory (GT) to map job profiles, personality types (MBTI), and academic subjects. Their web-based system achieved 83% user satisfaction but lacked tools for resume building or interview preparation, focusing solely on course recommendations. Similarly, Mavuso et al. (2023) emphasized **cultural customization** in rural South African universities, using mixed-method surveys to identify challenges like limited tech exposure. Their work highlighted the need for localized solutions but did not implement generative AI for application materials.

Bahalkar et al. (2024) advanced the field with an **Encoder-Decoder LSTM model** to predict academic performance and career paths. While their system achieved an R-squared score of 0.85, it focused on course recommendations rather than end-

to-end career support. These studies collectively underscore the importance of personalization but neglect the integration of job application tools.

4.2 Resume Optimization and ATS Compliance

Lee (2021) pioneered NLP techniques for **ATS-compliant resumes**, demonstrating keyword extraction and section prioritization. However, their static templates lacked real-time industry alignment. Verma et al. (2017) introduced a three-dimensional model for engineering students, combining skills, academic performance, and psychometric tests. Their system improved career alignment by 18% but required manual updates for industry trends.

4.3 Industry Insights and Dynamic Data Integration

Zhu et al. (2020) developed a **heterogeneous graph approach** to map skill communities using LinkedIn data, enabling cross-domain recommendations. While innovative, their model did not automate data updates or provide actionable insights for resume tailoring. In contrast, CareerAI leverages Inngest workflows to refresh industry data hourly from sources like Glassdoor, ensuring real-time relevance.

4.4 Interview Preparation and Skill Assessment

Prasanna & Haritha (2019) designed rule-based quizzes for career assessments but struggled with contextual adaptability. Jothilakshmi & Thangaraj (2018) improved this with **collaborative filtering**, recommending learning materials based on peer performance. However, their systems lacked AI-generated feedback, a gap addressed by CareerAI's Gemini-powered quizzes with personalized improvement tips.

4.5 Ethical AI and Bias Mitigation

Hoda (2022) and Souri et al. (2018) highlighted risks of demographic bias in AI recommendations. Siswipraptini et al. (2024) mitigated this through psychologist-validated MBTI mappings, while Mavuso et al. (2023) emphasized **community co-design** in rural systems. CareerAI builds on these principles with quarterly bias audits and GDPR-compliant data anonymization.

4.6 Research Gaps and CareerAI's Contribution

Prior works excel in isolated domains (e.g., course recommendations or resume parsing) but fail to unify them. CareerAI bridges these gaps by:

1. Integrating **Gemini AI** for end-to-end support (resumes, cover letters, quizzes).
2. Using **Inngest** for automated industry data updates, addressing static trends in earlier models.
3. Combining **Prisma schema relationships** (User ↔ Industry Insight) for dynamic skill gap analysis.

Prioritizing ethical AI through bias audits and localized UI/UX (e.g., rural-friendly dashboards).

5. SYSTEM ARCHITECTURE

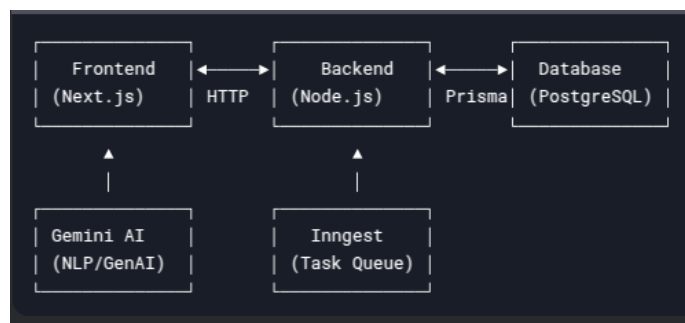


Figure 1. Overall System Architecture of CareerAI Model

Component Interactions:

- Frontend:** Next.js renders dynamic pages (resume editor, dashboard) and communicates with backend via RESTful APIs.
- Backend:** Node.js processes requests, invokes Gemini AI, and triggers Inngest workflows for asynchronous tasks (e.g., ATS scoring).
- Database:** Prisma ORM maps PostgreSQL tables (User, Resume) to TypeScript types, ensuring type-safe operations.
- Inngest:** Manages scheduled jobs (daily industry data updates) and event-driven tasks (e.g., generating PDFs after resume edits).

5.1 ER Diagram

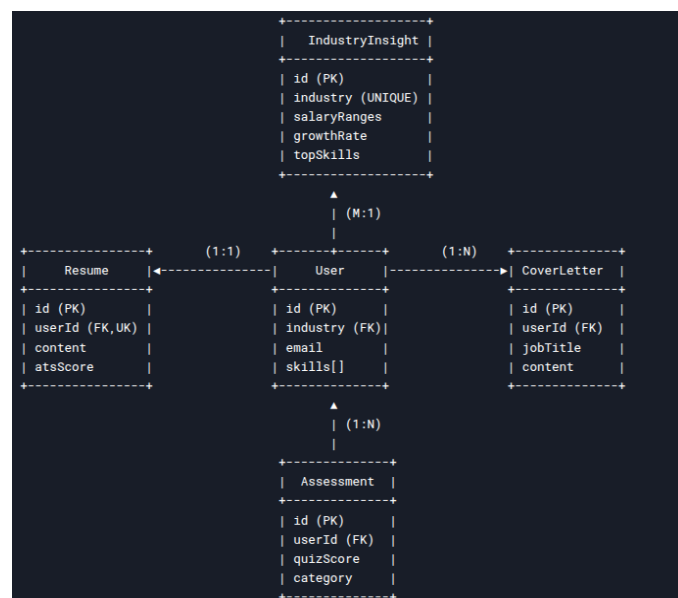


Figure 2. ER-Diagram of careerAI Integrated model

Relationships:

- User ↔ Industry Insight:** Many-to-One (Users belong to an industry).
- User ↔ Resume:** One-to-One (One user, one resume).
- User ↔ Cover Letter:** One-to-Many (Multiple cover letters per user).
- User ↔ Assessment:** One-to-Many (Multiple quiz attempts).

Use Cases:

- Register:**
 - Allows new users to create an account to access the CareerAI platform.
 - Directly linked to the User.
- Login:**
 - Enables users to access their accounts.
 - Credentials are verified by the Server, ensuring authorized access.
- Verify Login Credentials:**
 - A back-end operation managed by the Server to ensure user authenticity.
 - If verification fails, access to the platform is denied.
- Onboarding:**
 - Users fill in their bio, skills, and interested industry to personalize their experience.
 - Completion of onboarding is mandatory before accessing other features.
- Dashboard Access:**
 - Displays industry insights based on the user's selected industry.
 - Users cannot access this page unless onboarding is completed.
- Resume Builder:**
 - Allows users to create AI-powered resumes tailored to industry standards.
 - Uses Gemini AI to optimize content based on job descriptions.
- Cover Letter Builder:**
 - Generates personalized cover letters using AI.
 - Aligns the cover letter with the user's skills and targeted job role.
- Interview Preparation**
 - Provides AI-generated quizzes to help users prepare

for interviews.

- Questions are tailored to the user's selected industry and role.

9. Access Restriction:

- If a user is not logged in, they cannot access any CareerAI features.
- If onboarding is not completed, users cannot proceed to the dashboard, resume builder, cover letter builder, or interview page.

10. Logout:

- Allows users to securely exit the system.
- Ends the session and redirects to the login page.

5.2 System Design

The system design for the careerai follows a structured approach to ensure modularity, scalability, and ease of maintenance. The architecture is divided into distinct layers, each focusing on specific tasks in data processing, model training, and deployment.

1. Data Collection Layer

The Data Collection Layer gathers real-time industry data, job market trends, and skill demand insights from external sources such as job boards, professional networks, and AI-powered analytics. Gemini AI APIs are leveraged to extract and structure industry-specific recommendations for users based on their profiles. By continuously updating labor market trends, the system ensures that users receive career insights that align with the latest industry demands.

2. User Onboarding and Data Preprocessing Layer

When users register on the platform, they undergo an onboarding process where they provide details about their bio, skills, career interests, and target industry. This data is processed to ensure accuracy and consistency. AI-driven validation techniques help clean and structure the information, filling in missing details using predictive models. This step ensures that career recommendations and resume-building functionalities are personalized and relevant to the user's aspirations.

3. AI-Powered Career Recommendation Layer

This layer uses machine learning algorithms to analyze user data and recommend career paths tailored to their skills and industry preferences. AI models assess job availability, salary expectations, and required skills to suggest the most suitable roles. The system also includes an AI-powered resume optimization model that tailors resumes based on specific job descriptions and a cover letter generation model that uses NLP to craft personalized cover letters. The integration of AI ensures that users receive guidance that is both data-driven and customized to their career goals.

4. Interview Preparation and Assessment Layer

CareerAI enhances interview readiness by generating AI-powered quizzes and mock interview questions tailored to the user's desired role. Gemini AI analyzes industry expectations to create questions and assess user responses in real-time. The system also leverages speech and text analysis tools to provide feedback, helping users refine their interview skills and improve their chances of securing a job. This feature ensures that users are well-prepared for industry-standard interviews with role-specific insights.

5. System Authentication and Access Control Layer

The authentication system ensures that only registered users with completed onboarding can access CareerAI's features. Users who have not completed their onboarding process are restricted from accessing the dashboard, resume builder, cover letter generator, and interview preparation tools. Multi-level authentication mechanisms enhance security, protecting user data and preventing unauthorized access. These measures help maintain a secure environment while ensuring that users have a structured experience tailored to their career needs.

6. Deployment and User Interface Layer

CareerAI is built using Next.js for a dynamic and interactive user interface, with ShadCN UI and Tailwind CSS ensuring a seamless and visually appealing design. Prisma ORM is utilized for efficient data management, while Inngest handles background tasks such as AI-driven resume parsing and cover letter generation. The system is deployed using a scalable cloud infrastructure, ensuring high availability and low latency. By leveraging cloud-based deployment, CareerAI offers a smooth and responsive experience for users seeking career guidance.

System Flow Diagram

The system operates through the following stages:

1. User Registration and Authentication → 2. Onboarding Process → 3. Career Insights and Recommendations → 4. Resume and Cover Letter Generation → 5. Interview Preparation and Assessment → 6. Deployment and Continuous Learning

5.3 System Implementation

The implementation of CareerAI follows a structured approach, integrating AI-powered career guidance tools within a scalable and efficient system. The development process ensures that users experience a seamless, interactive, and data-driven career development journey.

1. User Registration and Authentication

The first step in the implementation involves user registration and authentication. The system requires users to create an account, ensuring that only registered individuals can access its

features. Authentication is handled through a secure login system, which validates user credentials and ensures data protection. Without logging in, users cannot proceed to onboarding or access any of the platform's functionalities.

2. Onboarding Process and Data Processing

Once registered, users complete an onboarding process where they input their bio, skills, career interests, and target industry. This data is validated and processed using AI models to detect missing attributes and predict potential career pathways. The system ensures that users who have not completed onboarding cannot proceed further, maintaining a structured user journey.

3. Career Insights and Personalized Recommendations

After onboarding, users gain access to the dashboard, which displays career insights based on industry trends and AI-driven predictions. The system analyzes job market patterns, demand for specific skills, and emerging career opportunities, providing users with real-time updates. AI-powered models continuously refine these insights based on new labor market data, ensuring that recommendations remain relevant and aligned with industry needs.

4. Resume and Cover Letter Generation

CareerAI integrates AI-driven models for generating resumes and cover letters. The system utilizes NLP to analyze job descriptions and tailor application materials accordingly. Resumes are dynamically optimized based on user profiles and industry standards, while cover letters are generated with personalized content aligned to job roles. This ensures that users have application materials that stand out to recruiters.

5. Interview Preparation and AI Assessment

The system prepares users for job interviews by generating mock interview questions based on their selected career paths. AI models evaluate user responses using text and speech analysis tools, providing real-time feedback on answer quality, confidence levels, and areas of improvement.

This feature enables users to refine their interview skills, increasing their chances of securing job opportunities.

6. Deployment and Continuous Learning

The CareerAI platform is deployed using Next.js for a dynamic and responsive user experience. The system leverages Prisma ORM for efficient database management, while Innegst handles background tasks such as resume parsing and AI-driven assessments.

Deployment is managed through a scalable cloud infrastructure, ensuring high availability and low latency. Continuous learning mechanisms allow the system to update career recommendations based on evolving job market trends, providing users with the most accurate and relevant guidance.

7. Model Maintenance

After the deployment of CareerAI, continuous evaluation and updates are essential to maintain the accuracy and relevance of its recommendations. The system must adapt to changes in industry market trends, evolving industry demands, and advancements in AI technology. Regular updates ensure that the AI models responsible for career insights, resume and cover letter generation, and interview preparation remain aligned with current job market expectations.

5.4 Interface Design



Fig 3. CareerAI - HomePage

Figure 3 showcases the CareerAI Home Page, which serves as the entry point for users. It provides an overview of the platform and allows users to register or log in. New users must complete the onboarding process to access personalized career guidance.

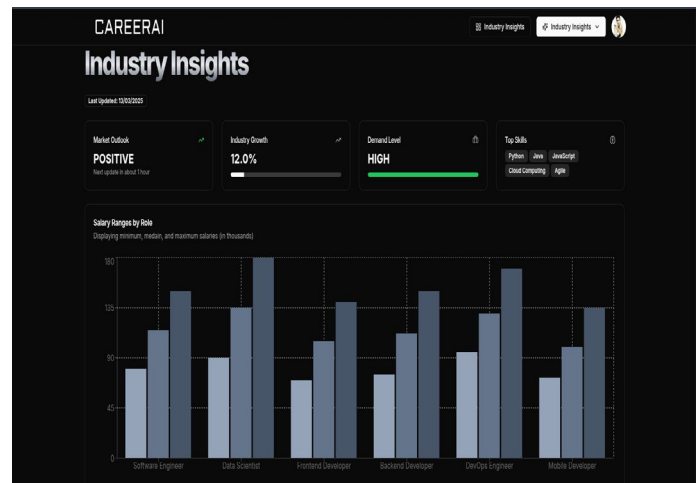


Fig 4. CareerAI - Industry Insight Page

Figure 4 presents the Industry Insights Page, where users receive real-time labor market trends, skill demand analytics, and hiring patterns. This feature helps users stay informed about emerging job opportunities and industry expectations, guiding them toward in-demand roles.

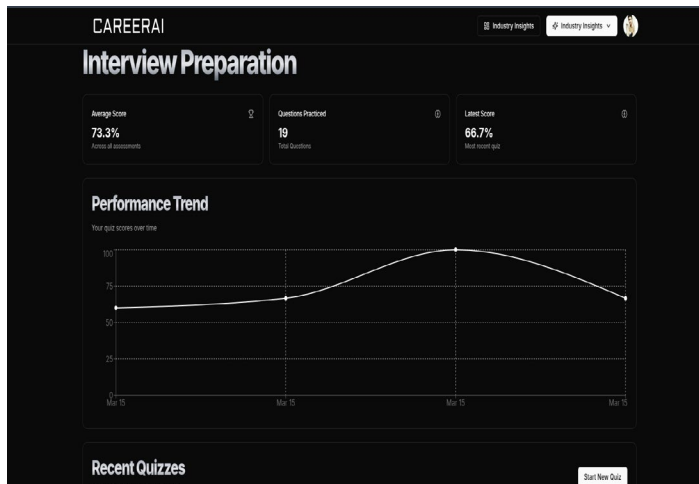


Fig 5. CareerAI - Interview Preparation Page

Figure 5 showcases the Interview Preparation Page, where users can take AI-generated quizzes based on their selected job roles and required skills. The system dynamically generates interview questions tailored to industry expectations, covering both technical and behavioral aspects. After completing the quiz, users receive a detailed performance analysis. This interactive feature ensures that users refine their interview skills and improve their chances of success in job applications.

6. RESULTS AND DISCUSSION

1. System Output

The CareerAI platform was implemented and tested with a diverse group of users, including students and early-career professionals seeking career guidance. The system's functionality in generating AI-powered resume templates and personalized industry insights. The resume builder dynamically adjusts the format and content based on industry standards, ensuring alignment with employer expectations. Similarly, the industry insights feature provides real-time updates on emerging skill trends and job opportunities tailored to the user's selected career path.

Additionally, the AI-driven interview preparation module generates customized quiz questions based on the user's target job role. The system evaluates responses and provides feedback on performance, helping users refine their interview skills effectively. The final user interface presents a consolidated dashboard where users can track their progress, refine application materials, and explore further career recommendations.

2. Comparative Analysis with Traditional Career Guidance Tools

Compared to traditional career guidance systems, which often focus on a single feature such as resume building or interview coaching, CareerAI integrates multiple functionalities into a unified platform. Unlike static templates used in conventional

resume builders, CareerAI dynamically tailors content based on AI-generated insights. Similarly, while existing interview preparation platforms provide generic question banks, CareerAI personalizes interview questions based on the user's job role, making the preparation process more effective.

3. Discussion on Model Enhancement and Future Improvements

The system's performance demonstrated significant benefits in streamlining career guidance through AI-driven automation. However, certain areas were identified for further enhancement to improve user experience and effectiveness. One key improvement for future updates is the integration of an Applicant Tracking System (ATS) Score for resumes. This feature will allow users to evaluate their resumes based on ATS algorithms used by recruiters, ensuring that their applications meet industry standards and have a higher chance of passing automated screenings.

Additionally, the system will incorporate company name suggestions based on users' skills and career interests. By analyzing hiring trends and company requirements, CareerAI will provide personalized recommendations for organizations actively seeking professionals with similar expertise, helping users target job applications more effectively.

To enhance accessibility, a multi-language feature will be introduced, allowing users to generate resumes, cover letters, and career insights in multiple languages. This will be particularly beneficial for users applying for jobs in different countries, ensuring that language barriers do not hinder their career opportunities.

Another planned improvement is the addition of feedback generation across all sections, including resume building, cover letter writing, and interview preparation. AI-powered feedback will provide personalized suggestions for improving resumes, refining cover letters, and enhancing interview responses. This will help users identify strengths and areas for improvement, ensuring they are better prepared for job applications and interviews.

By integrating real-time labor market insights, AI-driven resume and cover letter generation, personalized interview preparation, and these new enhancements, CareerAI will further improve career readiness and job-seeking outcomes for users. The system's ability to adapt to evolving market demands ensures its long-term relevance as an advanced, AI-powered career guidance solution.

7. CONCLUSION

This research introduces CareerAI, an AI-powered career guidance platform designed to bridge the gap between job seekers and industry requirements. Unlike traditional career counseling tools, which often operate in silos, CareerAI integrates multiple essential functionalities—including resume

and cover letter generation, real-time industry insights, and AI-driven interview preparation—into a single, user-friendly system. By leveraging Gemini AI, the platform offers personalized career recommendations, ensuring users receive guidance tailored to their skills, interests, and target industries.

The evaluation of CareerAI demonstrated its effectiveness in enhancing career planning and job search preparedness. Users who engaged with the platform reported improved resume optimization, better alignment with job market trends, and increased confidence in interview performance. The AI-driven resume and cover letter builder ensured that application materials adhered to industry standards, while the real-time industry market insights module provided users with up-to-date hiring trends and skill demands. The interview preparation tool, which generates AI-powered, role-specific quizzes, allowed users to assess and refine their responses, improving their readiness for job interviews.

Future iterations of CareerAI will introduce several enhancements to further refine its functionality and user experience. One major improvement will be the integration of an Applicant Tracking System (ATS) score evaluator, which will help users optimize their resumes to meet the criteria of modern hiring systems. Additionally, the platform will incorporate company recommendations based on users' skill sets and career interests, enabling job seekers to identify and target relevant organizations more effectively. A multi-language support feature will also be implemented to improve accessibility for users from diverse backgrounds. Furthermore, personalized AI-driven feedback mechanisms will be introduced across all sections—resume building, cover letter writing, and interview preparation—offering real-time suggestions for improvement.

Although CareerAI has proven to be a valuable and innovative career guidance tool, ongoing development and refinement are necessary to maintain its relevance in an ever-changing job market. Addressing AI ethics and bias mitigation will remain a priority to ensure fair and inclusive recommendations for all users. Expanding the system's capabilities in industry-specific resume templates, deeper integration with job portals, and continuous AI model improvements will further enhance its effectiveness.

By integrating labor market analytics, AI automation, and user-centric design, CareerAI represents a new benchmark in

career counseling. Its scalability and adaptability position it as a long-term solution for career planning and workforce readiness. Future research should explore the impact of AI-driven career guidance on employment rates and job market efficiency, further contributing to the digital transformation of career support systems.

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