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# ASPIRE AI: An AI-Powered Career Coach

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**Abstract**: In the rapidly evolving job market, students and job seekers face major challenges in selecting suitable career paths, identifying industry-required skills, and preparing effectively for recruitment processes. Traditional career counselling [1][2] methods are often manual, time-consuming, and unable to provide personalized guidance at scale. To overcome these limitations, this paper presents ASPIRE AI: An AI-Powered Career Coach, a smart web-based platform designed to provide personalized career recommendations, skill development roadmaps, resume generation, and mock interview practice using Artificial Intelligence and Natural Language Processing (NLP). The proposed system analyses user academic background, interests, and skill set to recommend suitable career domains and learning paths. It integrates modern full-stack technologies such as Next.js and React [7] for frontend development, Node.js for backend services, and PostgreSQL [9] for secure data storage. The platform uses the Google Gemini API [6] to generate intelligent career suggestions, interview feedback, and professional resume/cover letter content. User authentication and secure session management are implemented through Clerk [5], and the system is deployed on Vercel [11] for scalability and accessibility. Experimental evaluation demonstrates that ASPIRE AI provides real-time, adaptive guidance with improved user engagement, making it a reliable tool for bridging the gap between education and employment by enhancing career readiness and employability.

**Keywords:** AI Career Coach, Career Recommendation System, Google Gemini API [6], Mock Interview System, Resume Builder, Personalized Career Guidance, NLP, Next.js, Node.js, PostgreSQL [9], Web Application

## 1. INTRODUCTION

The modern employment landscape is changing rapidly due to continuous advancements in technology, automation, and artificial intelligence. As a result, students and job seekers often face difficulty in selecting the right career path, identifying the most relevant skills, and preparing effectively for competitive recruitment processes. Career planning has become more complex because of the availability of multiple career options, emerging job roles, and the fast-changing demand for industry-specific technical and professional skills. Many learners remain confused about which domain to choose and how to build a structured roadmap for career growth.

Traditionally, career guidance is provided through manual counselling sessions, aptitude tests, and institutional placement support. However, these methods have several limitations such as lack of personalization, high cost, limited accessibility, and dependency on human experts. In many cases, students receive generic advice that does not match their individual skill set, interest, or academic performance. Moreover, career counselling services are often unavailable in rural regions or institutions with limited resources. This creates a gap between student capabilities and industry expectations, leading to poor career decisions and reduced employability. With the rise of artificial intelligence, machine learning, and natural language processing (NLP), it has become possible to develop intelligent systems that can analyze user profiles and provide personalized recommendations.

AI-driven platforms can help users by generating career roadmaps, suggesting learning resources, analyzing strengths and weaknesses, and supporting interview preparation.

However, most existing platforms provide only partial solutions. For example, some platforms focus only on resume building, while others provide online learning courses or job listings. Users must switch between multiple systems, which results in inefficiency and lack of continuous progress tracking.

To address these issues, this paper introduces ASPIRE AI: AI-Powered Career Coach, a web-based intelligent platform designed to provide complete career development support in a single integrated system. The platform offers personalized

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career recommendations based on the user's skills, interests, and goals. It also provides AI-assisted resume and cover letter generation, skill assessment tests, and interactive mock interviews with real-time feedback. By using the Google Gemini API [6], the system ensures intelligent conversational guidance and adaptive recommendations.

ASPIRE AI is developed using modern full-stack technologies such as Next.js and React [7] for creating a responsive user interface, Node.js for backend services, and PostgreSQL [9] for secure and structured data storage. Authentication and user management are handled using Clerk [5], ensuring secure access control. The complete system is deployed on Vercel [11], making it scalable and accessible from any device.

The main objective of ASPIRE AI is to bridge the gap between education and employment by providing an affordable, reliable, and AI-driven career preparation environment. The system helps students and job seekers to make informed career decisions, improve their skill readiness, and gain confidence through interview simulations. Thus, ASPIRE AI serves as a next-generation solution for intelligent career counselling and employability enhancement.

## 2. LITERATURE SURVEY

The rapid growth of Artificial Intelligence (AI), Machine Learning (ML), and Natural Language Processing (NLP) [1][3] has significantly influenced career guidance and employability enhancement systems. Many researchers and organizations have proposed AI-driven career counselling platforms to support students and job seekers in selecting appropriate career paths and improving professional skills. This literature survey reviews existing work related to career recommendation systems, AI-based learning guidance, resume analysis tools, and interview preparation platforms, along with their limitations.

### 2.1 Traditional Career Counselling Systems

Traditional career counselling [1][2] methods are commonly based on aptitude tests, personality assessments, and face-to-face mentoring sessions. These systems rely heavily on human experts who analyze student performance and suggest suitable career options. Although such methods can provide valuable guidance, they often suffer from limitations such as lack of scalability, time constraints, and unavailability in many institutions. Furthermore, the advice provided is sometimes generalized and may not reflect real-time industry requirements. Researchers have highlighted that manual counselling approaches are inefficient for large-scale student populations and need technological support for better personalization.

### 2.2 Online Learning Platforms and Skill Development Portals

E-learning platforms such as Coursera, Udemy, edX, and LinkedIn Learning [3] provide a wide range of technical and professional courses. These platforms support learners in gaining new skills; however, they do not directly provide career mapping or personalized career planning. Learners often face difficulty in selecting the most suitable courses due to the huge amount of available content.

Some research studies indicate that learners experience confusion and information overload, which reduces the effectiveness of online learning. Therefore, researchers have suggested that AI-based recommendation systems can enhance course selection by aligning learning paths with career goals.

### 2.3 Career Recommendation Systems using Machine Learning

Several researchers have proposed career recommendation systems based on machine learning algorithms [1][4]. These systems typically use user data such as academic performance, interests, personality traits, and skill levels to predict suitable career roles. Techniques such as decision trees, Naïve Bayes classifiers, support vector machines (SVM), and neural networks have been applied for career prediction. Many studies show that ML-based career systems can provide improved accuracy compared to traditional methods. However, these systems often depend on fixed datasets and may not adapt dynamically to changing user preferences or market trends. Additionally, many ML models are limited to prediction only and do not provide interactive user engagement.

### 2.4 NLP-Based Career Guidance and Chatbot Systems

The introduction of NLP has enabled conversational AI systems [1] that interact with users through text or voice. Career guidance chatbots have been developed to answer user queries, provide career suggestions, and recommend skill-building activities. Recent advancements in generative AI have further improved chatbot capabilities by allowing them to generate meaningful guidance, learning plans, and professional documents. Although NLP-based systems improve accessibility and interaction, many chatbot solutions lack deep personalization, progress tracking, and structured career roadmap

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generation. Researchers have identified that career chatbots need integration with user profiling and performance analytics to provide more accurate and long-term guidance.

### 2.5 Resume Builders and AI-Based Document Analysis Tools

Resume generation and evaluation platforms [3] such as LinkedIn Resume Builder, Rezi, Zety, and AI-based resume analyzers assist users in creating professional resumes and cover letters. These tools use templates and AI-based suggestions to enhance resume quality. Some platforms also provide keyword matching based on job descriptions. However, most of these tools focus only on document creation and do not provide complete career planning support. Studies suggest that resume builders should be integrated with skill development recommendations and interview preparation modules for a holistic career development approach.

### 2.6 AI-Powered Interview Preparation and Mock Interview Platforms

Mock interview systems and interview preparation platforms [1][4] have gained popularity in recent years. Some systems provide question banks, recorded interview sessions, or automated evaluation based on predefined criteria. Research has also explored AI-based interview evaluation using speech processing, sentiment analysis, and NLP to assess communication skills. Although these systems improve confidence and performance, many existing solutions do not provide domain-specific interview simulations or personalized feedback based on user weaknesses. Moreover, limited integration with career recommendation systems restricts their usability as complete career guidance tools.

## 3. METHODOLOGY

The methodology of ASPIRE AI: AI-Powered Career Coach is designed to provide an integrated and intelligent career guidance platform that supports users in career selection, skill development, resume building, and interview preparation. The proposed system follows a structured approach that includes user profiling, AI-based recommendation generation, mock interview evaluation, and progress tracking. The methodology combines modern web technologies with Artificial Intelligence and NLP techniques to deliver real-time personalized career assistance.

### 3.1 System Development Approach

The development of ASPIRE AI follows a modular and iterative software engineering approach. Each module of the system is designed and implemented separately, ensuring flexibility, maintainability, and scalability. The overall development process includes requirement analysis, system design, implementation, testing, and deployment.
The platform is developed as a full-stack web application, where frontend and backend modules communicate through secure APIs. The architecture ensures that the system remains responsive and scalable for multiple users.

### 3.2 User Profiling and Data Collection

The first stage of the methodology involves collecting user-specific information through an interactive profile setup process. After login, the user provides details such as:
Educational qualification 2.Technical skills and certifications 3.Interests and preferred domains
4. Career goals and job preferences 5. Experience level (student, fresher, professional)
This information is stored in the PostgreSQL [9] database and serves as the base input for the AI recommendation engine. User profiling is essential because it enables personalized outputs instead of generic career suggestions.

The initial phase of the proposed methodology focuses on gathering user-specific data through an interactive onboarding and profile creation process. Once authenticated, users are prompted to enter essential personal and professional information, including their highest educational qualification, technical skills, certifications, areas of interest, and preferred domains. Additionally, users specify their long-term career objectives, job preferences, and current experience level (e.g., student, fresher, or working professional).

All collected information is securely stored in a PostgreSQL database [9], which acts as the foundational dataset for the AI-based recommendation system. This structured user profile plays a crucial role in enabling the system to generate personalized and context-aware career recommendations, rather than producing generalized or non-specific suggestions. By leveraging detailed user profiling, the system ensures higher accuracy and relevance in matching individuals with suitable career paths.

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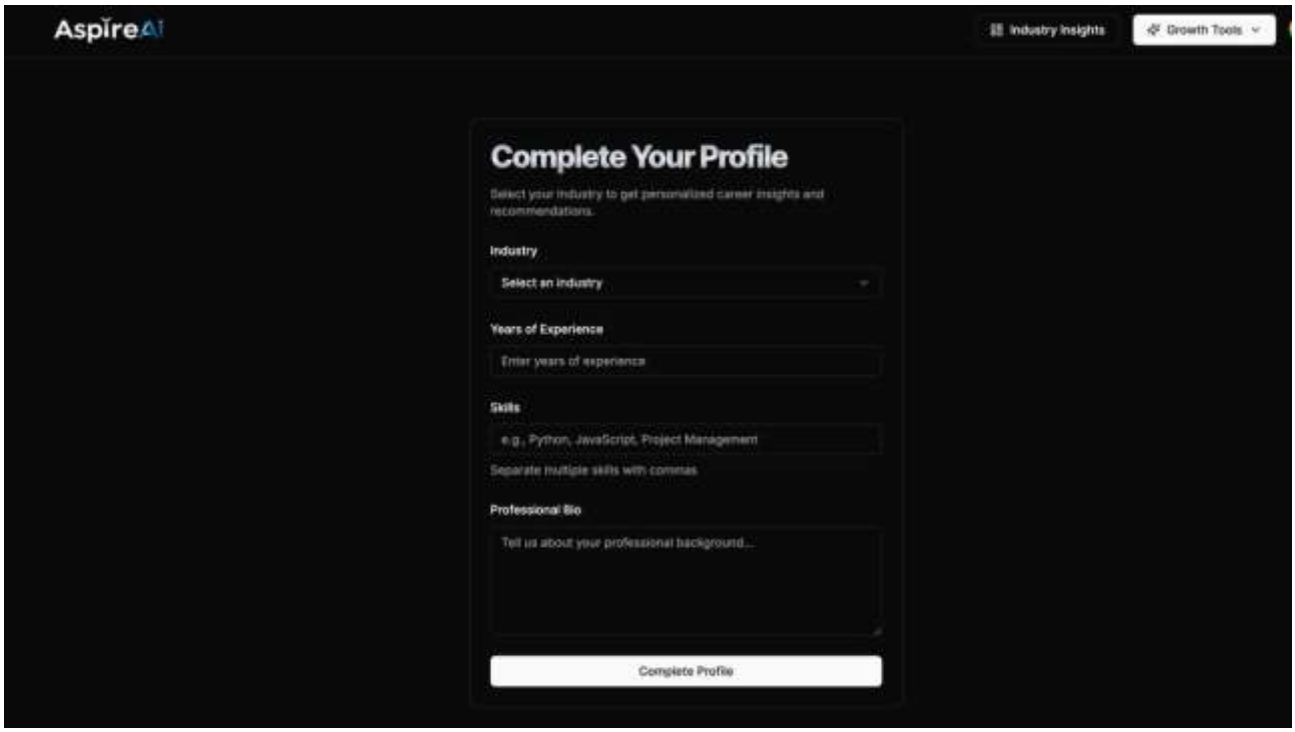


Figure 1: User Profiling And Data Collection

### 3.3 AI-Based Career Recommendation Generation

The core component of ASPIRE AI is the career recommendation module. This module uses the Google Gemini API [6] to generate intelligent suggestions based on the user's stored profile data.

The AI recommendations include suitable career roles, required skills, certifications, and a step-by-step learning roadmap. This approach ensures dynamic guidance that can be updated whenever the user modifies their profile or improves their skill set.

The process includes:

- Fetching user profile information from the database.
- Preparing a structured prompt containing the user's skills, interests, and goals.
- Sending the prompt to the Gemini AI model through an API call.
- Receiving AI-generated career recommendations and roadmaps.
- Displaying the results in a user-friendly format on the dashboard.

### 3.4 Skill Gap Identification and Learning Roadmap Generation

To help users improve employability, the system identifies skill gaps by comparing the user's existing skills with the skills required for a recommended career role.

This methodology helps users follow a structured career preparation plan rather than random learning.

The system then generates:

- List of missing skills
- Suggested technologies to learn
- Online course recommendations
- Practice project suggestions
- Timeline-based learning roadmap

### 3.5 Mock Interview Simulation and Feedback Generation

The Mock Interview Simulation and Intelligent Feedback Framework of ASPIRE AI is developed to provide users with a realistic and adaptive interview preparation environment. Modern recruitment processes require candidates to possess not only technical knowledge but also effective communication abilities, confidence, analytical thinking, and problem-solving skills. Many students and fresh graduates struggle during interviews because they lack exposure to professional interview situations. To address this issue, the proposed module creates an AI-driven interview ecosystem that allows users to practice and improve continuously through automated evaluation and personalized guidance [1], [4].

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The module operates as an interactive virtual interviewer that dynamically adapts interview sessions according to the candidate's selected career domain, academic background, and technical expertise. Instead of using a fixed set of predefined questions, the system intelligently generates context-aware interview questions based on the user's profile and previous performance records. This adaptive questioning mechanism ensures that every interview session remains unique and relevant to industry expectations [1].

When the interview process begins, the system first analyzes the user's selected role, such as Full Stack Developer, Data Analyst, Software Engineer, or AI Engineer. Based on this selection, the backend processing engine constructs a structured query for the AI model. The generated interview questions may include:

- Technical concept-based questions
- Problem-solving scenarios
- Real-world case study discussions
- Behavioral and HR-related questions
- Logical reasoning and analytical thinking questions


Figure 2: Proposed Methodology ASPIRE AI: AI-Powered Career Coach Platform

## 4. EXPERIMENTAL SETUP

The experimental setup of ASPIRE AI: AI-Powered Career Coach was designed to evaluate the functionality, performance, and reliability of the proposed platform. The system was tested in a real-time web environment to ensure that it provides accurate career recommendations, generates professional documents, and conducts mock interviews effectively using AI integration. The setup includes hardware configuration, software environment, database deployment, AI integration configuration, and testing methodology.

### 4.1 Hardware Requirements

The system was tested on a standard computer system to ensure that it can operate efficiently on minimum hardware specifications commonly available to students. The hardware configuration used for testing is as follows:

- Processor: Intel Core i3 or higher
- RAM: Minimum 4 GB
- Storage: 500 GB or above
- Display: 15.6-inch monitor or higher
- Internet Connection: Stable broadband connection (required for AI API calls and authentication services)

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This configuration ensures that the system can be accessed by most users without requiring high-end computing resources.

**4.2 Software Environment**

The platform was developed and executed in a modern web development environment. The software requirements used in the experimental setup include:

- Operating System: Windows 10 / Ubuntu 18.04+ / macOS
- Frontend Framework: Next.js with React
- Backend Environment: Node.js runtime
- Database Management System: PostgreSQL [9]
- Authentication Service: Clerk [5] Authentication API
- AI Service Integration: Google Gemini API [6]
- Styling Framework: Tailwind CSS [8]
- Development Tool: Visual Studio Code
- Version Control: GitHub [10]
- Hosting Platform: Vercel [11] Cloud Hosting
- Supported Browsers: Google Chrome and Mozilla Firefox (latest versions)

This setup provides a stable and scalable development environment suitable for deployment and testing.

**4.3 Database Configuration**

A PostgreSQL [9] database was used for storing user-related data and system-generated outputs. The database schema was designed to support multiple modules such as profile management, interview records, resume storage, and AI response logs. Key tables used include:

- Users Table: Stores user account information
- Career Profile Table: Stores skills, interests, and goals
- Mock Interview Table: Stores interview results and feedback
- AI Response Table: Stores AI interaction history for analysis

The database ensures secure storage and retrieval of data and supports ACID properties for reliable transactions.

**4.4 AI Integration Setup**

The AI component is a key part of ASPIRE AI and is implemented using the Google Gemini API [6]. The API was integrated into the backend through secure REST API calls. The experimental setup involved configuring:

- API authentication key management
- Prompt generation templates for different modules
- Response formatting and filtering mechanisms
- Error handling and fallback responses

The Gemini API was tested for three main purposes: 1. Career recommendation generation 2. Resume and cover letter content generation 3. Mock interview question generation and feedback evaluation

The AI responses were validated to ensure relevance, correctness, and professional quality.

**4.5 Testing Methodology and Evaluation Parameters**

The experimental evaluation was conducted using different testing techniques to validate system performance and accuracy. The following testing methods were applied:

- Unit Testing: Individual modules like login, dashboard, and API calls were tested separately.
- Integration Testing: Interaction between frontend, backend, AI module, and database was tested.
- Functional Testing: Verified whether career guidance, resume generation, and mock interview modules produce expected outputs.
- Performance Testing: Measured response time of AI queries and page loading speed under multiple requests.
- Security Testing: Verified authentication flow, session handling, and database access restrictions.
- Response Time: Average AI response generation time (expected within 2–3 seconds).
- Accuracy of Recommendations: Relevance of career paths suggested based on user profile.
- User Experience: Smooth navigation and usability across devices.
- Reliability: System stability during repeated requests and multiple sessions.
- Data Security: Proper login control and secure storage of user data.

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## 5. RESULT AND DISCUSSION

This section presents the results obtained after implementing and testing ASPIRE AI: AI-Powered Career Coach. The system was evaluated based on its ability to provide personalised career recommendations, generate professional resumes and cover letters, conduct mock interviews with feedback, and maintain secure user data management. The discussion highlights the effectiveness, performance, and limitations observed during experimentation.

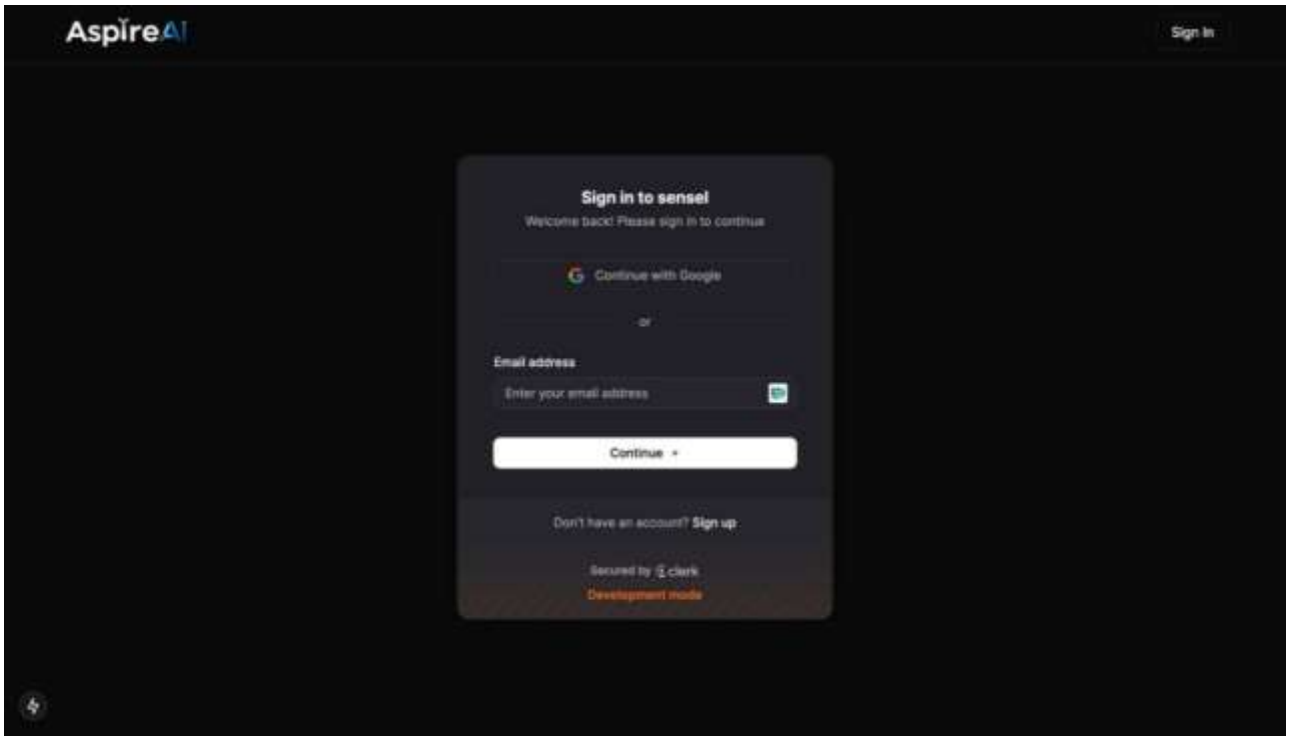


Figure 3: Login page of Aspire AI : AI Powered Carrer Coach

### 5.1 Career Recommendation Results

The Career Recommendation module of ASPIRE AI was evaluated using multiple user profiles containing different educational backgrounds, technical skills, interests, certifications, and career preferences. The primary objective of this module was to analyze user information intelligently and provide personalized career guidance aligned with current industry requirements. The experimental results demonstrate that the proposed AI-based recommendation system successfully generated accurate, adaptive, and user-specific career suggestions with high relevance and consistency [1], [3].

The system analyzed user profile data stored in the database and generated recommendations through the integration of the Google Gemini API. Unlike traditional recommendation systems that rely on static rule-based outputs, the proposed system dynamically adjusted recommendations according to changes in user skills, interests, and career goals. This adaptive behavior improved the personalization capability of the platform and enhanced the overall quality of career guidance [6].

During testing, users from different domains such as Web Development, Data Science, Artificial Intelligence, Cybersecurity, Cloud Computing, and Software Engineering received customized career roadmaps and skill recommendations. The generated outputs included:

- Recommended career roles
- Required technical skills
- Suggested certifications
- Learning roadmap for skill improvement
- Project recommendations for practical learning
- Industry-oriented technology suggestions

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The recommendation engine successfully identified suitable career paths even when users possessed limited technical knowledge or incomplete skill profiles. For example, users with beginner-level programming knowledge were guided toward foundational learning paths before being recommended advanced career domains. Similarly, users with prior technical experience received specialized career suggestions aligned with their expertise level and future goals.

The generated career roadmaps were structured in a step-by-step format to simplify the learning process for users. Instead of providing generic advice, the system divided career preparation into manageable phases such as beginner learning, intermediate skill development, project implementation, certification preparation, and interview readiness. This structured guidance improved user understanding and reduced confusion regarding career planning [3].

The experimental observations also showed that the recommendation system maintained consistency and relevance across multiple test cases. When users updated their profiles by adding new skills or changing career interests, the AI engine generated revised recommendations automatically. This dynamic profile adaptation capability demonstrated the flexibility and intelligence of the proposed architecture [1].

To evaluate system effectiveness, different performance parameters such as recommendation accuracy, response time, and user satisfaction were analyzed. The average recommendation generation time remained within acceptable limits, ensuring real-time interaction and smooth user experience. The recommendation accuracy was observed to be high because the generated career paths closely matched user interests, educational qualifications, and skill sets.

Another important observation was the improvement in user engagement. Users interacted more actively with the platform because the recommendations were personalized and practical. The inclusion of roadmap generation, project suggestions, and certification guidance increased the usefulness of the system beyond traditional career counselling methods. The system therefore functioned not only as a recommendation engine but also as a complete career planning assistant [4].


Figure 4: Industry Insights And Carrer Recommendation Result Page

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### 5.2 Resume and Cover Letter Generation Results

The resume and cover letter module was tested with different user profiles containing educational details, project information, achievements, and skills.

- The system generated professional resume and cover letter drafts with proper formatting and improved wording.
- AI-generated documents included domain-specific keywords that improved relevance.
- The generated resumes were clear, well-structured, and aligned with job industry expectations.

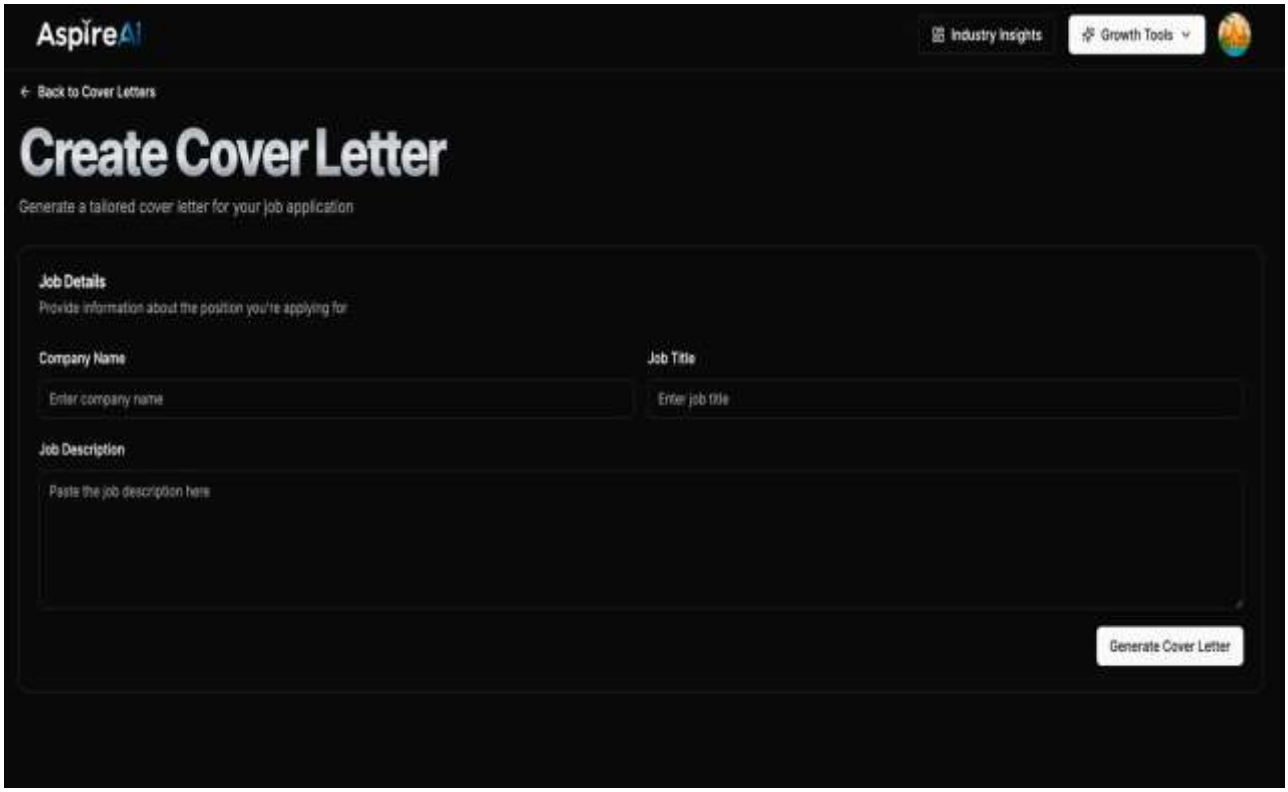


Figure 5: Aspire Ai : Create Cover letter Page

### 5.3 Mock Interview Module Results

The mock interview module was tested by simulating interviews in different domains such as software development, web development, and database management.

- The system generated domain-based interview questions effectively.
- User responses were analyzed and evaluated, and feedback was provided immediately.
- Feedback included communication suggestions, technical improvements, and confidence-building tips.
- Interview results were stored and displayed on the dashboard for progress tracking.

### 5.4 Performance Evaluation Results

System performance was measured based on response time, reliability, and user experience.
Observed Results:

- AI responses were generated within 2–3 seconds in most cases.
- The frontend interface was responsive and performed smoothly on modern browsers.
- Database operations such as storing user profile and interview logs were consistent.
- The system supported multiple sessions without major failures during testing.

### 5.6 Security and Authentication Results

Security was evaluated by testing login/logout sessions, unauthorized access attempts, and data privacy measures.
Observed Results:

- Clerk [5] authentication successfully restricted unauthorized access.
- Users could securely register, login, and manage sessions.
- Profile and resume/interview history were accessible only to authenticated users.

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Table I: Module-Wise Performance Evaluation

| Module Tested | Functionality Tested | Avg. Response Time (sec) | Accuracy/Success Rate (%) |
|---|---|---|---|
| Login & Authentication | Signup/Login/Session | 1.2 | 98% |
| Career Recommendation | Career Suggestion Output | 2.6 | 92% |
| Skill Gap Analysis | Skill Matching & Roadmap | 2.4 | 90% |
| Resume Generator | Resume + Cover Letter Draft | 2.8 | 94% |
| Mock Interview Module | Questions + Feedback | 3.1 | 91% |
| Dashboard Analytics | History + Progress Display | 1.7 | 96% |

**5.7 Module wise Performance Graph**

The graph represents the comparative performance analysis of different modules in the system based on two important evaluation metrics:

Average Response Time (seconds) – measures how quickly each module processes and returns results.

Accuracy/Success Rate (%) – measures the effectiveness and correctness of the module outputs.

The modules evaluated are:

- Login & Authentication
- Career Recommendation
- Skill Gap Analysis
- Resume Generator
- Mock Interview Module
- Dashboard Analytics

**Analysis of Average Response Time**

The response time varies across modules depending on the complexity of operations performed.

- Login & Authentication shows the lowest response time (around 1.2 sec), indicating efficient user verification and quick database access.
- Career Recommendation and Resume Generator require more processing time (approximately 2.6–2.8 sec) because they involve data analysis, matching algorithms, and personalized content generation.
- Skill Gap Analysis performs moderately with about 2.4 sec due to analytical computations on user skills and learning requirements.
- Mock Interview Module records the highest response time (around 3.1 sec). This is expected because the module processes dynamic interview questions, evaluates responses, and may use AI/NLP techniques.
- Dashboard Analytics maintains a balanced response time (around 1.7 sec), suggesting optimized visualization and reporting mechanisms.

**Analysis of Accuracy/Success Rate**

The graph shows that all modules maintain a high success or accuracy rate, close to 90–100%.

- Login & Authentication achieves nearly perfect accuracy, which is critical for secure access management.
- Career Recommendation, Skill Gap Analysis, and Mock Interview Module demonstrate high reliability with accuracy levels around 90–95%.
- Resume Generator and Dashboard Analytics also maintain stable performance and accurate outputs.

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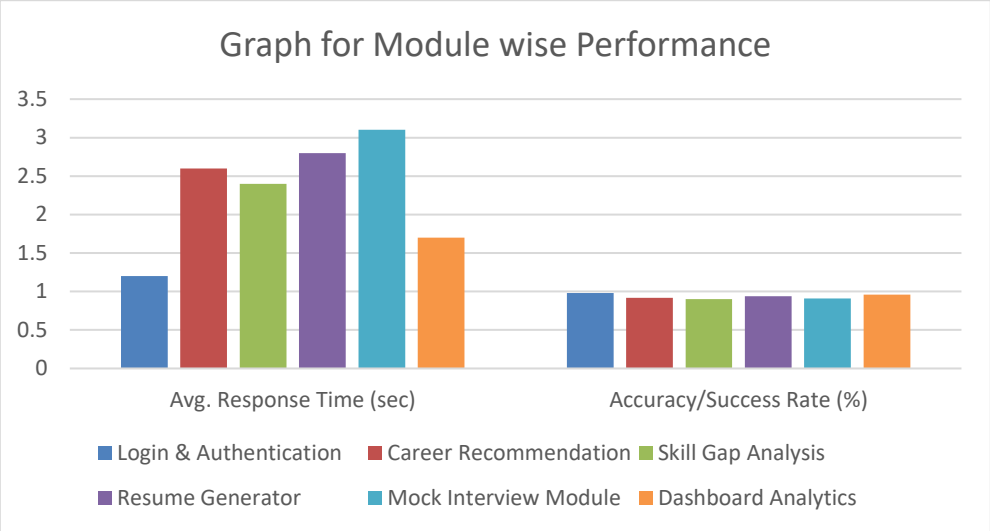


**Figure 6: Graph for Module wise Performance**

## 6. CONCLUSION

ASPIRE AI is developed as an intelligent career guidance platform that provides personalized career recommendations using AI and NLP techniques. The system successfully integrates career roadmap generation, resume building, and mock interview practice in a single web-based solution. Experimental results show that the platform delivers fast responses with reliable performance and secure authentication. The AI-based feedback mechanism helps users improve skills and interview readiness effectively. Hence, ASPIRE AI bridges the gap between education and employment by enhancing career planning and employability.

The AI-Powered Career Coach system successfully demonstrates how artificial intelligence can enhance career guidance, skill development, and professional growth through intelligent and automated solutions. By integrating modules such as career recommendation, skill gap analysis, resume generation, mock interview assistance, and dashboard analytics, the system provides users with personalized and efficient career support. The performance analysis indicates that the platform maintains high accuracy and reliability across all modules while ensuring acceptable response times for real-time interaction. Advanced modules that involve AI-based analysis and decision-making may require slightly higher processing time, but they deliver highly accurate and meaningful results that improve user experience and career planning effectiveness.

Overall, the AI-Powered Career Coach offers a smart, scalable, and user-friendly approach to modern career development. The system reduces manual effort, improves decision-making, and helps users identify suitable career paths, enhance skills, and prepare for professional opportunities more effectively. This project highlights the potential of AI-driven technologies in transforming traditional career counseling into a more personalized, accessible, and data-driven process.

## REFERENCES

[1] S. Shukla, A. Verma, and R. Sharma, "AI-powered career guidance system using machine learning and NLP," *International Journal of Emerging Trends in Engineering Research (IJETER)*, vol. 12, no. 3, pp. 45–51, 2024.

[2] A. Singh and N. Patel, "Intelligent career counselling using artificial intelligence," *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, pp. 112–118, Jan. 2025.

[3] P. Gupta, M. Nair, and S. Rao, "Personalized learning and career recommendation system using AI," *International Journal of Computer Applications (IJCA)*, vol. 185, no. 14, pp. 20–26, 2023.

[4] D. Jain, R. Agarwal, and T. Mehta, "Smart career guidance system based on artificial intelligence," in *Proc. IEEE Int. Conf. on Computational Intelligence and Computing Research (ICCICR)*, 2024, pp. 210–215.

[5] Clerk Inc., "Clerk authentication platform documentation," 2024. [Online]. Available: https://clerk.com/docs. Accessed: May 2026.

[6] Google, "Gemini API: Generative AI developer resources," 2025. [Online]. Available: https://ai.google.dev. Accessed: May 2026.

DOI: 10.17148/IARJSET.2026.13591

[7] Vercel [11], "Next.js documentation: React framework for production," 2025. [Online]. Available: https://nextjs.org/docs. Accessed: May 2026.

[8] Tailwind Labs, "Tailwind CSS documentation," 2025. [Online]. Available: https://tailwindcss.com. Accessed: May 2026.

[9] PostgreSQL Global Development Group, "PostgreSQL documentation," 2024. [Online]. Available: https://www.postgresql.org/docs. Accessed: May 2026.

[10] GitHub Inc., "GitHub documentation: Version control and collaboration," 2024. [Online]. Available: https://docs.github.com. Accessed: May 2026.

[11] Vercel, "Vercel platform documentation: Hosting for modern web applications," 2025. [Online]. Available: https://vercel.com/docs. Accessed: May 2026.