INTEGRATED PROJECT REPORT

On

PROPREP

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Submitted By

Under the Guidance of

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CERTIFICATE

This is to be certified that the project entitled “ProPrep” has been submitted for the Bachelor of Computer Science Engineering at Chitkara University, Punjab during the academic semester January 2025 - June 2025 is a bona fide piece of project work carried out by Nishtha 2210991992, Pragti Gupta 2210992056 and Priya Gupta 2210992096 towards the partial fulfillment for the award of the course Integrated Project (CS203) under the guidance of Mr. Kamal Saluja and supervision.

Sign. of Project Guide:

Mr. Kamal Saluja

CANDIDATE'S DECLARATION

We, Nishtha 2210991992, Pragti Gupta 2210992056, Priya Gupta 2210992096, B.E.-2022 of the Chitkara University, Punjab hereby declare that the Integrated Project Report entitled **"ProPrep"** is an original work and data provided in the study is authentic to the best of our knowledge. This report has not been submitted to any other Institute for the award of any other course.

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1. Abstract/ Keywords

Abstract: ProPrep is an AI-powered career preparation platform designed to assist job seekers in optimizing their resumes and enhancing their interview skills. The platform integrates two core functionalities: an AI Resume Builder, which generates tailored, ATS-friendly resumes with intelligent suggestions, and an AI Mock Interview App, which offers real-time, interactive interview simulations with adaptive feedback. Built using technologies like React, Tailwind CSS, Next.js, Drizzle ORM, Clerk, and Gemini AI, ProPrep ensures a seamless and responsive user experience. By leveraging AI-driven insights, real-time analytics, and an intuitive interface, ProPrep streamlines the job application journey—empowering users with the essential tools needed to thrive in a competitive job market.

2. Introduction to the project

In today's competitive job market, candidates often struggle with both creating optimized resumes and preparing effectively for interviews. ProPrep is an innovative AI-powered platform designed to bridge this gap by offering a comprehensive career preparation solution. It integrates two essential tools: an AI Resume Builder, which generates tailored, ATS-friendly resumes with intelligent suggestions, and an AI Mock Interview App, which provides real-time interview simulations with AI-driven feedback. Built using React, Tailwind CSS, Clerk, Next.js, Drizzle ORM, and Gemini AI, ProPrep delivers a seamless and user-friendly experience. By leveraging artificial intelligence, the platform offers personalized resume enhancements, interactive interview practice, and insightful analytics—empowering job seekers to boost their confidence, readiness, and chances of success. ProPrep is designed to be a one-stop solution for individuals striving to improve their employability and land their dream jobs efficiently.

2.1 Background

With the increasing competition in the job market, job seekers often face challenges in both crafting optimized resumes and preparing effectively for interviews. Traditional methods lack personalization and fail to offer real-time feedback or intelligent guidance. To address these issues, ProPrep was developed as a comprehensive AI-powered career

preparation platform. The project integrates two core tools: an AI Resume Builder, which provides tailored resume suggestions and formatting assistance, and an AI Mock Interview App, which delivers realistic interview simulations with AI-driven insights and adaptive feedback. Utilizing advanced technologies such as React, Tailwind CSS, Clerk, Next.js, Drizzle ORM, and Gemini AI, ProPrep ensures a seamless, interactive, and user-friendly experience. The platform is designed to empower job seekers with personalized career support—streamlining the transition from job search to employment and increasing the likelihood of success in a competitive landscape.

2.2 Problem Statement

Job seekers often face significant challenges in crafting optimized resumes and preparing effectively for interviews. These hurdles are primarily due to the fragmented nature of existing tools, a lack of personalized guidance, and limited access to real-time feedback. This project addresses these pain points by integrating two AI-powered solutions: an AI Resume Builder App that helps users create professional, tailored resumes with intelligent suggestions, and an AI Mock Interview App that provides seamless, real-time interview simulations and feedback. By leveraging AI, the platform streamlines the job application journey, enhances career readiness, and ultimately increases the user's chances of success in the hiring process.

3. Software and Hardware Requirement Specification

3.1 Methods

Backend Development:

- User Authentication**:** Clerk was integrated for secure authentication, managing sign-ups, logins, and user sessions across both the resume builder and mock interview modules.
- API Development**:** Next.js API routes were used to handle user management, resume generation, mock interview scheduling, and communication with AI services.

- AI Integration**:** Gemini AI was integrated to provide real-time feedback during mock interviews and generate smart suggestions for resume content optimization.
- Data Management: Drizzle ORM was utilized for managing structured interactions with the PostgreSQL database, covering resume data, interview results, and user profiles.

Frontend Development:

- UI/UX Design**:** Built using React (via Next.js) and styled with Tailwind CSS to deliver an intuitive, consistent, and responsive interface for both resume and interview functionalities.
- Routing**:** Implemented using Next.js for smooth navigation between features like resume building, interview practice, and analytics.
- State Management: Utilized React hooks and built-in state logic to maintain performance and fluid user interactions.

Database Design:

- PostgreSQL**:** Chosen as the relational database for storing structured data, including resumes, interview histories, AI-generated insights, and user information.
- ORM Usage: Drizzle ORM was employed to streamline database queries and maintain clear schema management across modules.

3.2 Programming/Working Environment

- **Backend:** Node.js runtime with Next.js API routes for server-side logic; PostgreSQL for data storage; Clerk for authentication; Drizzle ORM for data handling.
- **Frontend:** Developed using Next.js with React components; styled using Tailwind CSS following modern UI/UX standards.
- **Tools:** VS Code for development, Postman for API testing, Git and GitHub for version control, and Prisma Studio for database inspection
- **Deployment:** The application will be deployed using Vercel for the frontend and backend, with a managed PostgreSQL database on a cloud provider.

3.3 Requirements to Run the Application

- **Node.js and npm:** Required for running the backend services and API routes.
- **PostgreSQL:** Used for structured data storage and management.
- **Next.js:** Framework for rendering the frontend and handling API requests.
- **Tailwind CSS:** For styling and responsive UI design.
- **Clerk Authentication:** For secure user authentication and session management.
- **Gemini AI:** Integrated for AI-driven mock interview simulations and feedback.
- **Drizzle ORM:** Used for efficient database interactions.

4. Database Analyzing, Design and Implementation

The **PostgreSQL** database schema was designed to support core entities relevant to both mock interview and resume builder functionalities. These include users, resumes, interview sessions, responses, AI feedback, and session logs. Each table is optimized for efficient CRUD operations while ensuring data integrity and scalability. **Drizzle ORM** is used to manage structured interactions and maintain clean schema definitions across modules.

The database was structured to support:

- **User profiles** : Storing candidate data, authentication details, resume versions, and session histories.
- **Resume Data** : Including AI-generated content blocks, skill highlights, formatting preferences, and export logs.
- **Interview sessions** : Holding AI-generated questions, user responses, timestamps, and session metadata.
- **AI feedback** : Saving tailored feedback from both resume analysis and interview sessions.
- **Session logs** : Tracking user activity, progress analytics, and usage trends across both tools.

5. Program's Structure Analyzing and GUI Constructing

The program structure is divided into:

- Backend: Manages Clerk-based user authentication, Next.js API routes, AI model integration (Gemini AI), resume generation logic, and interview session data handling.
- Frontend: Built with **Next.js**, **React**, and **Tailwind CSS**, it manages user interaction, analytics, and access to key features like resume building, mock interviews, and AI insights.

The Dashboard serves as the central hub of the platform, allowing users to conveniently track their progress, manage multiple versions of their resumes, and access past mock interview results for continuous improvement. The Resume Builder is a dynamic, AI-integrated interface that enables users to effortlessly create and optimize their resumes with personalized suggestions tailored to specific job roles and industry standards. The Mock Interview Interface offers a real-time, text-based simulation environment where users can practice interview scenarios and receive immediate, intelligent feedback from the AI. Complementing these features is the Feedback System, which delivers in-depth, AI-generated insights, performance evaluations, improvement suggestions, and exportable reports to help users refine their skills and boost their job-readiness.

6. Code-Implementation and Database Connections

- The ProPrep platform adopts a modular, full-stack architecture to ensure scalability, maintainability, and seamless user experience across both its AI Mock Interview and Resume Builder functionalities. The backend is developed using Next.js API routes, integrating Gemini AI for generating intelligent interview responses and resume enhancement suggestions. Clerk is used for secure user authentication and session management, ensuring a safe and personalized user environment. The frontend, built with Next.js and Tailwind CSS, offers an intuitive and responsive interface that supports dynamic resume creation, real-time interview simulations, and feedback visualization. API routes facilitate smooth communication between the frontend and backend for handling user data, interview sessions, resume generation, and feedback mechanisms.
- Database Connections: Database connectivity is handled through Drizzle ORM integrated with PostgreSQL, providing efficient and structured data management across both modules. The database schema is designed to store user profiles, resume data, interview sessions, AI-generated feedback, and session logs. API endpoints

securely interact with PostgreSQL using Drizzle queries to perform CRUD operations and maintain data consistency. This setup ensures optimized data retrieval and manipulation based on user interactions, while supporting high availability and security. Overall, the system enables comprehensive tracking of both interview preparation progress and resume-building activities, forming a robust foundation for the platform's AI-driven career development tools.

7. Limitations

- **Live Video Interview Feature:** Currently, ProPrep supports only text-based AI mock interviews. The integration of real-time video-based mock interviews using technologies like WebRTC, ZegoUIKit, or Twilio is under development. This enhancement aims to make mock interview sessions more realistic and immersive, closely mimicking actual interview experiences.
- **Limited Customization of AI Responses and Resume Suggestions:** While Gemini AI delivers structured and intelligent feedback for both interviews and resumes, users currently have limited options to customize feedback according to specific job roles, experience levels, or industries. Future updates will focus on adding advanced personalization features, such as adjusting interview difficulty, choosing industry-focused question sets, and customizing resume templates to better suit individual career goals.
- **No Multi-Language Support:** Presently, ProPrep supports only English for both resume content optimization and AI-driven interview sessions. To accommodate a more diverse user base, plans are underway to integrate multi-language support, enabling users from different linguistic backgrounds to access personalized career preparation tools in their preferred language.

8. Conclusion

The development of ProPrep, an AI-powered career preparation platform, has made substantial progress, integrating both AI Mock Interview and AI Resume Builder functionalities. The backend is robust and effectively handles secure user authentication, real-time AI-driven interview sessions, dynamic resume optimization, and intelligent feedback generation. The frontend, built with Next.js and Tailwind CSS, offers a responsive and user-friendly interface, ensuring a smooth and engaging experience for users navigating between mock interviews and resume creation.

While the platform already delivers a strong set of core features, several enhancements are actively under development. These include the integration of live video interviews for more realistic simulations, expanded customization for interview difficulty and resume templates, and multi-language support to serve a broader, global user base. Plans are also in place to extend payment gateway options beyond Stripe, offering users more flexibility.

Despite these pending features, ProPrep has laid a solid foundation with its current capabilities. It already serves as a valuable, interactive, and intelligent tool for job seekers looking to boost their confidence, polish their resumes, and prepare thoroughly for real-world interviews using AI-driven insights.

9. Future Scope

- **Personalized AI Feedback & Reports:** The AI-driven feedback system will be enhanced to deliver detailed performance analytics, personalized improvement suggestions, and custom learning paths. This will provide users with actionable insights to track progress and fine-tune both their interview responses and resume content over time.
- **AI Resume Analysis & Smart Job Recommendations:** A future integration of an AI-powered resume analyzer will help users optimize their resumes with real-time suggestions. Additionally, a job recommendation engine will match users to roles based on their skills, experience, and resume content—helping streamline the job search process.
- **Scalable and Flexible Deployment:** The platform will continue to be deployed on scalable infrastructures such as Vercel and Heroku, with future plans to explore multi-region deployment and serverless architecture. This ensures high availability, low latency, and seamless performance for a growing global user base.

10. Bibliography/References

- https://nextjs.org/
- https://orm.drizzle.team/docs
- https://ai.google.dev
- https://clerk.com/docs
- https://tailwindcss.com/docs
- https://www.postgresql.org/docs/