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CSE471: System Analysis and Design
Assignment on Functional Requirements
Proposed Project Title: Job Portal Application (MERN Stack)

<table>
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Fall 2025</th></tr>
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Submission Date:

Tech Stack: MERN

- Language: JavaScript
- Framework: React.js
- Styling: TailwindCSS
- Database: MongoDB
- ORM: Prisma
- Deployment: Vercel

Functional requirements:

Module 1

1. [Member-1] Users can securely log in to access their features and log out, utilizing JWT authentication.Users can create an account by entering their details and specifying their role (Student/Recruiter).
2. [Member-2] Users can search and filter job listings (title, location, keywords) on the public Home/Browse page.

3. [Member-3 Implement advanced route protection and role-based access control on frontend (React Context) and backend (Express middleware) to restrict unauthorized access to dashboards. *Unique: Session timeout with auto-save drafts for unfinished actions.*]
4. [Member-4] Users can view personalized job recommendations on the public side based on search history or basic profile keywords (using simple collaborative filtering logic). Unique: Trend-based suggestions pulled from job market news.
5. Add a login activity tracker using the IPinfo free API to detect unusual login patterns and prompt users with a security alert.
6. Enable users to import professional profiles from LinkedIn (via public URL scraping with free CORS proxy) to auto-fill registration and skill fields. **Unique:** Skill extraction using free NLP API (TextRazor free tier).
7. Integrate the free NewsAPI to show live industry news feeds filtered by user-selected job categories on the homepage sidebar.
8. Implement a dynamic password strength checker providing real-time feedback as users set their password, enforcing best practices and displaying recommendations to increase security.

Module 2

1. [Member-1] Users can view and update their profile information, including name, email, phone number, bio, and resume/avatar upload. Recruiters can update company information (website, description, location) and change the company logo after registration
2. [Member-2] Users can apply to a job listing via the "Apply Now" button, linking their profile to the job post.
3. [Member-3] Users can add a job to a "Wishlist" or "Saved Jobs" list for later review.
4. [Member-4] Users can view their applied job status dashboard, showing the status (Pending/Accepted/Rejected) for each application.
5. Implement two-factor authentication (2FA) via SMS using the free Textlocal API for enhanced account security on login.
6. Implement a Smart Job Alert system that uses AI to send weekly email summaries of new jobs matching user preferences (via SendGrid free tier API).
7. Let users upload and manage multiple resumes or portfolio documents, assign custom titles to each, and select which one to use for each job application.
8. Offer an in-platform note-taking feature for each job post, allowing users to jot down thoughts, reminders, or follow-up plans which are then saved to their account.
9. Provide an “Achievements and Milestones” tracker where users can record past career accomplishments, display them visually on their profile, and update them any time.

Module 3

1. [Member-1] Recruiters can post new job listings with all details (title, description, salary, requirements).
2. [Member-2] Recruiters can update an applicant's status to "Accepted" or "Rejected" (e.g., after reviewing the resume).
3. Side-by-side comparison view of up to 4 candidates showing skills, experience, and compatibility scores to help recruiters make decisions.
4. An AI tool that scans uploaded resumes and provides improvement suggestions (missing keywords, formatting issues, skill gaps for target jobs) with a compatibility score for specific job listings.
5. Integrate the free NewsAPI to show live industry news feeds filtered by user-selected job categories on the homepage sidebar

6. include a Smart Interview Suggestion Tool that provides AI-generated interview questions for each posted job, based on job description keywords (using Perplexity API).
7. Implement a Company Analytics Dashboard showing the total applicants, accepted/rejected ratio, and active job posts, visualized with Chart.js.
8. Add an AI-driven application summary generator that produces a one-line application summary (“Your resume best matches 80% of this role”) for user motivation and feedback.
9. Enable one-click video resume upload and playback with transcription using the free AssemblyAI API (speech-to-text) for accessibility.
10. Add a Global Job Trend API (JSearch) integration to display in-demand roles and industries dynamically on the recruiter’s dashboard.
11. Provide a real-time applicant engagement tracker using the free Pusher API to show when candidates view job posts or update profiles.
12. Enable integrated feedback collection: after every interview or application, recruiters and applicants can rate the interaction, suggest improvements, and this feedback becomes available as anonymized insights for system improvements.
13. Allow recruiters to build a repository of frequently asked interview questions for each posted job, so each future recruiter or team member can quickly reuse or edit them for later rounds.