ResuméX

Transforming the Hiring Lifecycle with Next-Gen AI Features

Problem Statement

- The Challenge: "Build a full-stack AI Enabled HR Evaluation System from scratch that manages the journey from resume upload to a final hiring decision with transparent rationale."

- Hiring new employees is often a hassle, involving manual resume filtering fatigue, multiple interviews, and unconscious bias in selection.

- Recruiters are overwhelmed, skimming resumes in seconds, while candidates are 'ghosted' without feedback. Our website helps ease these difficulties.

Proposed Solution

Resumex is an end to end full stack platform which manages the entire hiring lifecycle

1. Smart Resume Shortlisting: An AI "Gatekeeper" that parses and ranks applicants against the Job description
2. Multi-Modal Assessment Engine: Evaluate a candidate’s job-readiness using multiple input modes ,not just resumes or code.
3. Dual-Track Assessment Logic: Hard skills and soft skills are evaluated independently and merged only at the final decision stage to ensure fairness, transparency, and explainability.
4. The Integrity Shield: A webcam-enabled proctoring system to ensure test validity.
5. Explainable AI: A decision engine that generates a text-based rationale for every "Hire/No-Hire" recommendation.

Module 1: Smart Resume Shortlisting

- Parsing Logic: We use pypdf to extract key entities (Skills, Education, Years of Experience) from uploaded PDF/DOCX files and send it to AI for summary description
- Scoring Heuristics: The system cross-references extracted data against the specific Job Description keywords.
- Auto-Ranking: Candidates are automatically bucketed into:
  - 🟢 High Match (Direct fit)
  - 🟡 Potential (Needs review)
  - 🔴 Reject (Misaligned)

Module 2: Multi-Modal Assessment Engine

- Coding Sandbox: A fully functional, browser-based IDE where candidates write code. It executes securely using piston api and checks hidden test cases given by the recruiter
- Scenario-Based MCQs: Questions presenting workplace conflicts to test judgment and ethics
- Text-Based Responses: Open-ended questions analyzed for communication clarity and reasoning ability
- Slider-Based Inputs: Quantitative psychometric self-assessment

Module 3: Dual-Track Assessment Logic

- Track A: Technical Assessment
  - Focus: Hard Skills (Syntax, Domain Knowledge, Efficiency).
  - Measurement: Automated grading using Execution Time (Latency), Code Conciseness (Memory Proxy), and Code Complexity
- Track B: Psychometric Assessment
  - Focus: Soft Skills (EQ, Resilience, Leadership, Culture Fit).
  - Measurement: Analysis of scenario choices , Text Response and slider inputs.

Final score: Calculated based on Job Description with AI-generated explaination

(example) *final_score = (0.65 * technical_score) + (0.35 * psychometric_score)*

Module 3: The Integrity Shield (Proctoring)

- Real-Time Monitoring:
  - Visual: Browser-based webcam access detects Multiple Faces or No Face using getUserMedia
  - Environmental: Listeners detect Tab-Switching, Copy-Paste events, and forbidden keyboard shortcuts (Alt+Tab).
- Audit Trail:
  - The system logs every suspicious event with a precise timestamp.
  - Recruiters see a "Trust Score" alongside the candidate's technical score.

Module 4: "Explainable AI" Decision Engine

- Beyond the Score:
  - Instead of just a number, the system outputs a Rationale.
- Automated Decision:
  - Generates a clear "Hire" or "No-Hire" recommendation badge.
- The "Why" (Example Output):
  - *"Candidate scored 92% in Technical Assessment but showed low resilience in psychometric scenarios. Recommended for Senior Individual Contributor role rather than Team Lead."*

Technical Stack

1. Frontend (User Interface)

- **Framework: Next.js 14** (App Router) – For server-side rendering and fast performance.
- **Library: React.js** – Component-based UI structure.
- **Styling: Tailwind CSS** – For responsive and modern utility-first styling.
- **UI Components: Shadcn/ui** – For pre-built, accessible components (Cards, Buttons, Inputs).
- **Icons: Lucide React** – For the clean icons used in the dashboard.

2. Backend (API & Logic)

- **Framework: FastAPI** (Python) – High-performance, async web framework.
- **Server: Uvicorn** – ASGI server to run the Python application.
- **ORM: SQLAlchemy** – To manage database interactions using Python classes instead of raw SQL.
- **Data Validation: Pydantic** – Used for validating request data (like UserSync and JobCreate schemas).

3. Database & Storage

- **Database: Supabase (PostgreSQL)** – The primary relational database used to store candidates, jobs, and assessments
- **File Storage:** Initially configured to save PDFs to a local uploads/ folder, with plans to move to cloud buckets.

4. Artificial Intelligence (AI)

- **LLM Model: Google Gemini 2.0 Flash** – Used for summary review of resumes and generating rationale.
  Rule Engine → Score Breakdown → LLM Explanation
- **PDF Parsing: pypdf** – Library used to extract raw text from uploaded PDF resumes.
- **getUserMedia** - used to capture image every 30s during assessment for multiple face

5. Code Execution Engine (Sandbox)

- **Service: Piston API** - An external API used to compile and run candidate code safely

6. Authentication

- **Service: Clerk** (implied by UserSync logic) – Handles user login/signup, while the backend syncs this identity to the internal database.

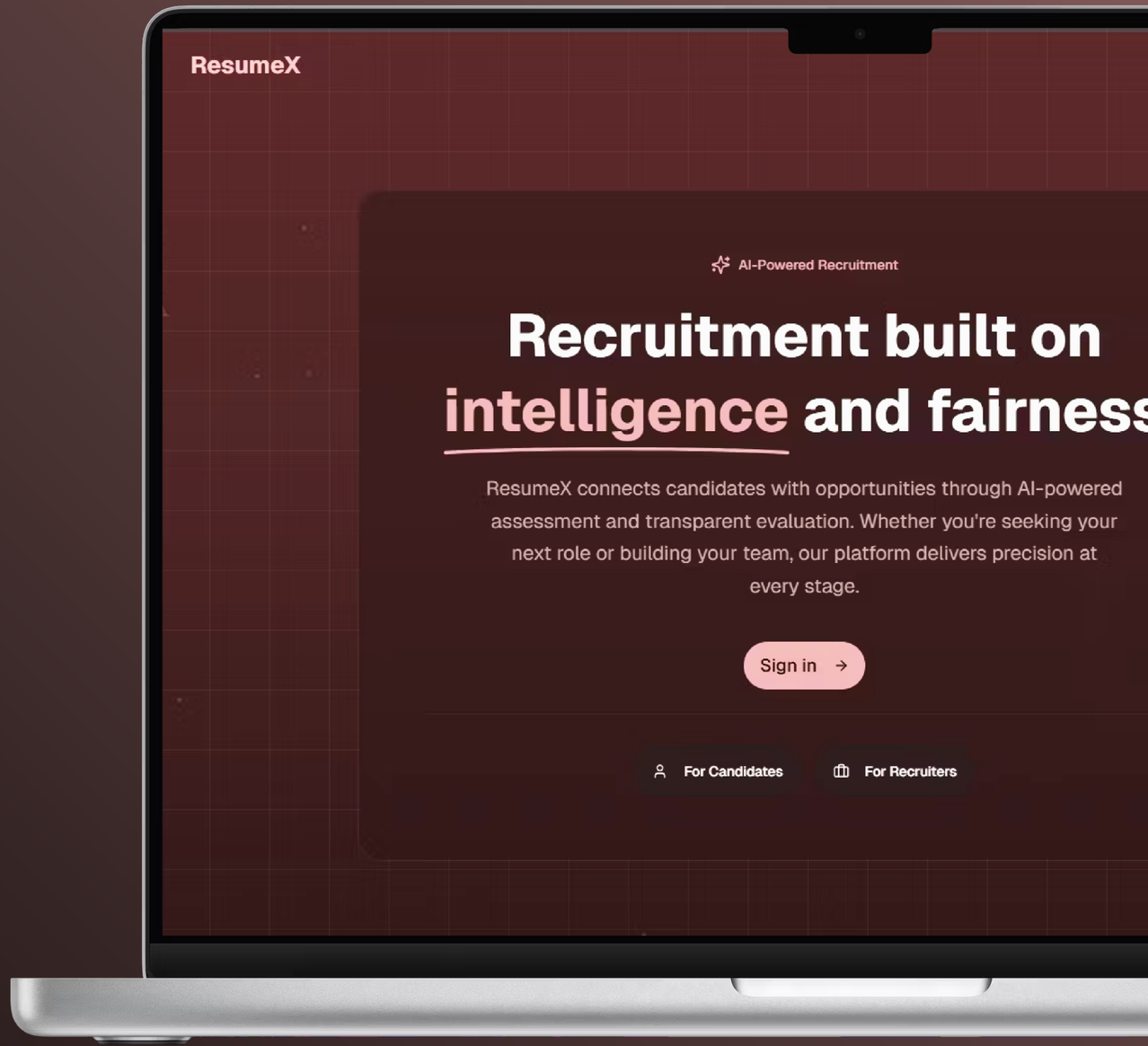
7. Deployment (Planned)

- **Frontend Hosting: Vercel** (Optimized for Next.js).
- **Backend Hosting: Render** (Great for Python FastAPI services).

***stack might change but the architecture will remains same**

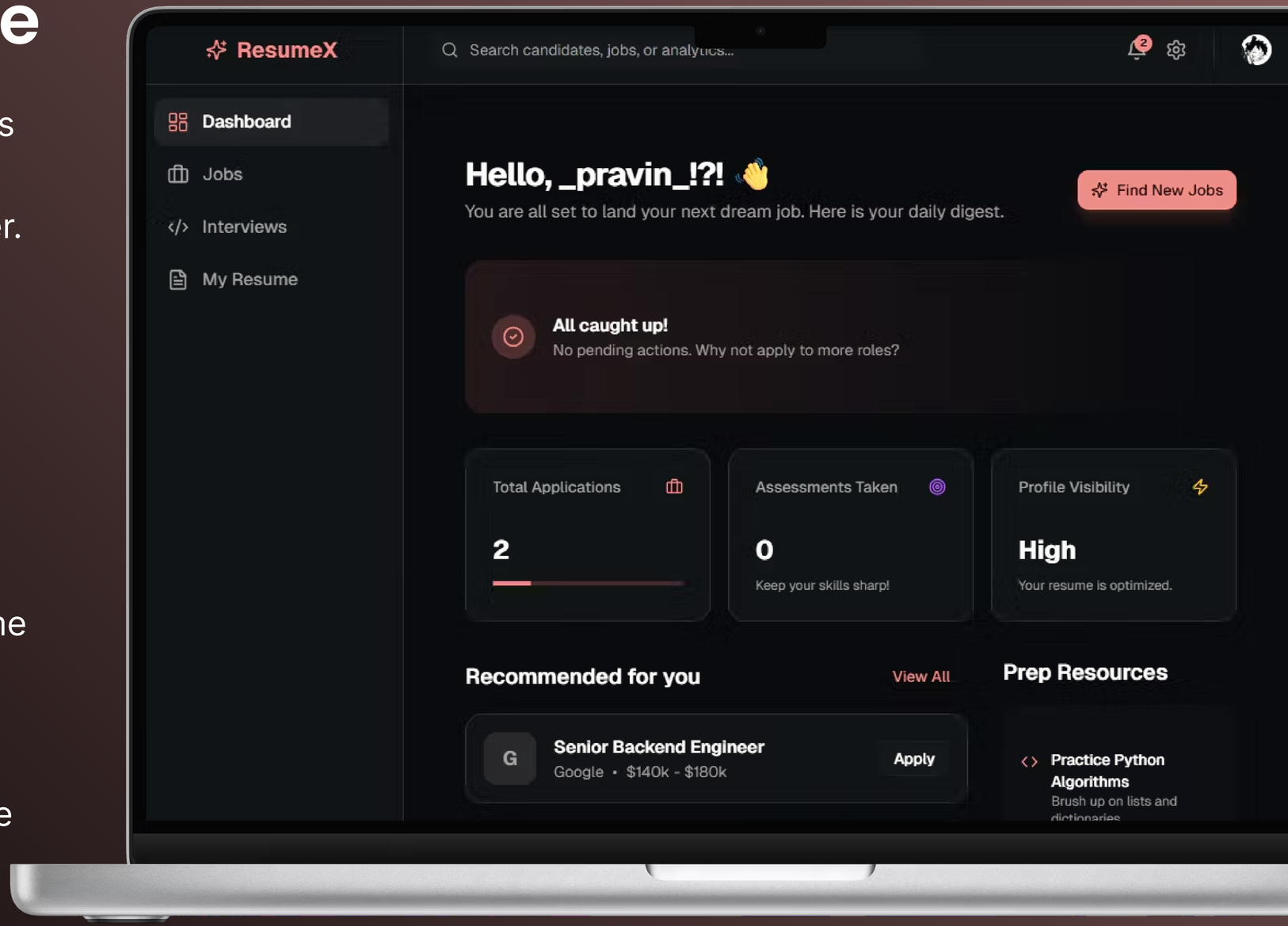
User Experience

1. Clear, distinct pathways for Recruiters and Candidates right from the start. No confusion.
2. Explains the working process of candidates and recruiters in a simplified way
3. Built with Shadcn/ui & Tailwind CSS for a clean, professional, and distraction-free interface.
4. Users can easily logging with google, LinkedIn using clerk

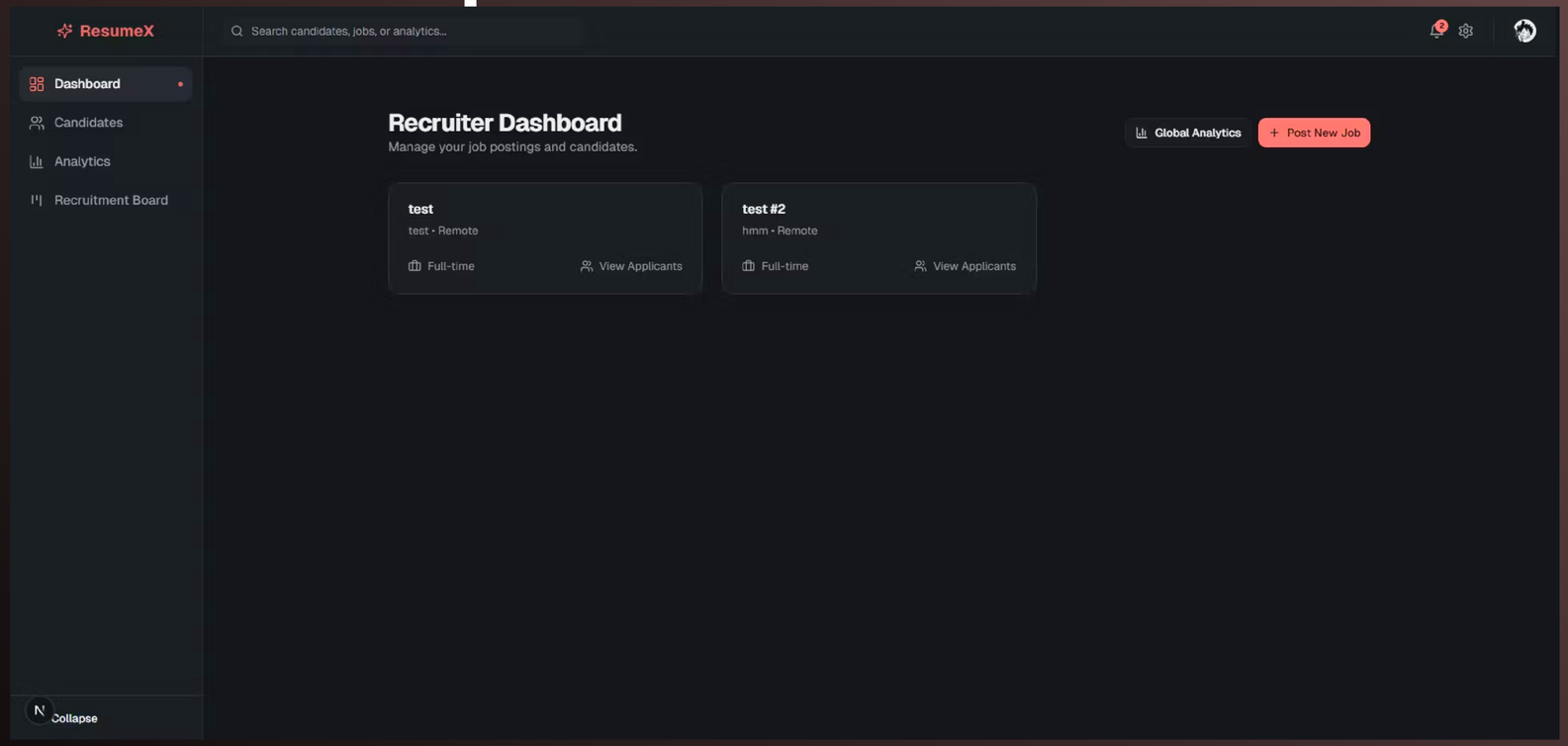


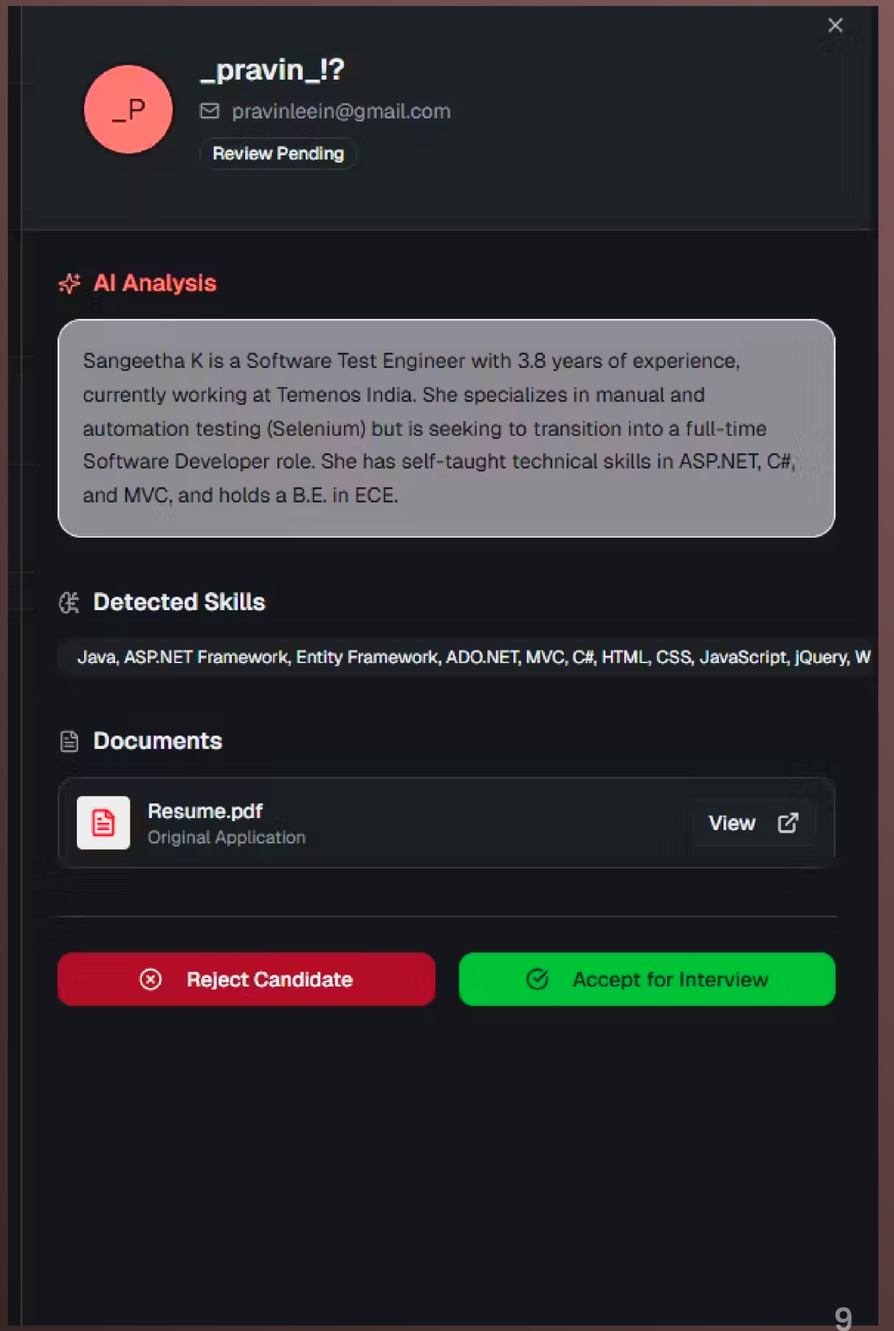
Candidate Experience

1. A single, unified dashboard where users manage everything: Applications, Interviews, and Resume data. No clutter.
2. Jobs: users can apply and search for new jobs
3. Interviews: shows all the interview's progress you have applied and if you are selected for taking up assessment
4. My Resume: users can post their resume and get recommended for job opportunities based on their resume
5. Step-by-step progression with real time progress indicators
6. Visual warnings on tab switch or copy paste , Minimal intrusion with clear system feedback



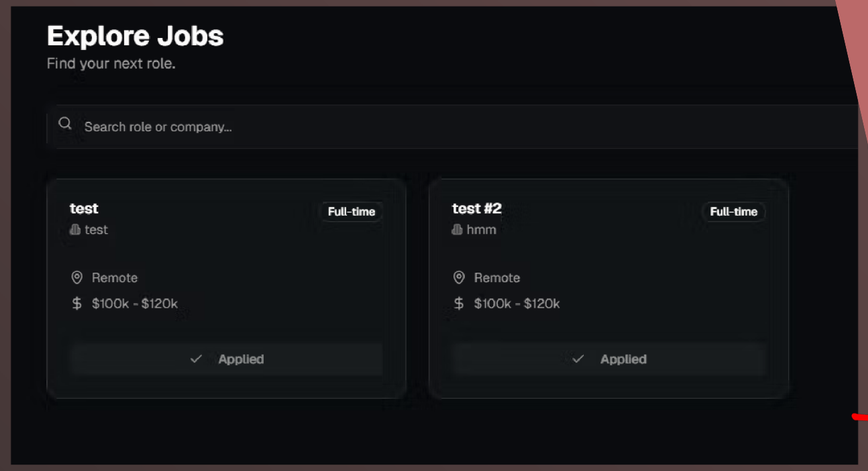
Recruiter Experience

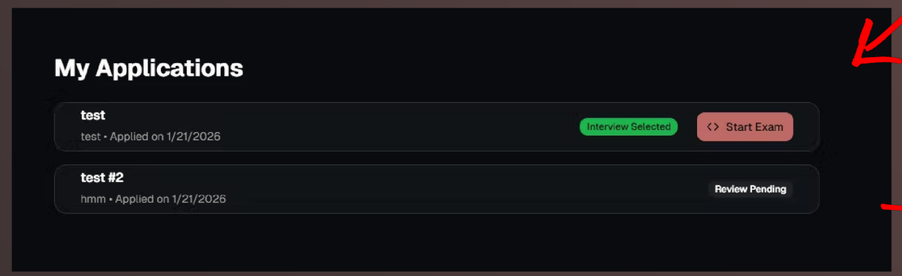


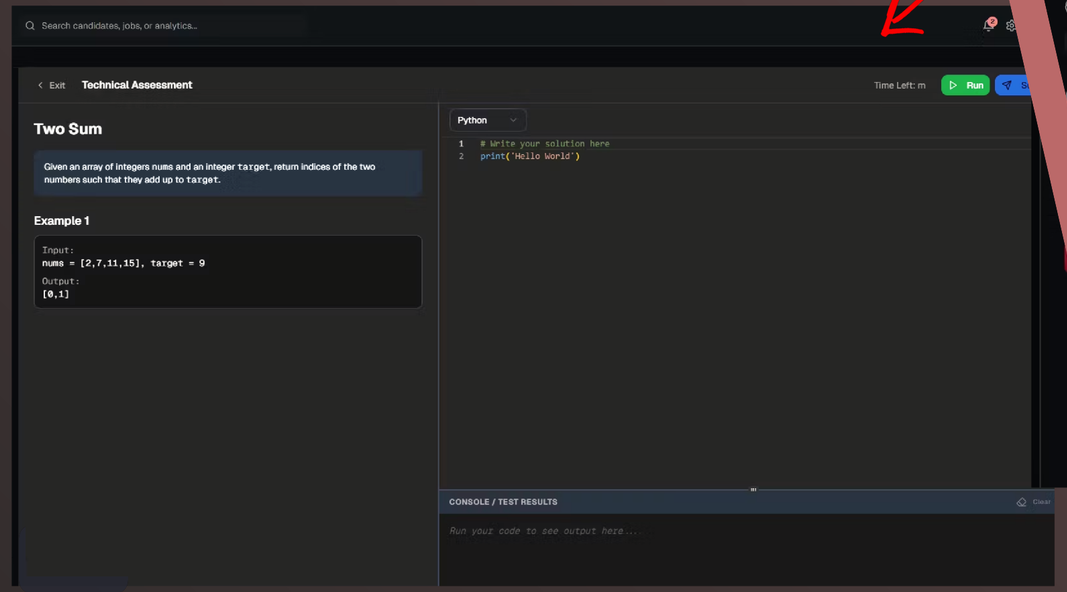


- A neat simple dashboard where the user could see all the details of the jobs posted
- Users can view the AI analysis of candidate's resume and can either manually or automatically select candidates for interviews
- Users can create assessments as they wish and get notified if any candidate is involved in malpractice
- Interview analysis are automated with text-based justification by our system
- Users can pick the best candidates recommended by our system

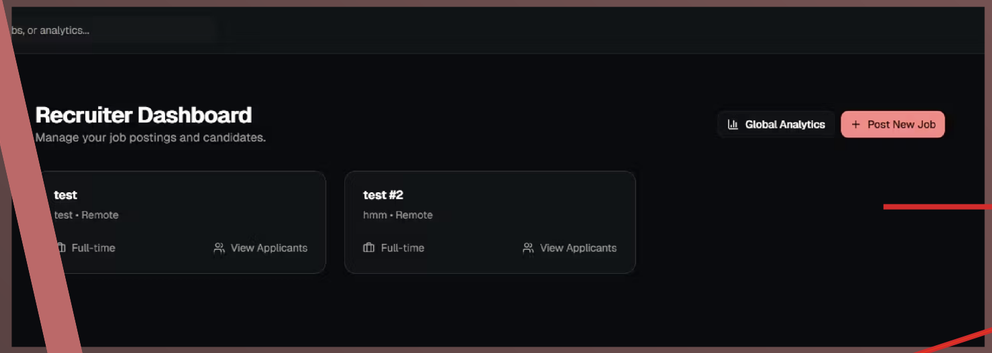
Candidate workflow

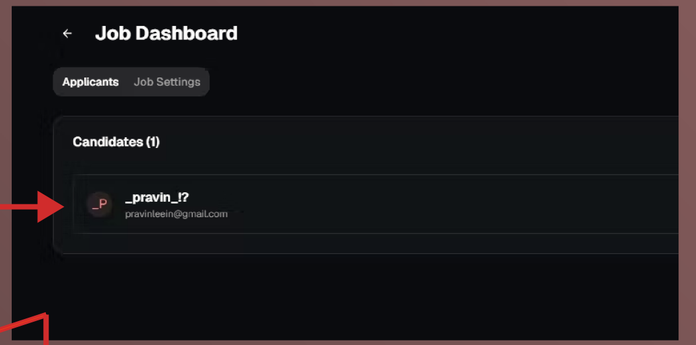


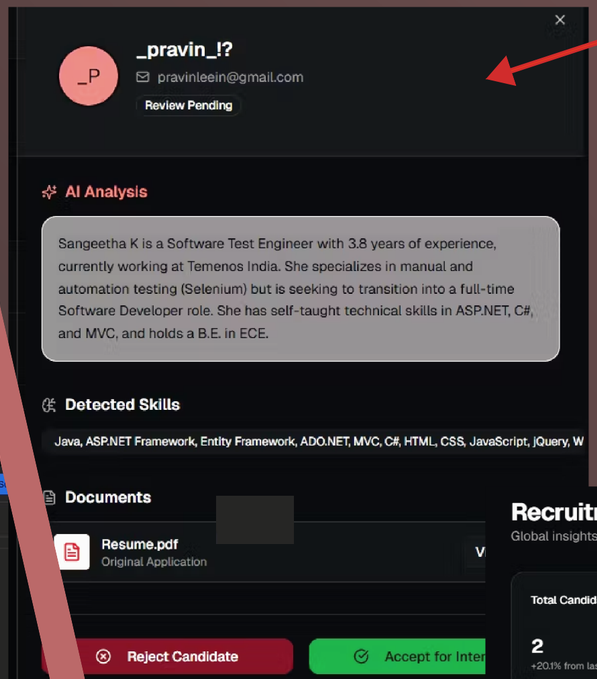


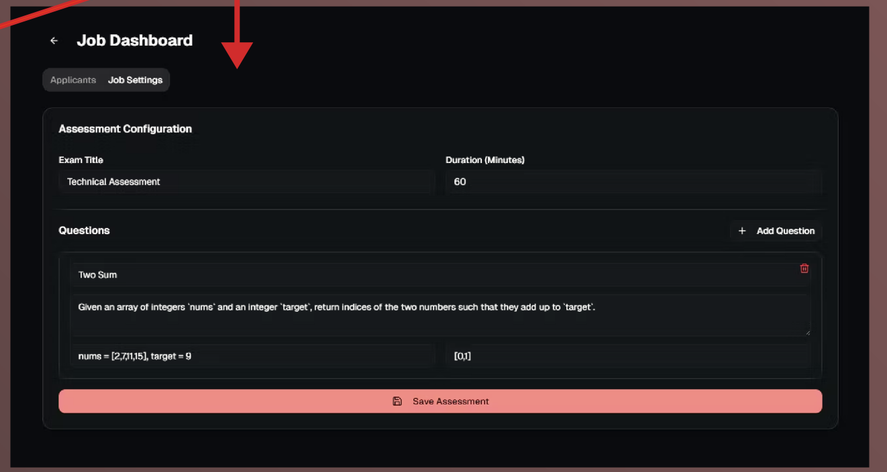


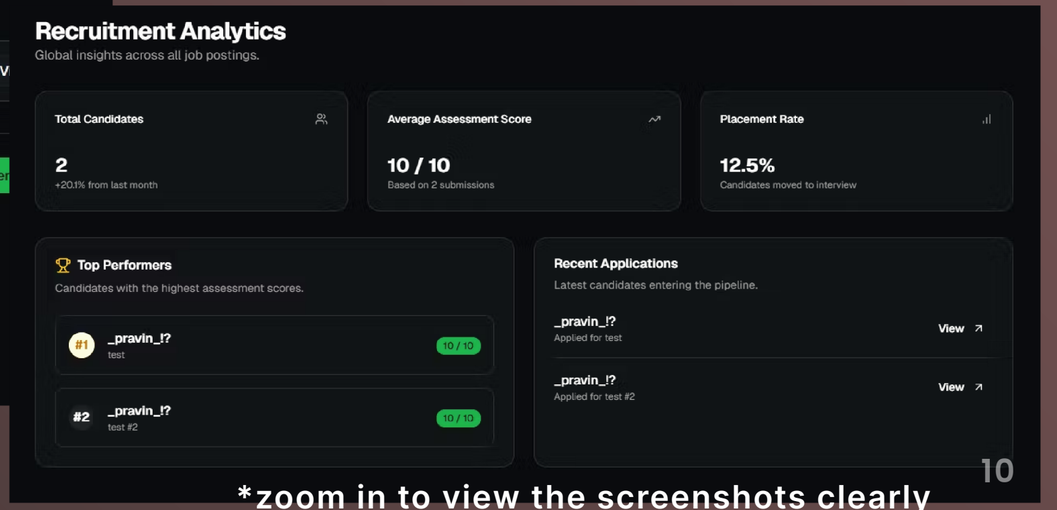
Recruiter workflow











*zoom in to view the screenshots clearly

System Architecture

1. AI Resume Parsing

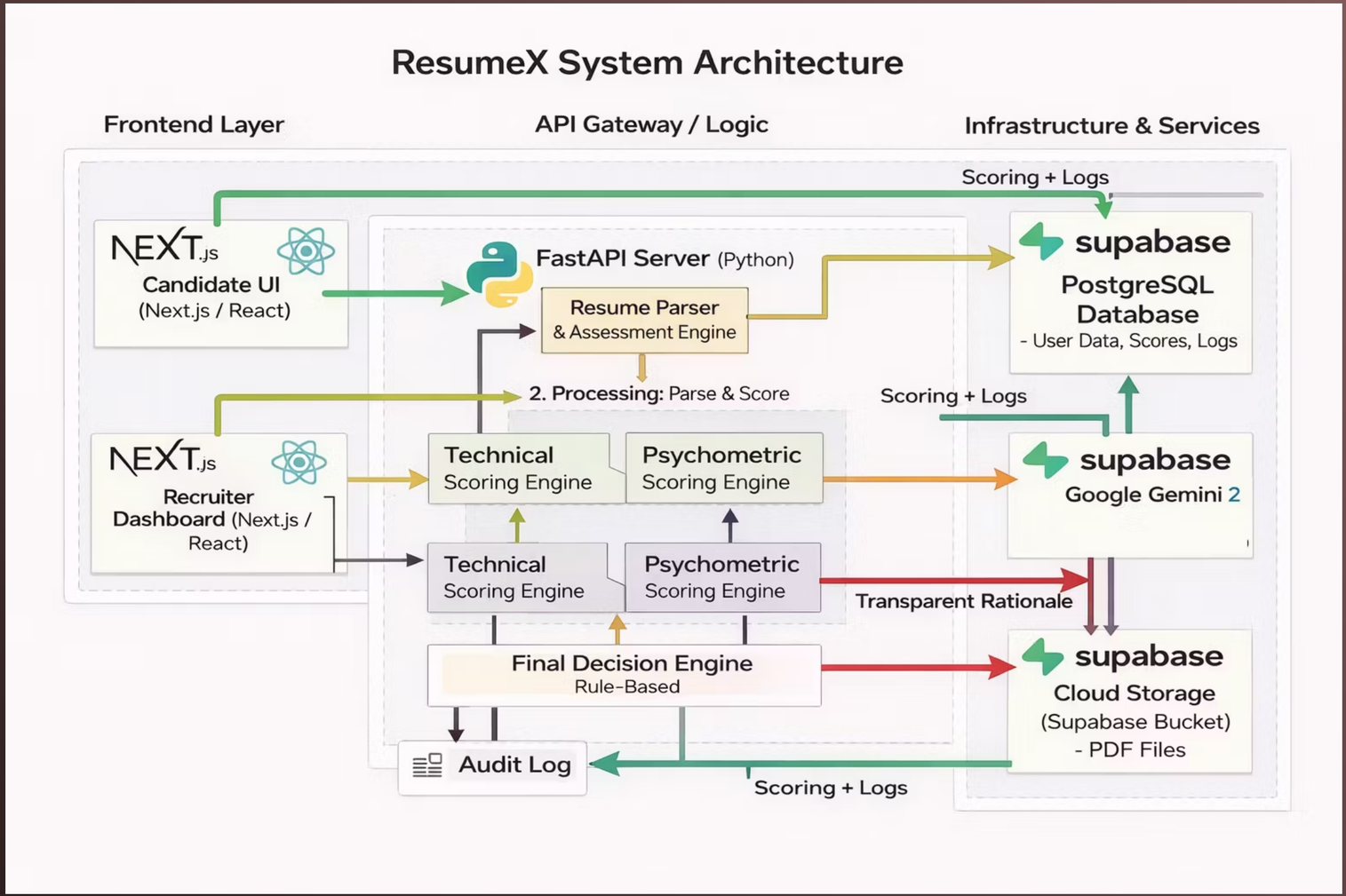
- Reads text from uploaded PDFs using “pypdf”.
- Sends text to AI to generate a "Smart Summary" and extract "Technical Skills" as JSON.
- Includes error handling to ensure data is captured even if the AI fails.

2. Job Application Handling

- Stores the resume file securely.
- Creates/Updates the Candidate profile in the database with the new AI-parsed data.
- Generates an Application record connecting the user to the specific job.

3. Recruiter Dashboard Data

- Joins data from Applications, Candidates, and Jobs tables into one view.
- Merges the candidate's technical Assessment Score (from the coding sandbox) so recruiters see everything in one row.



4. Utilities

- Tracking: Lets candidates view their application history and status.
- Controls: Allows recruiters to update status i.e. "Accepted/Rejected" and prevents duplicate applications.

*the tech implement might change but logic reminds the same

Why ResumeX?

We aim to build a shared ecosystem where hiring and job searching are unified, transparent, and data driven, leveraging emerging AI technologies to ensure fair and explainable decisions.

Meet Us

Pravin I (RA2411004010680) Team Leader
Farhaan (RA2411004010731)
Adarsh S (RA2412703010025)