

# AI-INTERVIEW PLATFORM

**Personalized mock interviews with AI-driven feedback**

Gautam Buddha University  
Btech CSE  
4<sup>th</sup> year

**Project Guide:**

Dr.Rakesh Kumar Yadav

**Team Members:**

- 1.Rohit Kumar
- 2.Prakhar Diwakar
- 3.Khushi Chaudhary
- 4.Rahul Prajapati

# PROBLEM STATEMENT

- **Job seekers often lack access to personalized and realistic mock interview practice.**
- **Traditional mock interviews are time-consuming, static, and offer limited feedback, making it difficult for candidates to identify weaknesses, track progress, and build confidence.**
- **There is a need for an AI-driven platform that provides adaptive interview simulations, real-time performance evaluation, and personalized improvement insights.**

# WHY IS INTERVIEW PREPARATION DIFFICULT?

**Lack of Access:** Finding experienced interviewers for practice is difficult, time-consuming, and often expensive.

**No Actionable Feedback:** Most practice is done alone, with no objective feedback on performance, tone, or answer quality.

**High Anxiety:** There is no safe, repeatable environment for users to build confidence and overcome interview anxiety.

# ABOUT OUR PROJECT

This platform is an AI-powered mock interview system designed to help users practice real-world interview scenarios. It dynamically generates questions, evaluates user performance (audio-based), and provides personalized insights, progress tracking, and learning recommendations.



**A↑**  
**INTERVIEW**  
PLATFORM

# CORE FEATURES

**Personalized Dashboard:** Allows users to track their complete interview history, see performance metrics, and visualize their progress over time.

**Dynamic Question Generation:** Uses LLAMA 3 to generate relevant, role-specific behavioural questions in real-time, moving beyond static question banks.

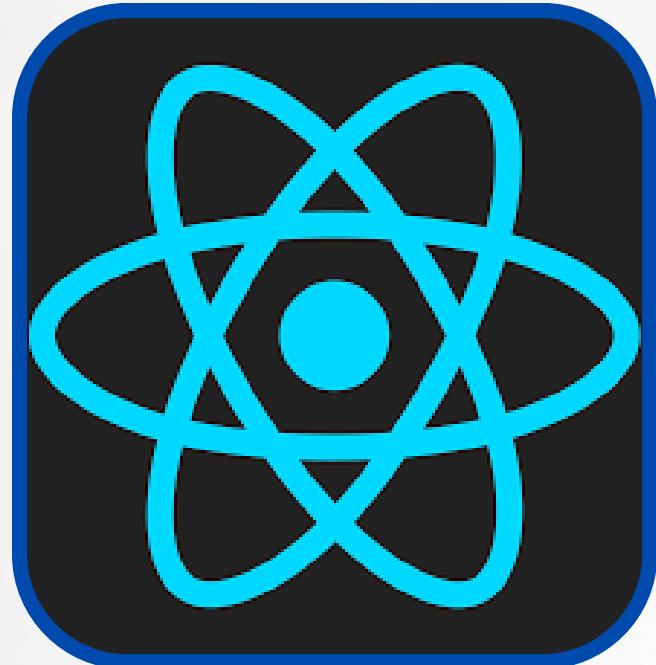
**Real-time Audio Responses:** Captures user answers via their microphone, simulating a more realistic vocal interview and allowing for future confidence analysis.

1

2

3

# PROJECT ARCHITECTURE



**Frontend (React):** User interacts with the web application.

**Authentication (Clerk):** Manages secure user login and profiles.

**Backend (FastAPI):** Handles all business logic and API requests.

**AI (Langchain + LLAMA 3):** Orchestrates and generates interview questions.

**Audio (Whisper):** Transcribes the user's spoken audio into text.

**Database (Mongo Atlas):** Stores user data, sessions, and feedback.

**Dashboard & Analytics:** Displays performance trends over time and tracks history of completed interviews.

# FRONTEND OVERVIEW

## Built with React and Tailwind CSS:

The frontend provides a clean, modern, and fully responsive user interface that adapts smoothly across all devices for an optimal user experience.

## Structured Navigation and Pages:

Includes dedicated routes for Login, Dashboard, and Interview Page, ensuring organized navigation and seamless user interaction throughout the platform.

## Integration and Authentication:

Connects to the backend via REST APIs for data exchange, while Clerk handles secure authentication and user management processes.

1

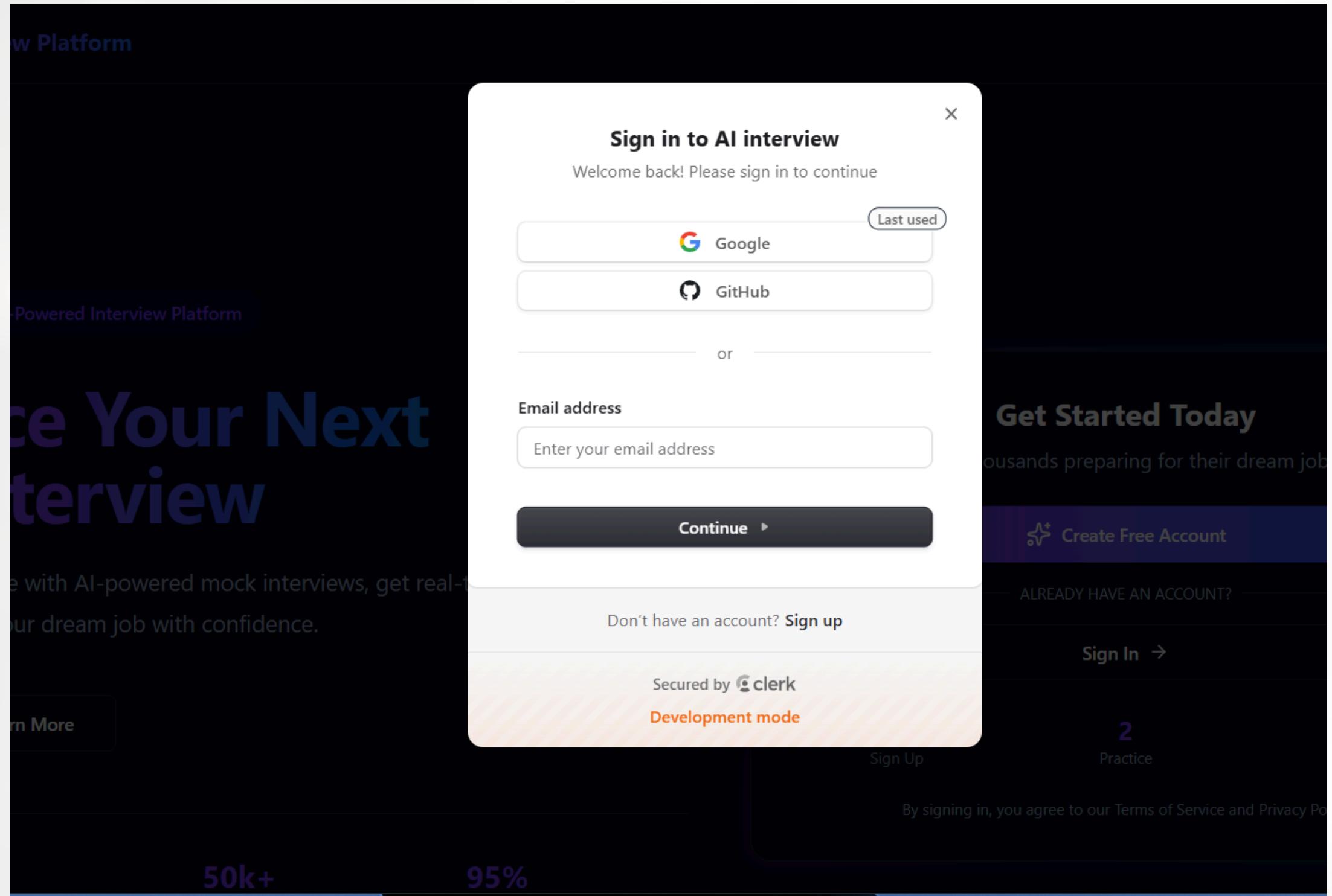
2

3

# DATA FLOW



# UI WALKTHROUGH



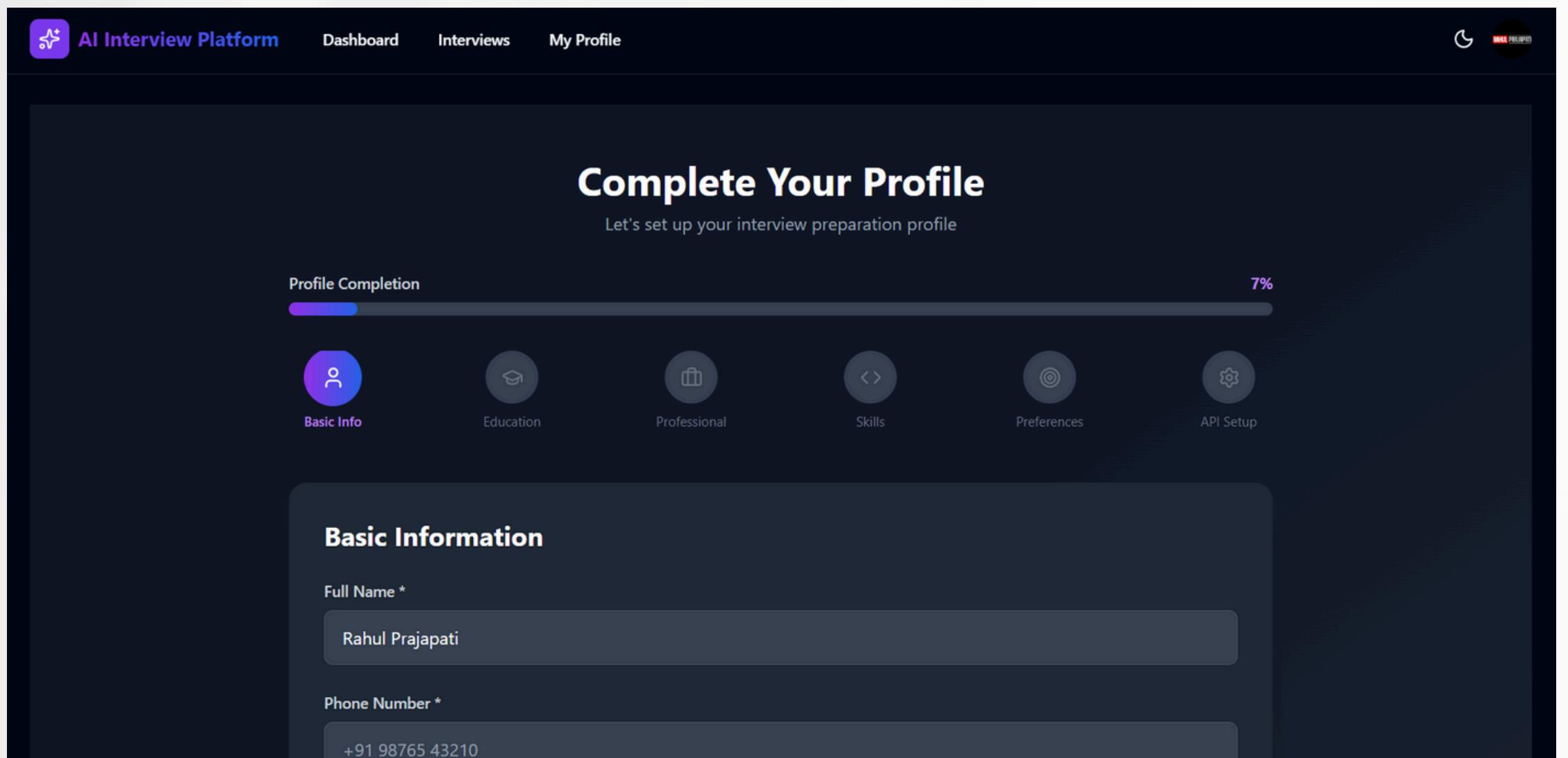
## Login Page (Clerk Authentication):

Uses Clerk for secure user login and sign-up. It manages user sessions, profiles, and ensures only authenticated users can access the dashboard and interview pages.

## Profile Page Completion

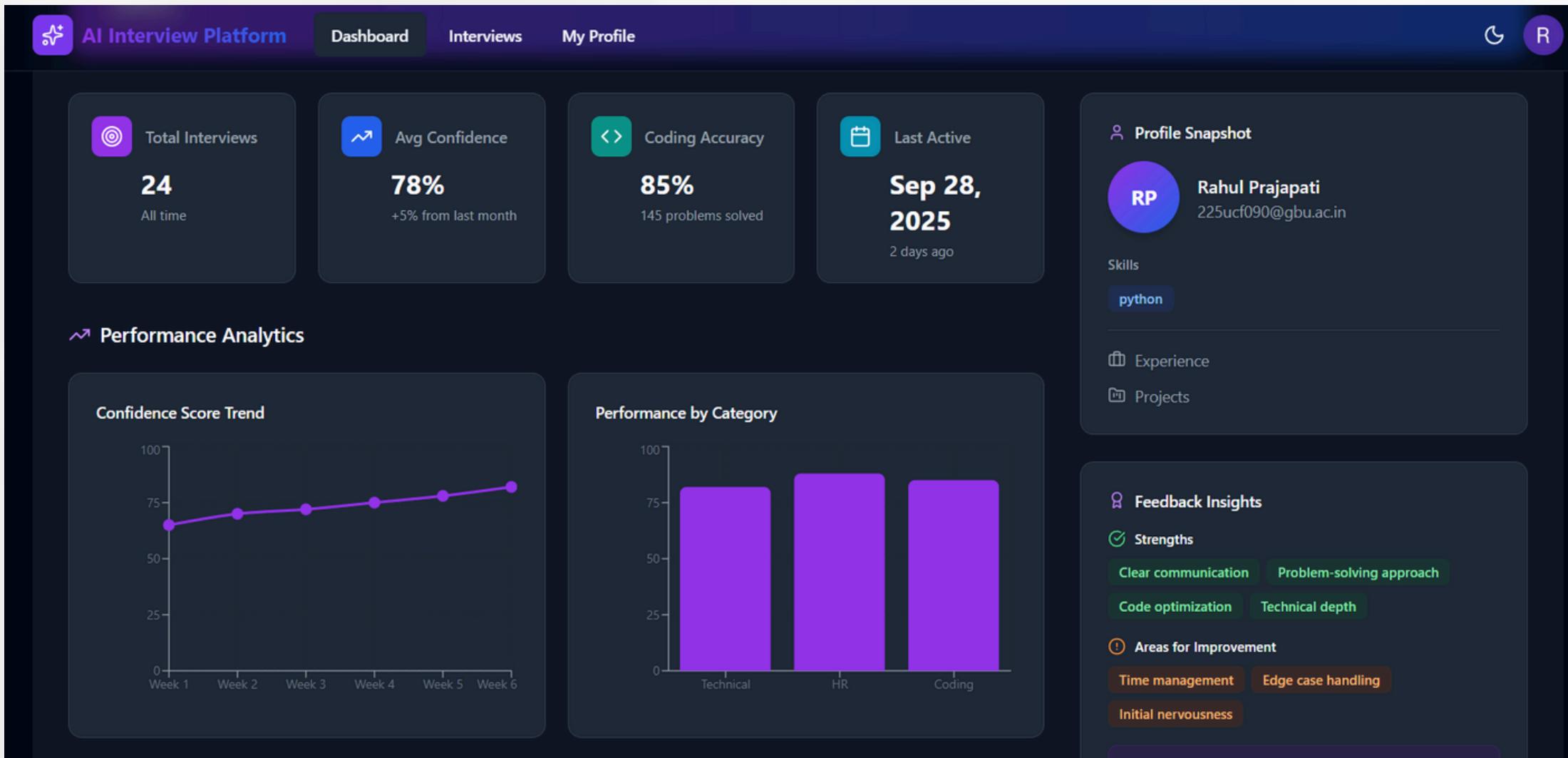
Users can create and complete their profiles by adding details like name, goals, and preferred interview type.

This helps the system personalize interview questions, track progress, and provide tailored feedback and course recommendations.



The screenshot shows the 'Start Interview Page' of the AI Interview Platform. At the top, there is a dark header bar with the platform logo, 'AI Interview Platform', and navigation links for 'Dashboard', 'Interviews', and 'My Profile'. In the top right corner, there are icons for a profile picture, a gear, and a refresh symbol. The main content area has a dark purple background with white text. It features a title 'Prepare for Your Interview' and a subtitle 'Configure your interview session and get ready to showcase your skills'. Below this, there is a three-step progress bar with circles numbered 1, 2, and 3. Step 1 is labeled 'Select Role', step 2 is 'Interview Type', and step 3 is 'Duration'. Under the 'Duration' section, there is a heading 'Select interview duration' and a slider with the label 'Duration'. The slider shows a range from '3 min (Quick)' to '30 min (Full)', with '3 min' highlighted in blue. Below the slider, there are buttons for '3m', '5m', '10m', '15m', '20m', and '30m', with '3m' also highlighted in blue.

**Start Interview Page:** Displays the interview questions generated by the AI model and includes an audio recording button for users to record their responses. This page serves as the main interaction point for the mock interview experience.



**Dashboard Page:** Provides visual feedback and performance insights to the user after each session. It shows strengths, weaknesses, and progress through interactive charts and analytics.

QUESTION 2  
4 questions remaining

Recording answer...  
Confidence: 20%

What part of the question "Tell me about yourself" was unclear?

Listening... speak clearly into your mic.

Recording: 00:00

Repeat Question Skip Question

Answer History  
Q1

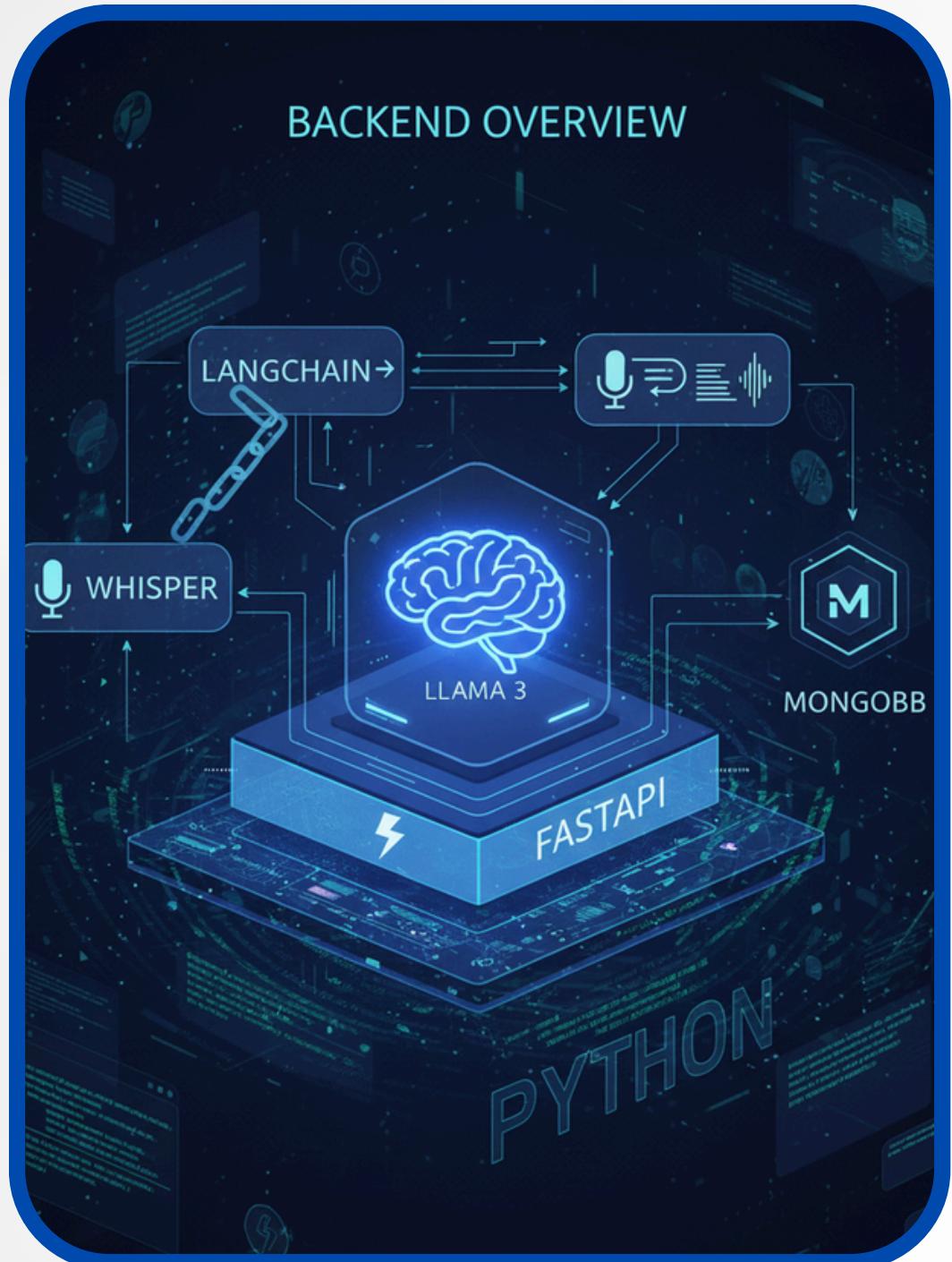
Session Stats  
Questions Answered  
Avg. Confidence

Behavior Tracking  
Engagement  
Looking Away  
Blink Rate  
Fidget Score

Camera

**Interview Session Page:**  
**Provides a live, interactive interview environment with voice-based Q&A, real-time transcript, recruiter avatar responses, and a split-screen coding editor—allowing candidates to experience a realistic mock interview from start to finish.**

# Backend Overview



- **Built with FastAPI (Python):** The backend is developed using FastAPI, a high-performance Python framework that handles all API requests efficiently and ensures smooth communication between the frontend, database, and AI components.
- **Core Functionalities:** Manages critical operations like AI question generation, audio upload and transcription requests, and feedback storage & retrieval. Each function is modular, allowing scalability and easy integration of future features.
- **Database & AI Integration:** Uses MongoDB Atlas to store user data, interview history, and feedback securely. The backend also integrates with the LangChain pipeline, enabling seamless interaction with the LLAMA 3 model for dynamic question generation.

# BACKEND MODULES OVERVIEW

1

## **Question Generation (LangChain + LLAMA 3):**

Uses LangChain's prompt templates and LLAMA 3's reasoning capabilities to generate realistic behavioral interview questions tailored to specific roles or user preferences.

2

**Response Processing (Whisper + Feedback Engine):** The Whisper model converts user audio responses into text, which is then analyzed by the feedback engine.

3

## **Feedback Generation:**

The system reviews the full interview transcript and scores each response on relevancy, clarity, depth, examples, and communication. It then produces a brief summary highlighting strengths and key improvement areas, giving candidates clear, actionable feedback after each session.

# BACKEND MODULES OVERVIEW

4

## **Audio Processing (Confidence Scoring):**

Uses Librosa to analyze voice features such as pitch stability, energy, tempo, and hesitation patterns. These audio signals are converted into a confidence score that reflects how confidently the candidate answered each question.

5

## **Behavioral Analysis (Face Mesh API):**

Utilizes Face Mesh to track facial landmarks, eye focus, and micro-expressions in real time. This data helps estimate attention level, engagement, and visible confidence during the interview.

# LLAMA 3 QUESTION GENERATION ARCHITECTURE

## **Key Components:**

### **Controller Model (Groq LLaMA-3 + LangChain)**

→ Decides the interviewer's next action

### **Question Generator**

→ Produces high-quality adaptive questions

### **Vector Memory (FAISS)**

→ Tracks topics, prevents repetition

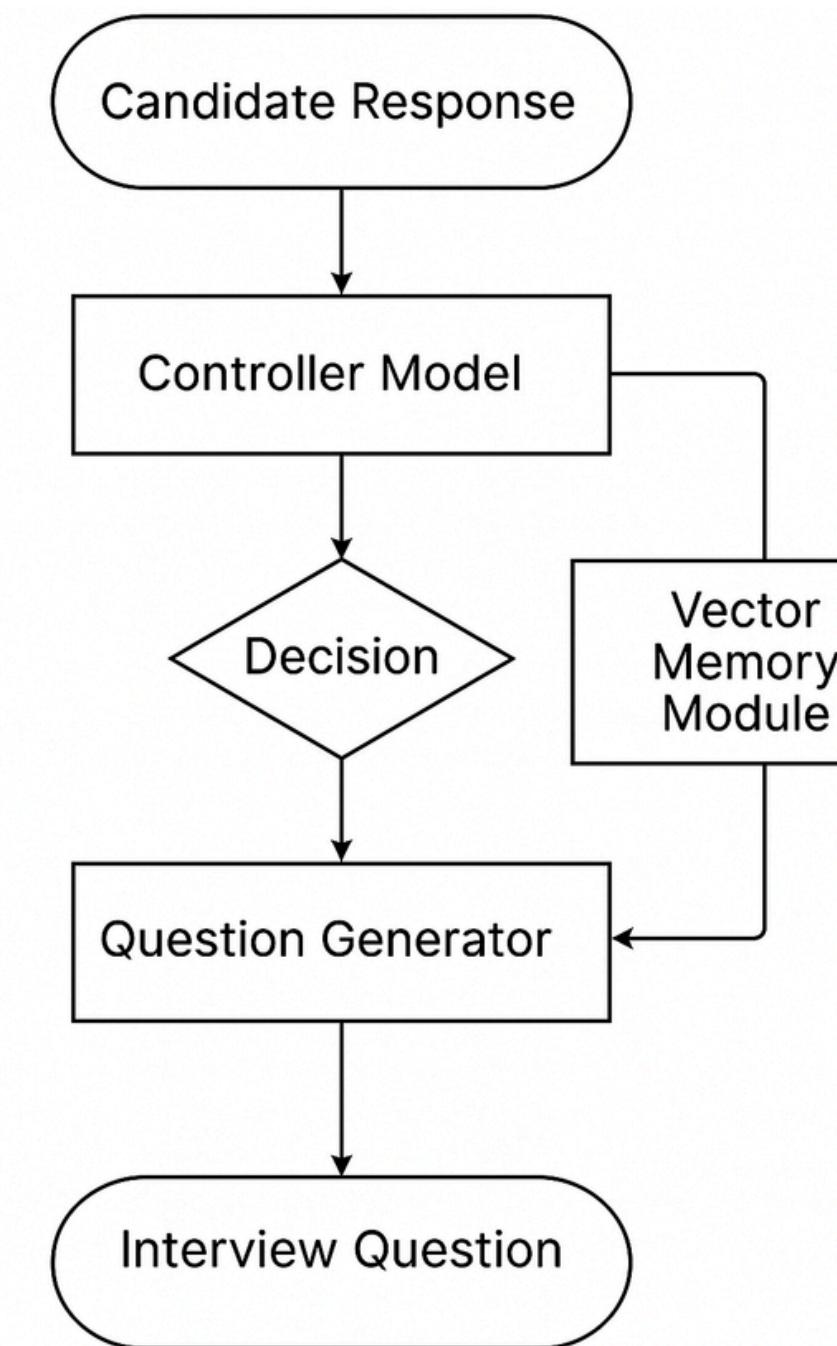
### **Session Manager**

→ Manages rounds, history, feedback



# Question Generation ARCHITECTURE

## FLOW DIAGRAM



# DASHBOARD & ANALYTICS

## Purpose of the Dashboard

- Central hub for tracking all mock interview activity in MockMate AI.
- Helps users understand their progress in confidence, consistency, and skills.
- Converts raw interview data into clear visual insights and streaks.

## Core Data Sources

- User profile: name, email, skills, experience, projects.
- Interview history: date, role, mode (Full / Technical / HR / Coding), feedback.
- Calculated analytics: confidence trends, average scores, streaks, weekly activity.

## Profile Hero Section

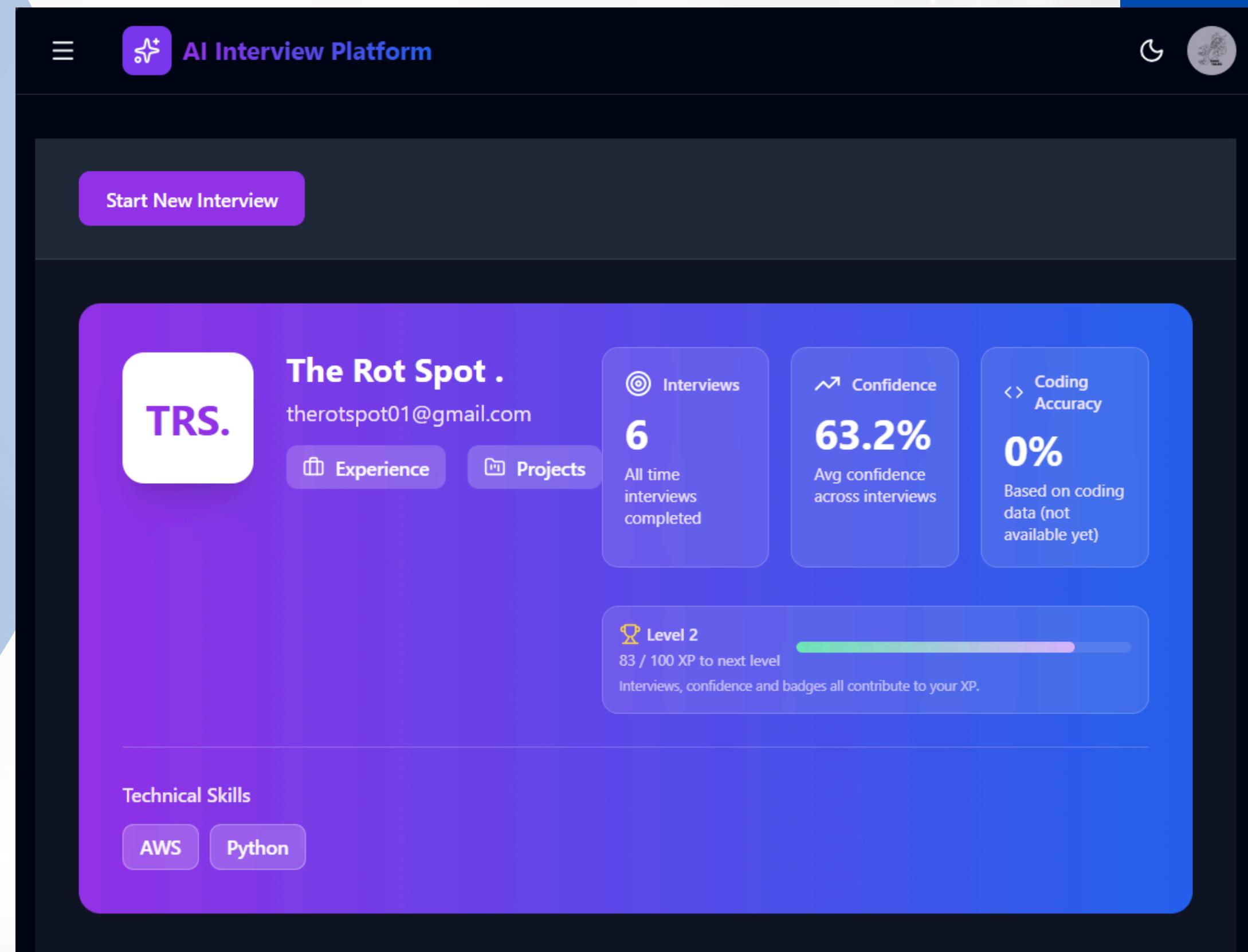
- Gradient card showing user initials avatar and full name.
- Displays email and small chips for experience (e.g., "2 years") and projects count.
- "Technical Skills" row shows skills from Profile.skills as pill badges.

## Top Stats Summary

- Total Interviews: counts all completed interviews.
- Average Confidence: average average\_confidence or avg\_confidence across interviews, shown in %.
- Coding Accuracy: placeholder metric for future coding-specific analytics (currently 0%).

## XP & Level System

- XP is calculated from:
- Number of interviews (totalInterviews \* 10).
- Average confidence (confidence percentage).
- Badges unlocked (each badge adds XP).
- Level derived from total XP (every 100 XP = 1 level).
- Progress bar shows current XP vs XP needed for next level, highlighting gamification.



# DASHBOARD & ANALYTICS

## Key Sections in the UI

- Top gradient profile hero with name, experience, projects, and skills chips.
- Main content: performance analytics, coding insights, achievements, interview table.
- Right sidebar: profile snapshot, activity calendar, dynamic feedback insights, resume entry.

## Tech & Libraries

- Built in React with hooks (`useState`, `useEffect`) and React Router navigation.
- Uses `lucide-react` icons for visual cues (Trophy, Target, Flame, Code, etc.).
- Uses Recharts for interactive charts (LineChart, BarChart, PieChart).
- Applies Tailwind CSS classes for a modern, responsive layout with dark mode support.

## Confidence Score Trend (Line Chart)

- Uses interview dates on X-axis and confidence (%) on Y-axis.
- Each point represents a single interview's confidence.
- Shows how confidence improves (or drops) over time, helping users reflect on practice impact.
- Performance by Category (Bar Chart)
- Categories derived from interview mode:
  - Full, Technical, HR (Behavioral), Coding.
- Supports two metrics via toggle:
  - Avg Confidence: average confidence per category (0–100%).
  - Avg Score: average overall score taken from `interview.feedback` (`overall_score / overall / overall.score`).
- Bar colors change by performance: red (low), yellow (medium), green (high).
- Helps users identify strongest and weakest interview types.

## Best Category Card & Supporting Stats

- “Best Category” stat card shows category with highest confidence and its %.
- Additional cards show Current streak, Interviews this week, and Last active date.
- Reinforces daily discipline and recent activity patterns.



# DASHBOARD & ANALYTICS

## Interview History Table

- Lists all interviews with: Date, Role, Mode, Score, Status, and Action.
- “View details” expands a row to show:
  - Overview: role, mode, date, average confidence, average focus.
  - Feedback snapshot: technical / behavioral / coding scores and short summaries.
- Quick link to full report page for each interview.

## Interview Activity Calendar (Heatmap)

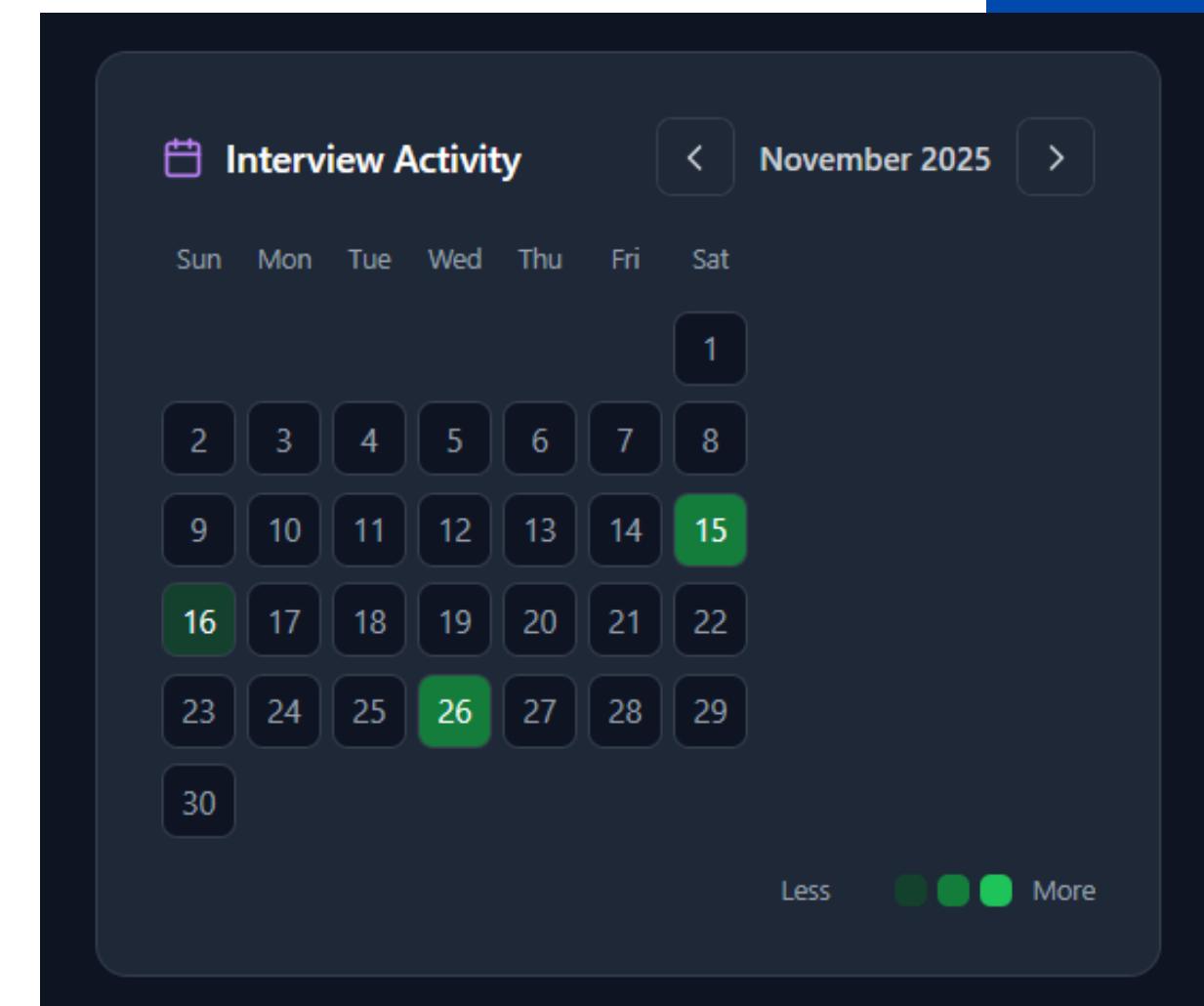
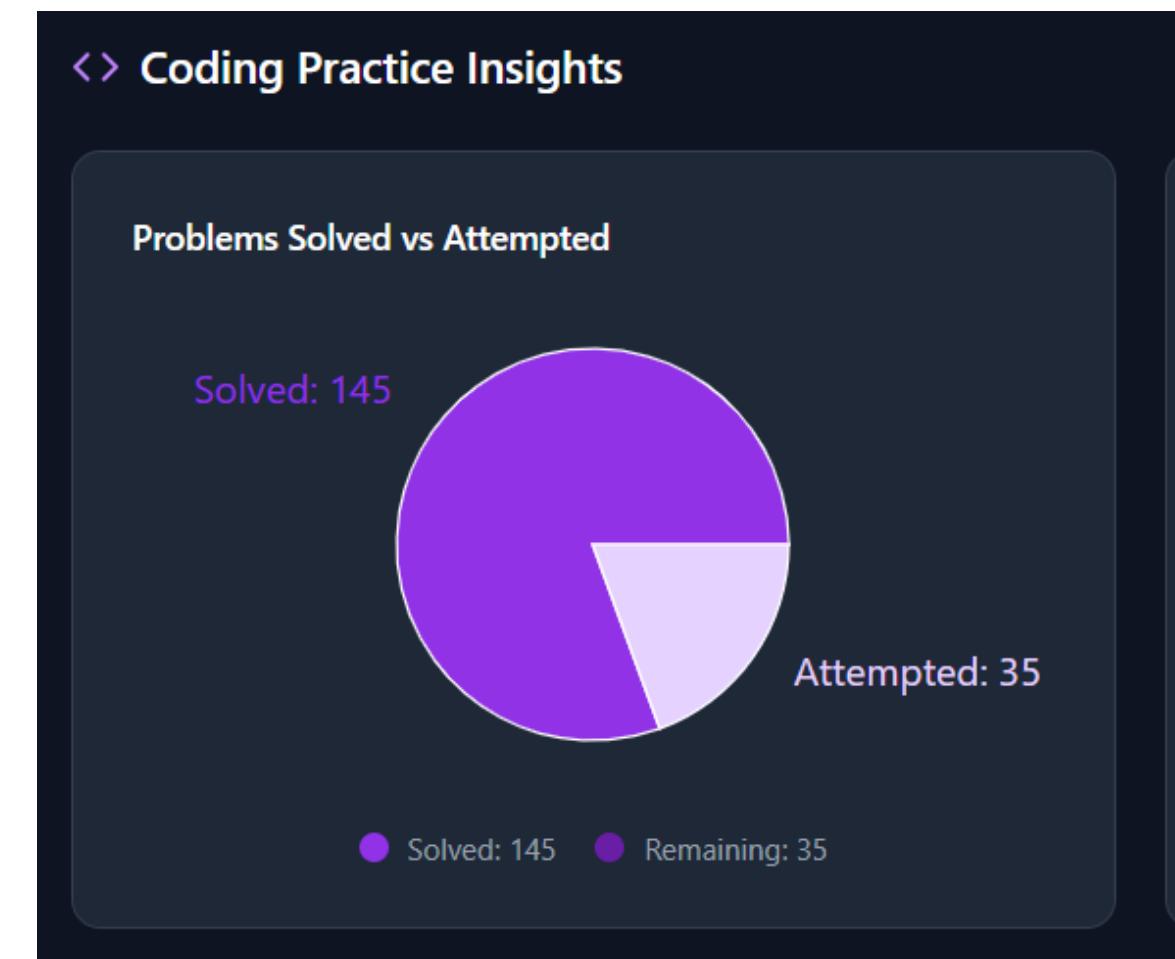
- Calendar for the current month, navigable via previous/next month buttons.
- Each day cell is shaded by number of interviews that day (lighter to darker green).
- Legend explains intensity (“Less” → “More”).
- Clearly shows practice frequency and gaps in preparation over the month.

## Achievements & Badges System

- Badges grouped by Activity, Consistency, Performance, and Category Mastery.
- Examples: “First Step” (first interview), “On a Roll” (5-day streak), “Tech Guru” (75% technical confidence).
- Unlocked badges shown with green styling; locked ones show progress bars.
- Reinforces targets such as number of interviews, streak length, and confidence goals.

## Feedback Insights Sidebar (Dynamic AI Summary)

- Uses latest interview feedback to generate:
  - Strength tags (e.g., “Strong technical problem-solving”, “Good communication”).
  - Improvement tags (e.g., “Improve technical depth”, “Practice coding edge cases”).
  - Small cards for latest Avg Confidence and Avg Focus.
- “AI Insight” text block gives a short, human-readable summary of how the user is doing and what to focus on next.
- Makes feedback quick to scan and actionable without reading the full report every time.



## Interview History

DATE	ROLE	MODE	SCORE	STATUS	ACTION
Nov 15, 2025, 04:49 AM	data scientist	Technical	--	Completed	<a href="#">View details</a>
Nov 15, 2025, 05:04 AM	full stack developer	HR	--	Completed	<a href="#">View details</a>
Nov 15, 2025, 06:04 AM	product manager	HR	--	Completed	<a href="#">View details</a>
Nov 16, 2025, 04:24 PM	full stack developer	HR	--	Completed	<a href="#">View details</a>
Nov 26, 2025, 06:20 PM	full stack developer	HR	--	Completed	<a href="#">View details</a>
Nov 26, 2025, 07:18 PM	frontend developer	Technical	--	Completed	<a href="#">View details</a>

# DASHBOARD & ANALYTICS

## Frontend ([dashboard.jsx](#))

- Built using React (Functional Components) with hooks like useState, useEffect, and useMemo.
- UI styled with Tailwind CSS, providing responsive and modern layouts.
- Recharts used for dynamic visual charts:
  - LineChart for confidence trend
  - BarChart for category performance
  - PieChart for coding insights
- Lucide-react icons for clean UI elements.
- Uses React Router for navigation to interview details & profile pages.

## APIs Connected in [dashboard.jsx](#) (Short Version)

The dashboard uses four main backend APIs:

### [GET /api/getUserProfile](#)

Fetches user profile: name, email, experience, projects, skills, avatar, sidebar info.

### [GET /api/getDashboardStats](#)

Returns dashboard analytics: total interviews, avg confidence, weekly stats, streaks, XP & level, coding progress, badge progress.

### [GET /api/getInterviewHistory](#)

Provides full interview history: table data, category-wise stats, confidence trend, bar chart values, activity calendar data.

### [GET /api/getInterview/{id}](#)

Fetches detailed report for one interview: technical/HR/coding scores, strengths, improvements, overall score, AI insights.

## Backend Tech (Assumed)

FastAPI/Node/Django REST, MongoDB/PostgreSQL, JWT authentication, deployed on Vercel/AWS/Render.

```
...  
@app.get("/api/interviews/{interview_id}")  
def get_interview(interview_id: str, user: str =  
Depends(get_current_user)):  
    interview =  
interviews_collection.find_one({"_id":  
ObjectId(interview_id), "userId": user})  
    if not interview:  
        raise HTTPException(status_code=404,  
detail="Interview not found")  
    interview["_id"] = str(interview["_id"])  
    return interview
```

```
...  
export const getInterviewHistory = async () => {  
    const headers = await applyAuthToken();  
    const response = await  
api.get("/api/interviews", { headers });  
    return response.data;  
};
```

# DASHBOARD & ANALYTICS

- The MockMate Dashboard serves as a complete, smart hub for monitoring interview readiness, practice consistency, and progress.
- It combines profile insights, confidence tracking, performance analytics, and AI-driven feedback into one seamless interface.
- Visual elements like line charts, bar charts, pie charts, and activity calendars ensure users quickly understand their strengths and weaknesses.
- Gamified elements—including XP, Levels, Streaks, and Achievements—motivate users to maintain consistent practice.
- The dashboard continuously updates using backend APIs to fetch real-time interview data and performance metrics.
- Overall, it transforms raw feedback and interview logs into actionable, clear insights that help users become more confident and interview-ready.

The image shows a dark-themed digital profile page. At the top right is a purple button labeled "Resume". Below it is a section titled "Profile Snapshot" with a user icon and the name "Rohit kumar" in blue. Rohit's email, "rohitiiitk2002@gmail.com", and title, "Data Scientist", are listed below his name. To the left is a circular profile picture with the letters "Rk" in white. Below this is a "Skills" section with a blue button containing the word "python". A horizontal line separates this from a "Badges" section, which includes two purple buttons: "First Step" and "Getting Serious". Another horizontal line separates the badges from sections for "Experience" and "Projects", both represented by small icons and text labels.

# CURRENT FEATURE OF PROJECT

## 1. Interview Sessions for All Tech Roles

AI dynamically generates questions for different tech roles, providing realistic mock interviews tailored to the user's skills.

## 2. Personalized Feedback Generation

Each interview session ends with detailed feedback highlighting strengths, weaknesses, and improvement suggestions.

## 3. Performance Tracking

The platform tracks user performance over time, helping them monitor progress and identify areas needing improvement.

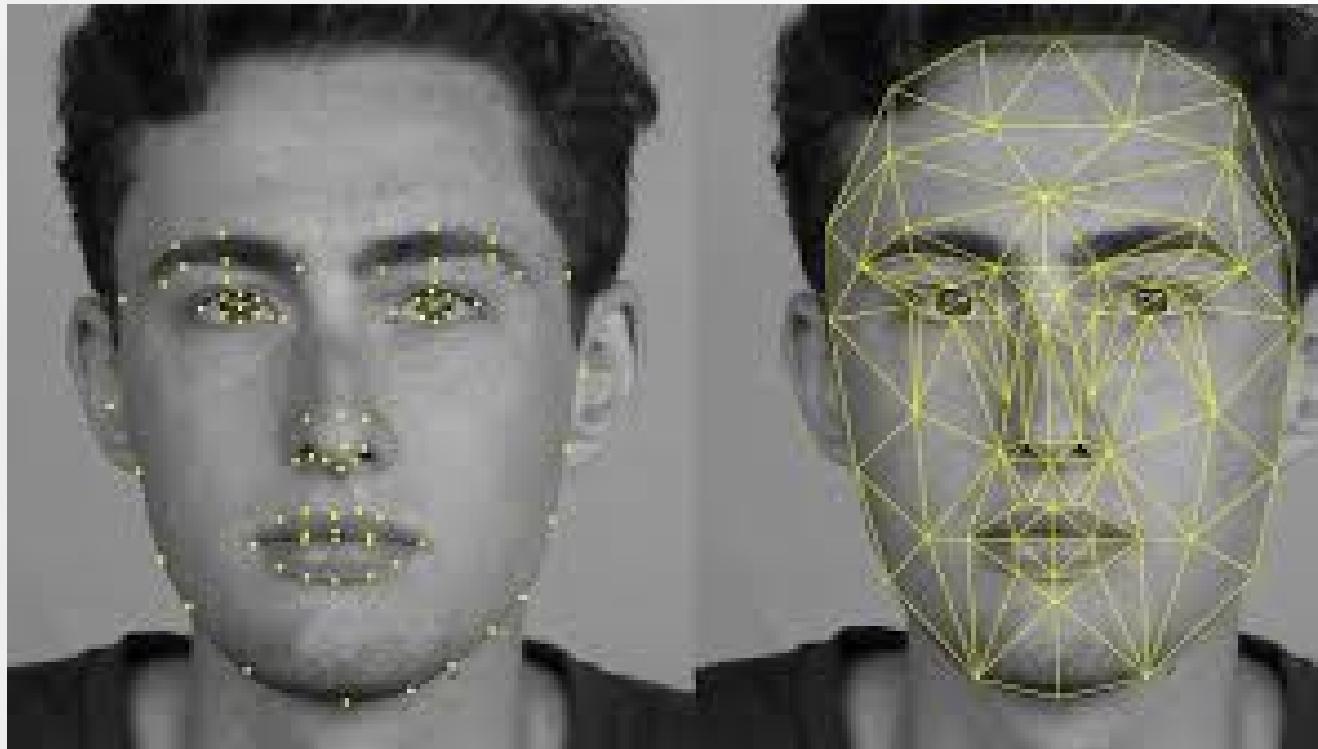
## 4. Focus & Confidence Analysis

Using webcam and audio processing, the system analyzes user focus levels, eye contact, and confidence to enhance behavioral assessment.

## 5. Fully Functional Dashboard

A user-friendly dashboard displays interview history, progress analytics, feedback reports, and personalized insights in one place.

# FUTURE ENHANCEMENTS



1

## 1. Coding Challenges

Introduce hands on coding challenges directly within the platform. Users can practice DSA, system design, and language-specific problems in a real-time coding environment. The system will auto-evaluate solutions and provide feedback on time/space complexity and code quality.

2

## 2. Interview Patterns by Experience & Company

Customize interview flow based on user experience level and target companies for more realistic practice.

3

## 3. Improved LLM Question Generation

Upgrade AI models to generate more accurate, relevant, and diverse interview questions.

# FUTURE ENHANCEMENTS

## AI CAREER PLATFORM: CORE FEATURES



4

### 4. All Types of Interview Support

Extend the platform to include HR, PM, BA, and non-technical interview simulations.

5

### 5. Course Recommendations

Recommend personalized courses based on user performance, strengths, and weak areas.



# THANK YOU