AI Mock Interview Platform
Technical Summary Document

1. PROBLEM STATEMENT

Job seekers face critical challenges in interview preparation: **lack of personalized feedback**, **generic question banks** that don't adapt to roles, and **inaccessible professional coaching**. Our platform leverages **Google Gemini 2.0 Flash** to deliver AI-powered voice interviews with real-time analysis, intelligent questioning, and actionable improvement suggestions.

2. APPROACH AND AI COMPONENTS

AI Feature	Description
Question Generation	Dynamic questions based on job role, skill type (Soft/Technical/Full), and difficulty level
Audio Analysis	Real-time scoring: Clarity, Confidence, Pace, Content (0-100) with personalized suggestions
Resume Parsing	Document analysis to extract skills and generate tailored interview questions
AI Coach Chat	Context-aware coaching responses for interview preparation guidance

Prompt Engineering: Specialized templates for Soft Skills (emotional intelligence, STAR method), Technical (system design, problem-solving), and Full Interview (comprehensive assessment).

3. TECHNICAL ARCHITECTURE

Layer	Technology Stack	Responsibilities
Frontend	React 19, Vite, Tailwind CSS, Framer Motion	UI Components, Audio Recording (MediaRecorder), Animations
Backend	FastAPI (Python), Uvicorn ASGI Server	REST API, Authentication, File Handling, AI Orchestration
AI Layer	Google Gemini 2.0 Flash API	Question Generation, Audio Analysis, Resume Parsing

API Endpoints: POST /api/interview/start | POST /api/interview/analyze | POST /api/resume/analyze | POST /api/video-chat

4. CHALLENGES AND MITIGATIONS

Challenge	Mitigation Strategy
API Rate Limits (~15 RPM free tier)	Request queuing, retry logic, cached fallback questions, user warnings
Audio Quality Variability	WebM format optimization, client-side normalization, manual input fallback
AI Response Latency (2-4s)	Loading animations, optimistic UI updates, streaming responses
Output Consistency	Structured JSON requirements, output validation, error handling
Cross-Browser Audio Support	Feature detection, multi-codec support (webm/mp4), compatibility checks

5. ROADMAP TO FINAL BUILD

CURRENT STATE (MVP)

Voice interviews with real-time AI feedback and scoring (Clarity, Confidence, Pace, Content)

Three interview modes: Soft Skills, Technical, and Full Interview

Resume-based personalized question generation from uploaded documents

Video library with integrated AI chat coaching assistant

Performance analytics dashboard with skill distribution charts

Phase	Timeline	Key Features
Phase 2: Enhanced AI	Q1 2025	Video interviews with facial expression analysis Multi-language support (5+ languages) Industry-specific question banks (FAANG, Healthcare, Finance)
Phase 3: Scalability	Q2 2025	OAuth authentication (Google, LinkedIn) Persistent interview history and progress tracking PostgreSQL/MongoDB integration, WebSocket real-time feedback
Phase 4: Enterprise	Q3 2025	Company-branded interview simulations Recruiter dashboard for candidate evaluation Public API access, Paid Gemini Pro tier (unlimited requests)

SUCCESS METRICS

Metric	Current (MVP)	Target (Final Build)
Response Latency	2-4 seconds	< 1 second
Feedback Accuracy	~85%	> 95%
Concurrent Users	~10 users	1,000+ users
Supported Languages	1 (English)	5+ languages
API Uptime	95%	99.9%

Technology Stack: React 19 | FastAPI | Google Gemini 2.0 Flash | Tailwind CSS | Framer Motion