# Requirements Document for TechPrep AI

## Functional Requirements

### Resume Analysis System

1. Document Processing The system must support multiple document formats for resume uploads, including:

   - PDF files (primary format)
   - Microsoft Word documents (DOCX)
   - Plain text files (TXT)
   - Rich text format (RTF)

   The system will provide real-time feedback during upload, indicating file size limits and format validation.

2. Content Analysis The system must extract and categorize key information including:

   - Technical skills and proficiency levels
   - Work experience details
   - Educational background
   - Project contributions
   - Certifications and achievements

3. Gap Analysis The system will perform immediate analysis to identify:

   - Missing critical skills for target positions
   - Experience level mismatches
   - Areas requiring additional preparation
   - Suggested improvements for resume content

### Mock Interview System

1. Interview Formats The system must support both:

   - Text-based interactive interviews
   - Voice-based interviews with speech-to-text processing

   Each format should maintain consistent quality and response timing.

2. Interview Control Features Users must have access to:

   - Pause/Resume functionality during sessions
   - Session timing controls with customizable durations
   - Option to save partial sessions
   - Ability to review previous answers
   - Emergency exit with session saving

3. Interview Content The system must provide:

- Dynamic question generation based on user level
- Follow-up questions based on previous responses
- Real-time feedback on answer quality
- Code editor for technical solutions
- System design whiteboarding tools

## Personalization System

1. Skill Assessment The system must maintain:

   - Detailed skill progression tracking
   - Proficiency scoring for each technical area
   - Historical performance data
   - Learning pace analysis

2. Company-Specific Preparation Users should be able to:

   - Select target companies
   - Access company-specific question banks
   - Review company-specific technical requirements
   - Practice company-specific interview styles

3. Difficulty Levels The system must support:

   - Beginner/Entry level
   - Intermediate
   - Advanced
   - Expert Each level should adapt based on user performance.

## Progress Tracking System

1. Performance Metrics The system will track:

   - Question response accuracy
   - Interview completion rates
   - Time spent per topic
   - Skill improvement over time
   - Practice consistency
   - Problem-solving speed
   - Code quality metrics

2. Progress Visualization Users will have access to:

   - Performance trend graphs
   - Skill radar charts
   - Achievement badges
   - Comparative analytics
   - Weekly/Monthly progress reports

# Technical Requirements

## Performance Requirements

- Page load time: < 2 seconds
- API response time: < 500ms
- AI response generation: < 2 seconds
- Concurrent users support: 1000+
- Database query time: < 100ms
- File upload time: < 5 seconds for files up to 10MB

## Security Requirements

- OAuth 2.0 authentication with Auth0
- JWT token-based authorization
- Data encryption at rest
- HTTPS/TLS for all communications
- Rate limiting for API endpoints
- Input sanitization
- Regular security audits

## Scalability Requirements

- Horizontal scaling capability
- Load balancing support
- Caching implementation
- Database connection pooling
- Microservices architecture readiness

## Availability Requirements

- System uptime: 99.9%
- Automated backup system
- Disaster recovery plan
- Error logging and monitoring
- System health dashboard

## Integration Requirements

- OpenAI API integration
- Auth0 integration
- Cloud storage integration
- Email service integration
- Analytics integration

## Development Requirements

- Version control (Git)
- CI/CD pipeline
- Testing environment
- Documentation system

- Code review process
- Performance monitoring tools