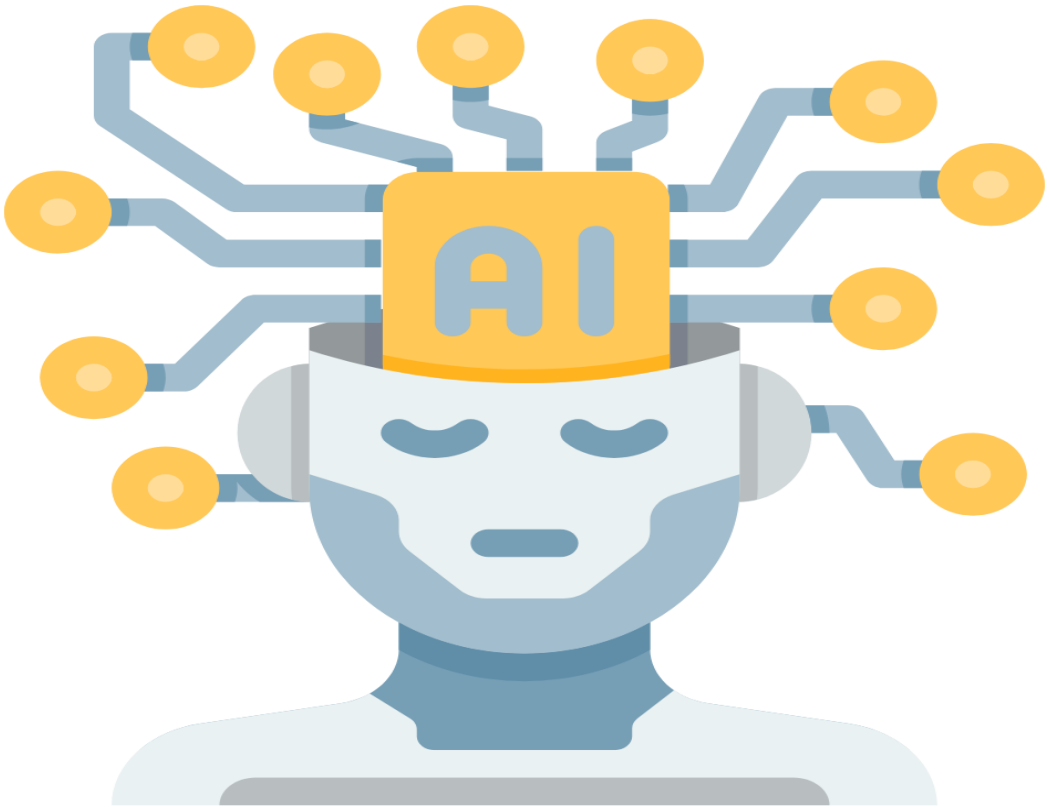
SOFTWARE REQUIREMENTS
SPECIFICATION
FOR

NEXTSTEP AI



AI CAREER COACH PLATFORM

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Revision History

Name	Date	Reason For Changes	Version
GENZ Minds	Sept 25, 2025	Initial comprehensive specification	1.0

1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document offers a detailed overview of the requirements for the AI Career Coach Platform (NextStep AI), version 1.0. The system integrates AI-driven CV creation functionalities with engaging interview simulation features to assist job seekers in enhancing their career opportunities. This SRS outlines both the functional and nonfunctional requirements for the entire system, encompassing AI/ML elements, user interfaces, and integration functionalities.

1.2 Document Conventions

This Software Requirements Specification (SRS) adheres to the recommended practices outlined in IEEE 830-1998 and employs the following conventions:

- **Requirements Priority:** All functional requirements are assigned priority ratings of High, Medium, or Low.
- **Requirement IDs**: Each requirement is assigned a unique identifier following the format REQ-[Category]-[Number] (for example, REQ-F001 for functional requirements).
- **Typography**: Key terms are presented in bold, while italics are used for emphasis, and monospace is reserved for technical specifications.
- **AI-Specific Standards:** Requirements for all AI-generated content include established accuracy thresholds and mechanisms for human oversight.
- **Inherited Priority:** Lower-level requirements will inherit their priority from parent features unless stated otherwise.

1.3 Intended Audience and Reading Suggestions

This document is intended for multiple stakeholder groups:

1- Developers and Technical Teams:
- Focus on Sections 3 (External Interface Requirements) and 4 (System Features) for implementation details
- Review Appendix B for technical architecture and AI/ML integration specifications
- Pay special attention to AI service integration requirements and performance thresholds

2- Project Managers:
- Begin with Sections 1-2 for project overview and scope understanding
- Review Section 5 for performance and quality requirements

3- AI/ML Engineers:
- Concentrate on AI-specific requirements throughout Section 4
- Review performance requirements in Section 5.1 for AI processing expectations
- Examine Appendix B for RAG system and model integration details

4- Quality Assurance Teams:
- Focus on testable requirements in Section 4 and performance criteria in Section 5
- Review AI content quality validation requirements and testing approaches
- Reference Appendix E for comprehensive testing strategy

5- Business Stakeholders:
- Start with Sections 1.4 (Product Scope) and 2 (Overall Description)
- Review Section 5.5 (Business Rules) for operational constraints
- Consider user classes in Section 2.3 for market understanding

1.4 Product Scope

The AI Career Coach Platform (NextStep AI) aims to deliver tailored career support using artificial intelligence and machine learning technologies. This system is intended for job seekers, career coaches, and recruiters, providing features such as intelligent CV creation, ATS optimization, and realistic interview simulation experiences.

Primary Benefits:
- Significantly reduces the time required to create a CV from hours to minutes through AI automation.
- Enhances interview preparation with realistic, customized mock interviews.
- Boosts job application success rates via ATS optimization.
- Offers data-driven career guidance and progress tracking.

Key Objectives:
- Make professional career coaching accessible to all through AI technology.
- Enhance job matching efficiency between candidates and employers.
- Minimize bias in career preparation with standardized AI support.
- Assist global job seekers with capabilities in multiple languages.

Business Goals Alignment:
- Capture a share of the expanding $4.2B career services market.
- Position the platform as a leading AI-driven career development solution.
- Generate revenue through subscription services and premium features.
- Lay the groundwork for the expansion of enterprise B2B career services.

1.5 References

- IEEE Std 830-1998 (IEEE Recommended Practice for Software Requirements Specifications)
- OpenAI API Documentation v1.0
- GDPR Data Protection Guidelines (EU Regulation 2016/679)
- WCAG 2.1 Web Accessibility Guidelines
- OAuth 2.0 Security Framework (RFC 6749)
- ISO/IEC 27001:2013 Information Security Management
- OWASP Top 10 Security Risks 2023
- Schema.org Resume/CV Structured Data Specifications

2. Overall Description

2.1 Product Perspective

The AI Career Coach Platform is a new, standalone web-based system that integrates with external services and APIs. The system leverages advanced AI technologies including large language models, RAG (Retrieval-Augmented Generation) systems, and natural language processing to provide intelligent career assistance.

System Context: The platform operates as a cloud-based SaaS solution with the following external dependencies:

- **AI/ML Services:** Integration with OpenAI GPT-4 or equivalent LLMs for content generation
- **Professional Networks:** LinkedIn and GitHub APIs for profile data import
- **Job Market Data:** Job board APIs (Indeed, Glassdoor) for real-time job analysis
- **Authentication:** OAuth 2.0 providers for secure user authentication
- **Document Processing:** PDF and DOCX generation services for CV export

System Boundaries: The system includes all components for CV generation, interview simulation, and user management, but excludes job application submission, employer communication features, and direct recruiting functionalities.

2.2 Product Functions

The system shall provide the following major functions:

AI CV Building:

- Automated resume generation from basic user input
- Professional formatting and ATS optimization
- Industry-specific content recommendations
- Real-time improvement suggestions

Interview Simulation:

- AI-powered mock interviews with dynamic questioning
- Behavioral interview training using STAR methodology
- Real-time feedback and confidence scoring
- Industry and role-specific interview preparation

Job Matching and Analysis:

- Job description keyword analysis and CV tailoring
- ATS compatibility scoring and optimization
- Skills gap identification and improvement suggestions

Progress Analytics:

- Comprehensive tracking of user improvement over time
- Performance benchmarking against industry standards

- Personalized career development recommendations

2.3 User Classes and Characteristics

Primary User Classes:

1- **Job Seekers (Priority: High)**
   - **Characteristics:** Individuals seeking employment with varying technical expertise
   - **Frequency of Use:** Daily to weekly during active job search periods
   - **Technical Expertise:** Basic to intermediate computer skills required
   - **Security Level:** Standard user access with personal data protection
   - **Key Functions:** CV building, interview practice, progress tracking

2- **Career Coaches (Priority: Medium)**
   - **Characteristics:** Professional coaches assisting multiple clients
   - **Frequency of Use:** Daily usage with multiple client management needs
   - **Technical Expertise:** Intermediate to advanced computer skills
   - **Security Level:** Enhanced access for client management features
   - **Key Functions:** Client progress monitoring, bulk CV operations, analytics

3- **Students and Recent Graduates (Priority: High)**
   - **Characteristics:** University students and recent graduates entering job market
   - **Frequency of Use:** Intensive usage during job search preparation periods
   - **Technical Expertise:** High comfort with web applications and technology
   - **Security Level:** Standard access with educational institution integration
   - **Key Functions:** Entry-level CV building, interview skills development

4- **Recruiters and HR Professionals (Priority: Low)**
   - **Characteristics:** HR professionals seeking to improve candidate quality
   - **Frequency of Use:** Periodic usage for candidate evaluation insights
   - **Technical Expertise:** Intermediate business software skills
   - **Security Level:** Professional access with candidate data protection
   - **Key Functions:** Candidate assessment tools, hiring process optimization

2.4 Operating Environment

Hardware Platform:

- **Client Side:** Modern devices with internet connectivity (desktop, laptop, tablet, mobile)
- **Server Side:** Cloud-based infrastructure with GPU support for AI processing
- **Minimum Client Requirements:** 2GB RAM, modern web browser, stable internet connection

Software Environment:

- **Supported Browsers:** Chrome 90+, Firefox 88+, Safari 14+, Edge 90+
- **Operating Systems:** Platform-independent (web-based)
- **Cloud Infrastructure:** AWS, Azure, or Google Cloud Platform
- **Database Systems:** PostgreSQL 14+ for relational data, vector database for AI knowledge base

Network Environment:

- **Internet Connectivity:** Required for all functionality

- **Bandwidth Optimization:** Optimized for both high-speed and mobile networks
- **Global Accessibility:** CDN support for international users
- **Offline Capabilities:** Limited offline viewing of generated CVs

AI/ML Infrastructure:

- **GPU Requirements:** NVIDIA V100 or equivalent for AI model inference
- **AI Service Integration:** OpenAI API, Anthropic Claude, or equivalent services
- **Processing Requirements:** Real-time AI inference with sub-10-second response times

2.5 Design and Implementation Constraints

AI/ML Technology Constraints:

- **Model Dependencies:** Reliance on third-party AI services with potential pricing and availability changes
- **Processing Limitations:** AI inference time constraints requiring optimization strategies
- **Content Quality:** AI-generated content requires human oversight and bias detection mechanisms
- **Language Model Updates:** System must adapt to evolving AI capabilities and service changes

Regulatory and Compliance Constraints:

- **Data Protection:** GDPR compliance for EU users, CCPA compliance for California users
- **AI Ethics:** Responsible AI practices to prevent bias in career recommendations
- **Employment Law:** Compliance with anti-discrimination laws in optimization suggestions
- **Accessibility:** WCAG 2.1 Level AA compliance for inclusive user access

Technical Architecture Constraints:

- **Scalability:** Must support horizontal scaling for varying user loads
- **Integration Limits:** Third-party API rate limits and terms of service restrictions
- **Security Standards:** Implementation of industry-standard security practices
- **Performance:** Real-time AI processing requirements with user experience expectations

Business and Resource Constraints:

- **Timeline:** 1-month development timeline with quarterly milestone deliverables
- **Team Expertise:** Requirement for specialized AI/ML engineering skills
- **Market Competition:** Need for rapid development to maintain competitive advantage

2.6 User Documentation

The following user documentation components will be delivered with the software:

User Manuals:

- **Getting Started Guide:** Step-by-step onboarding for new users
- **CV Builder Manual:** Comprehensive guide for AI-powered resume creation
- **Interview Preparation Guide:** Best practices for mock interview usage
- **Analytics Dashboard Guide:** Understanding progress tracking and insights

Online Help System:

- **Contextual Help:** In-Application guidance and tooltips
- **FAQ Database:** Frequent questions and troubleshooting solutions
- **Video Tutorials:** Screen-recorded demonstrations of key features
- **AI Interaction Guide:** Understanding AI capabilities and limitations

Technical Documentation:

- **API Documentation:** For potential third-party integrations
- **Administrator Guide:** System configuration and maintenance procedures
- **Troubleshooting Manual:** Common issues and resolution steps

Delivery Formats:

- **Web-based Help:** Integrated help system within application
- **PDF Downloads:** Offline-accessible comprehensive guides
- **Interactive Tutorials:** In-app guided tours and feature introductions

2.7 Assumptions and Dependencies

Technology Assumptions:

- Users have reliable internet connectivity with minimum 5 Mbps bandwidth
- Modern web browsers continue to support current web standards and technologies
- AI model performance and availability will remain stable or improve over time
- Cloud infrastructure services will maintain high availability and performance standards

User Behavior Assumptions:

- Users are comfortable sharing professional information for CV improvement purposes
- Job seekers will engage with AI-generated content and provide feedback for system improvement
- Users have basic computer literacy and web application experience
- Professional users will adopt AI-assisted tools as part of their workflow

Market and Business Assumptions:

- Job market data will remain accessible through third-party APIs and partnerships
- Regulatory environment for AI applications will remain stable during development period
- Market demand for AI-powered career tools will continue to grow
- Competition will not introduce identical AI capabilities during development timeline

Technical Dependencies:

Critical Dependencies (High Impact):

- OpenAI API Availability: Core AI functionality depends on stable third-party AI service access
- LinkedIn API Access: Profile import features require maintained API partnerships
- Cloud Infrastructure: AWS/Azure/GCP services for hosting, scaling, and AI processing
- OAuth Providers: Google, LinkedIn authentication services for user management

Important Dependencies (Medium Impact):

- Job Board APIs: Indeed, Glassdoor for real-time job description analysis
- GitHub API: Code repository analysis for technical skill assessment
- Payment Processing: Stripe or equivalent for subscription management
- Email Services: Transactional email providers for user communication

Supporting Dependencies (Low Impact):

- CDN Services: Content delivery for global performance optimization
- Monitoring Tools: Application performance and error tracking services
- Analytics Platforms: User behavior tracking and business intelligence tools

Risk Mitigation for Dependencies:

- Multi-Provider Strategy: Secondary AI service providers to reduce single-point-of-failure risk
- API Rate Limit Management: Caching and optimization strategies to work within service limits
- Vendor Relationship Management: Contractual agreements to ensure service continuity
- Fallback Mechanisms: Graceful degradation when external services are unavailable

3. External Interface Requirements

3.1 User Interfaces

Web Application Interface: The system shall provide a responsive web-based interface optimized for multiple device types and screen sizes.

Browser Compatibility:

- Primary Support: Chrome 90+, Firefox 88+, Safari 14+, Edge 90+
- Mobile Browsers: iOS Safari 14+, Chrome Mobile 90+, Samsung Internet 14+
- Progressive Web App: Installable web application with offline capability for CV viewing

Responsive Design Specifications:

- Desktop (1920x1080): Full-featured interface with sidebar navigation and multi-panel layouts
- Tablet (768x1024): Optimized layout with collapsible navigation and touch-friendly controls
- Mobile (375x667): Streamlined interface with bottom navigation and swipe gestures
- Adaptive Scaling: Dynamic layout adjustment for screens between 320px and 4K resolution

Accessibility Requirements:

- WCAG 2.1 Level AA: Full compliance with international accessibility standards
- Keyboard Navigation: Complete functionality accessible without mouse interaction
- Screen Reader Support: Compatible with JAWS, NVDA, and VoiceOver technologies
- High Contrast Mode: Alternative color schemes for visually impaired users
- Font Scaling: Support for browser font size adjustments up to 200%

User Experience Design Standards:

- Loading States: Clear progress indicators for AI operations exceeding 2 seconds
- Error Handling: User-friendly error messages with actionable resolution steps
- Feedback Mechanisms: Visual confirmations for user actions and AI processing status
- Contextual Help: Integrated tooltips and help overlays for complex features

Multi-Language Interface Support:

- Language Selection: Dynamic language switching without session loss
- Right-to-Left Support: Full RTL layout for Arabic language interface
- Cultural Localization: Date formats, number formats, and cultural norms adaptation
- Typography: Language-appropriate fonts and text rendering

3.2 Hardware Interfaces

Input Device Support:

- Keyboard: Full keyboard shortcuts and navigation support for power users
- Mouse/Trackpad: Precision control for CV editing and formatting operations
- Touchscreen: Native touch gestures for mobile and tablet interfaces including tap, swipe, pinch-to-zoom
- Microphone: Voice input capability for future interview simulation features (Phase 2 enhancement)

Output Device Integration:

- Display Screens: Optimized rendering for various screen densities and color profiles
- Speakers/Headphones: Audio feedback for interview simulation and accessibility features
- Printers: Direct print support for CV documents with print-optimized formatting
- External Storage: Support for saving documents to connected storage devices

Performance Requirements by Device Type:

- Desktop Systems: Minimum 8GB RAM recommended for optimal AI processing
- Mobile Devices: Optimized for devices with 4GB RAM, progressive enhancement for higher-spec devices
- Network Hardware: Adaptive quality based on connection speed and stability

3.3 Software Interfaces

AI/ML Service Interfaces:

- Large Language Model API Integration:
  - Primary Service: OpenAI GPT-4 API with structured prompt engineering
  - Request Format: JSON-based API calls with conversation context and formatting instructions
  - Response Handling: Streaming responses for real-time user feedback during AI generation
  - Error Management: Graceful fallback to secondary AI providers on service unavailability
  - Rate Limiting: Intelligent request queuing to stay within API quotas

- RAG System Components:
  - Vector Database: Pinecone or Weaviate integration for knowledge retrieval
  - Embedding Models: OpenAI text-embedding-ada-002 for semantic search capabilities
  - Knowledge Base: Continuously updated repository of CV best practices and job market data
  - Retrieval Logic: Hybrid search combining semantic similarity and keyword matching

External Platform APIs:

- LinkedIn API Integration:
  - OAuth 2.0 Flow: Secure user authorization with scope-limited data access
  - Profile Import: Structured data extraction including experience, education, skills
  - Connection Analysis: Network insights for career advancement recommendations
  - Rate Limiting: Compliance with LinkedIn API usage policies and throttling

- GitHub API Integration:
  - Repository Analysis: Code language detection and project complexity assessment
  - Contribution Metrics: Commit history and collaboration pattern analysis
  - Skill Inference: Technology stack identification from codebase analysis
  - Privacy Controls: User-controlled selection of repositories for analysis.

- Job Board API Integrations:
  - Indeed API: Job posting retrieval and keyword analysis
  - Glassdoor API: Salary data and company insights integration
  - LinkedIn Jobs: Real-time job matching and application tracking
  - Data Normalization: Standardized job data format across multiple sources

Database Interface Specifications:

- Primary Database (MongoDB)
  - Connection Pooling: Optimized connection management for high concurrency
  - Transaction Management: ACID compliance for data consistency
  - Backup Strategy: Automated daily backups with point-in-time recovery
  - Performance Optimization: Query optimization and indexing strategies

- Cache Layer (Redis):
  - Session Management: Distributed session storage for multi-server deployment
  - API Response Caching: Intelligent caching of AI service responses
  - Rate Limiting: Distributed rate limiting across application instances
  - Real-time Data: WebSocket session management and real-time notifications

3.4 Communications Interfaces

Network Protocols:

- HTTPS/TLS 1.3: All client-server communication encrypted with latest security standards
- WebSocket (WSS): Real-time communication for interview simulation and live AI generation
- HTTP/2: Optimized protocol for improved performance and resource loading
- GraphQL over HTTPS: Flexible data querying for complex analytics and reporting features

API Communication Standards:

- RESTful Architecture: Stateless API design with standard HTTP methods
- JSON Data Format: Structured data exchange with schema validation
- API Versioning: Semantic versioning with backward compatibility support
- Error Response Format: Standardized error codes and descriptive messages

Real-time Communication:

- WebSocket Connections: Persistent connections for interview simulation chat interface
- Message Queuing: Asynchronous processing of AI generation requests
- Push Notifications: Web push notifications for job alerts and system updates
- Connection Management: Automatic reconnection and connection health monitoring

Security Protocols:

- OAuth 2.0 with PKCE: Secure authorization flow for third-party integrations
- JWT Token Management: Secure session tokens with automatic refresh capability
- API Key Security: Encrypted storage and rotation of third-party service keys
- Request Signing: HMAC-SHA256 signing for sensitive API communications

Data Exchange Formats:

- JSON Primary Format: Structured data for all API communications
- XML Legacy Support: Limited XML support for older system integrations
- CSV Export Format: Bulk data export capability for analytics and reporting
- Binary Formats: PDF and DOCX generation for document export functionality

Communication Quality and Performance:

- Compression: Gzip compression for all text-based communications
- Caching Headers: Appropriate cache control headers for static and dynamic content
- CDN Integration: Global content delivery network for optimal performance
- Bandwidth Optimization: Progressive loading and adaptive quality based on connection speed

Message Formatting and Standards:

- Internationalization: Unicode (UTF-8) support for multi-language content
- Structured Logging: JSON-formatted logs for system monitoring and debugging
- API Documentation: OpenAPI 3.0 specification for third-party integration
- Schema Validation: JSON Schema validation for all data exchanges

4. System Features

4.1 AI-Powered CV Builder

4.1.1 Description and Priority

The AI-Powered CV Builder is a core system feature that transforms basic user input into professional, ATS-optimized resumes using advanced artificial intelligence. This feature leverages large language models and retrieval-augmented generation to create personalized, industry-specific CVs that significantly reduce creation time while improving quality and job market compatibility.
Priority: High - Core business functionality essential for platform value proposition

4.1.2 Stimulus/Response Sequences

- **User Input Sequence:** User provides basic information (name, field, experience) → System processes through AI pipeline → Generated CV displayed with real-time preview
- **Job Tailoring Sequence:** User uploads job description → System analyzes requirements → CV automatically adjusted to match keywords and requirements → Compatibility score displayed
- **Optimization Sequence:** User requests ATS optimization → System analyzes CV structure → Keyword density and formatting adjusted → Improvement recommendations provided
- **Template Selection:** User selects industry template → AI adapts content to template style → Professional formatting applied → Export options presented

4.1.3 Functional Requirements

- **REQ-F001:** The system shall generate complete CVs from minimal user input including name, career field, and basic work history within 15 seconds.
- **REQ-F002:** The system shall use RAG technology to retrieve industry-specific best practices and incorporate them into CV content generation.
- **REQ-F003:** The system shall analyze job descriptions and tailor CV content to match specific requirements with minimum 85% keyword relevance.
- **REQ-F004:** The system shall optimize CVs for ATS compatibility by analyzing formatting, keyword density, and section structure.
- **REQ-F005:** The system shall generate impactful bullet points that emphasize measurable achievements and use action-oriented language.
- **REQ-F006:** The system shall provide real-time grammar, clarity, and tone feedback during CV editing with AI-powered suggestions.
- **REQ-F007:** The system shall support multiple professional CV templates optimized for different industries and career levels.
- **REQ-F008:** The system shall maintain complete version history of CV iterations with comparison functionality.
- **REQ-F009:** The system shall provide ATS compatibility scoring with detailed feedback on improvement areas.
- **REQ-F010:** The system shall generate personalized improvement recommendations based on user profile and target roles.

4.2 Interview Mocking and Simulation

4.2.1 Description and Priority

The Interview Mocking and Simulation feature provides realistic, AI-powered mock interviews that adapt to user responses and provide comprehensive feedback. This system uses natural language processing to conduct dynamic interviews, evaluate responses, and provide actionable improvement suggestions.
Priority: High - Unique differentiator providing significant user value

4.2.2 Stimulus/Response Sequences

- **Interview Initiation:** User selects interview type and role → System generates customized question bank → AI interviewer persona activated → Interview session begins
- **Dynamic Questioning:** User provides response → AI analyzes content and relevance → Follow-up question generated based on response → Conversation continues naturally
- **Real-time Feedback:** User completes response → System evaluates clarity, confidence, and structure → Immediate feedback displayed → Improvement suggestions provided
- **Session Completion:** Interview concluded → Comprehensive report generated → Strengths and weaknesses identified → Personalized training recommendations provided

4.2.3 Functional Requirements

REQ-F011: The system shall generate interview questions customized to user's CV content and target job role within 3 seconds.
REQ-F012: The system shall conduct real-time mock interviews through chat interface with natural conversation flow.
REQ-F013: The system shall support voice-based interview simulation as future enhancement with speech-to-text integration.
REQ-F014: The system shall evaluate user responses for clarity, confidence level, and relevance to questions asked.
REQ-F015: The system shall provide structured behavioral interview training using STAR (Situation, Task, Action, Result) methodology.
REQ-F016: The system shall generate dynamic follow-up questions based on user responses to create realistic interview scenarios.
REQ-F017: The system shall maintain comprehensive question banks organized by industry, role level, and interview type.
REQ-F018: The system shall provide confidence scoring and specific improvement recommendations after each interview session.
REQ-F019: The system shall track user progress across multiple interview sessions with performance trend analysis.
REQ-F020: The system shall simulate different interview formats including behavioral, technical, and case study interviews.

4.3 Job Description Analysis and Tailoring

4.3.1 Description and Priority

This feature analyzes job postings using advanced NLP to extract key requirements and automatically tailors user CVs to match specific positions. The system identifies skills gaps, suggests content modifications, and provides compatibility scoring to optimize job application success rates.
Priority: High - Critical for job matching accuracy and user success

4.3.2 Stimulus/Response Sequences

- **Job Analysis Initiation:** User inputs job description URL or text → System extracts and processes content → Key requirements identified → Analysis results displayed
- **CV Tailoring Process:** Job requirements analyzed → User CV compared against requirements → Content modifications suggested → Tailored CV version generated
- **Skills Gap Analysis:** Job requirements vs. user profile comparison → Missing skills identified → Training recommendations provided → Career development path suggested
- **Compatibility Scoring:** Tailored CV analyzed against job requirements → Matching score calculated → Improvement areas highlighted → Optimization suggestions provided

4.3.3 Functional Requirements

REQ-F021: The system shall accept job descriptions via text input, URL upload, or file attachment with automatic content extraction.
REQ-F022: The system shall extract key requirements, skills, and qualifications from job descriptions with 90% accuracy.
REQ-F023: The system shall analyze and match user qualifications against job requirements with detailed compatibility scoring.
REQ-F024: The system shall automatically rewrite CV content to align with job-specific terminology and requirements.
REQ-F025: The system shall identify and highlight missing skills or experience areas with specific improvement recommendations.
REQ-F026: The system shall provide numerical matching scores between user CV and job requirements with detailed breakdown.
REQ-F027: The system shall maintain a knowledge base of job posting patterns and industry-specific requirements.
REQ-F028: The system shall suggest keyword optimization to improve ATS parsing and human recruiter appeal.
REQ-F029: The system shall provide industry salary insights and requirement trends based on job analysis data.
REQ-F030: The system shall generate tailored cover letter suggestions based on job analysis and user profile.

4.4 User Authentication and Profile Management

4.4.1 Description and Priority

Secure user authentication and comprehensive profile management system that stores personal and professional information while maintaining data privacy and security. The system supports multiple authentication methods and provides detailed profile customization capabilities.

Priority: High - Essential foundation for personalized AI services

4.4.2 Stimulus/Response Sequences

- **Registration Flow:** User provides registration details → System validates information → Account created → Email verification sent → Profile setup initiated
- **Authentication Process:** User provides credentials → System validates against database → Multi-factor authentication if enabled → Session established → Dashboard access granted
- **Profile Import:** User connects LinkedIn/GitHub → OAuth authorization → Profile data retrieved → Information populated → User confirms and saves
- **Profile Management:** User updates information → System validates changes → AI services updated with new data → Recommendations refreshed → Changes confirmed

4.4.3 Functional Requirements

REQ-F031: The system shall support user registration via email/password or OAuth providers (Google, LinkedIn, GitHub) with secure credential storage.

REQ-F032: The system shall provide multi-factor authentication option with support for authenticator apps and SMS verification.

REQ-F033: The system shall maintain comprehensive user profiles including personal information, career history, skills, and preferences.

REQ-F034: The system shall import profile data from LinkedIn and GitHub with user consent and data mapping capabilities.

REQ-F035: The system shall provide secure password reset functionality with time-limited tokens and email verification.

REQ-F036: The system shall support role-based access control for job seekers, career coaches, and recruiters with appropriate permissions.

REQ-F037: The system shall implement automatic session timeout after 30 minutes of inactivity with session extension options.

REQ-F038: The system shall provide data export functionality allowing users to download their complete profile and generated content.

REQ-F039: The system shall maintain audit logs of profile changes and system access for security and compliance purposes.

REQ-F040: The system shall support account deletion with complete data removal in compliance with privacy regulations.

4.5 Feedback and Analytics System

4.5.1 Description and Priority

Comprehensive feedback and analytics system that tracks user progress, provides performance insights, and generates detailed reports for continuous improvement. The system uses machine learning to identify patterns and provide personalized recommendations.

Priority: Medium - Important for user engagement and continuous improvement

4.5.2 Stimulus/Response Sequences

- **Progress Tracking:** User completes activities → System records performance data → Analytics updated → Progress indicators refreshed
- **Report Generation:** User requests analytics → System compiles data → Visual reports generated → Insights and recommendations provided
- **Benchmark Comparison:** User performance data → Industry benchmarks retrieved → Comparative analysis performed → Positioning feedback provided
- **Improvement Recommendations:** Performance patterns analyzed → AI generates personalized suggestions → Action plan created → Progress monitoring activated

4.5.3 Functional Requirements

REQ-F041: The system shall generate detailed performance reports after each interview session with scoring and improvement areas.

REQ-F042: The system shall track CV versions and interview practice history with comprehensive timeline visualization.

REQ-F043: The system shall provide strengths and weaknesses analysis based on interview performance and CV optimization patterns.

REQ-F044: The system shall offer progress tracking over time with visual analytics including charts and trend indicators.

REQ-F045: The system shall compare user performance against industry benchmarks with percentile rankings and peer comparisons.

REQ-F046: The system shall provide personalized improvement recommendations based on performance data and career objectives.

REQ-F047: The system shall generate exportable progress reports in PDF format for career coaching and personal records.

REQ-F048: The system shall implement machine learning algorithms to identify user success patterns and optimize recommendations.

REQ-F049: The system shall provide goal setting and tracking functionality with milestone notifications and achievement recognition.

REQ-F050: The system shall maintain privacy-compliant analytics that anonymize user data for aggregate insights.

4.6 Export and Sharing Functionality

4.6.1 Description and Priority

Comprehensive export and sharing system that provides multiple format options for CVs and reports, enabling seamless integration with job application workflows and professional networking platforms.

Priority: Medium - Important for user workflow integration

4.6.2 Stimulus/Response Sequences

- **CV Export Process:** User selects export format → System generates document → Formatting applied → Download link provided → Export history updated
- **Sharing Workflow:** User requests sharing → Platform selection → Authorization if required → Content uploaded → Confirmation provided
- **Batch Export:** User selects multiple CV versions → Bulk processing initiated → Archive created → Download notification sent
- **Format Conversion:** Export format selected → Content optimized for target format → Quality validation performed → Final document delivered

4.6.3 Functional Requirements

REQ-F051: The system shall export CVs in PDF format with professional formatting and consistent layout across different devices.

REQ-F052: The system shall export CVs in Microsoft Word format (.docx) with editable formatting and proper document structure.

REQ-F053: The system shall provide shareable links for feedback reports with privacy controls and expiration settings.

REQ-F054: The system shall support direct sharing to LinkedIn profiles with user authorization and content optimization.

REQ-F055: The system shall generate ATS-friendly plain text versions optimized for automated parsing systems.

REQ-F056: The system shall maintain export history and download tracking for user reference and system analytics.

REQ-F057: The system shall provide batch export capabilities for multiple CV versions with organized file naming.

REQ-F058: The system shall support custom branding options for career coaches and enterprise users.

REQ-F059: The system shall implement watermarking for free tier exports with removal option for premium users.

REQ-F060: The system shall provide print-optimized formatting with proper page breaks and margin settings.

4.7 Multi-Language Support

4.7.1 Description and Priority

Comprehensive internationalization system supporting multiple languages with cultural adaptations for CV formatting and interview practices to serve global user base effectively.

Priority: Medium - Important for global market expansion

4.7.2 Stimulus/Response Sequences

- **Language Selection:** User chooses language preference → Interface updates → AI models switched → Content regenerated in target language
- **CV Localization:** Target country selected → Cultural norms applied → Formatting adjusted → Localized content generated
- **Interview Adaptation:** Region-specific interview practices → Question bank filtered → Cultural context applied → Localized feedback provided
- **Content Translation:** Existing content → Translation service called → Quality validation → User review and approval

4.7.3 Functional Requirements

REQ-F061: The system shall support CV generation in English, Arabic, and French with native language AI models.

REQ-F062: The system shall provide interview questions and feedback in multiple languages with cultural context adaptation.

REQ-F063: The system shall maintain language-specific formatting standards and cultural norms for professional documents.

REQ-F064: The system shall support right-to-left text rendering for Arabic language with proper alignment and formatting.

REQ-F065: The system shall provide localized industry terminology and job titles relevant to specific geographic regions.

REQ-F066: The system shall allow dynamic language switching within user sessions without data loss.

REQ-F067: The system shall maintain separate progress tracking and analytics per language for user development monitoring.

REQ-F068: The system shall implement cultural adaptation for interview practices and professional expectations by region.

REQ-F069: The system shall provide multilingual customer support with native speakers for each supported language.

REQ-F070: The system shall support Unicode text processing and proper character encoding for all supported languages.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Response Time Requirements:

- REQ-P001: Web page initial load time shall not exceed 2 seconds on broadband connections (≥25 Mbps)
- REQ-P002: AI CV generation shall complete within 15 seconds for standard resumes with up to 5 years experience
- REQ-P003: Interview question generation shall respond within 3 seconds during active conversation
- REQ-P004: Job description analysis shall complete within 10 seconds for documents up to 2000 words
- REQ-P005: User authentication shall complete within 1 second for valid credentials
- REQ-P006: CV export generation shall complete within 5 seconds for all supported formats
- REQ-P007: Real-time interview chat responses shall appear within 2 seconds of user input

Throughput Requirements:

- REQ-P008: The system shall support up to 10,000 concurrent users during peak hours without degradation
- REQ-P009: The system shall process up to 1,000 CV generations per hour across all users

- REQ-P010: The system shall handle up to 500 concurrent interview sessions with real-time interaction
- REQ-P011: The system shall support up to 50 API requests per minute per authenticated user
- REQ-P012: The system shall process batch operations of up to 100 users simultaneously for analytics

Scalability and Capacity:

- REQ-P013: The system shall support horizontal scaling to accommodate 5x traffic growth without architectural changes
- REQ-P014: The system shall maintain performance standards with database growth up to 1 million user records
- REQ-P015: The system shall handle seasonal peak loads (3x normal capacity) during job application periods
- REQ-P016: The system shall support storage of up to 10 CV versions per user without performance impact
- REQ-P017: The system shall maintain sub-second response times for cached AI-generated content

5.2 Safety Requirements

Data Integrity and Loss Prevention:

- REQ-S001: The system shall implement automated backups every 4 hours with point-in-time recovery capability
- REQ-S002: The system shall prevent data loss during AI processing failures through transaction rollback mechanisms
- REQ-S003: The system shall maintain data consistency across distributed components using ACID-compliant transactions
- REQ-S004: The system shall implement graceful degradation when AI services are unavailable, preserving user work

User Safety and AI Ethics:

- REQ-S005: The system shall implement bias detection in AI-generated content to prevent discriminatory recommendations
- REQ-S006: The system shall provide clear disclaimers about AI-generated content limitations and user responsibility
- REQ-S007: The system shall prevent generation of misleading or false information in professional documents
- REQ-S008: The system shall implement content filtering to prevent inappropriate or unprofessional CV content

System Availability and Reliability:

- REQ-S009: The system shall maintain 99.5% uptime with maximum 4 hours unplanned downtime per month

- REQ-S010: The system shall implement health monitoring with automatic failover for critical components
- REQ-S011: The system shall provide graceful error handling that never exposes sensitive user data
- REQ-S012: The system shall implement circuit breaker patterns for external AI service dependencies

5.3 Security Requirements

Authentication and Access Control:

- REQ-SEC001: All user passwords shall be hashed using bcrypt with minimum 12 salt rounds
- REQ-SEC002: The system shall implement role-based access control with principle of least privilege
- REQ-SEC003: The system shall support multi-factor authentication with TOTP and SMS options
- REQ-SEC004: The system shall enforce session timeout after 30 minutes of inactivity
- REQ-SEC005: The system shall implement account lockout after 5 failed login attempts within 15 minutes

Data Protection and Encryption:

- REQ-SEC006: All data transmission shall use TLS 1.3 encryption with perfect forward secrecy
- REQ-SEC007: Sensitive data at rest shall be encrypted using AES-256 encryption
- REQ-SEC008: The system shall implement secure API key management with automatic rotation
- REQ-SEC009: Personal identifying information shall be tokenized for analytics and logging purposes
- REQ-SEC010: The system shall provide data anonymization options for user privacy protection

Security Monitoring and Compliance:

- REQ-SEC011: The system shall log all security-related events with tamper-evident audit trails
- REQ-SEC012: The system shall implement rate limiting to prevent abuse and DDoS attacks
- REQ-SEC013: The system shall scan for common vulnerabilities (OWASP Top 10) and prevent injection attacks
- REQ-SEC014: The system shall comply with SOC 2 Type II standards for security controls
- REQ-SEC015: The system shall implement data loss prevention measures for sensitive information

5.4 Software Quality Attributes

Reliability and Availability:

- REQ-Q001: Mean Time Between Failures (MTBF) shall be at least 168 hours (1 week) for core functionality
- REQ-Q002: Mean Time To Repair (MTTR) shall not exceed 2 hours for critical system issues
- REQ-Q003: The system shall implement automatic health checks every 30 seconds for critical components
- REQ-Q004: The system shall provide graceful degradation with limited functionality during partial outages

Usability and User Experience:

- REQ-Q005: New users shall successfully create their first CV within 10 minutes of registration
- REQ-Q006: The system shall provide contextual help and guided tours for complex features
- REQ-Q007: Error messages shall be user-friendly with clear resolution steps and support contact information
- REQ-Q008: The system shall maintain user session state and draft content during temporary disconnections

Maintainability and Supportability:

- REQ-Q009: The system shall provide comprehensive logging with configurable log levels for troubleshooting
- REQ-Q010: Code shall maintain 80% or higher test coverage with automated testing pipelines
- REQ-Q011: The system shall support zero-downtime deployments using blue-green deployment strategies
- REQ-Q012: The system shall provide comprehensive API documentation with interactive examples

Interoperability and Portability:

- REQ-Q013: The system shall be deployable across multiple cloud platforms (AWS, Azure, GCP) without modification
- REQ-Q014: The system shall provide standard REST APIs for third-party integration capabilities
- REQ-Q015: The system shall support data export in industry-standard formats (JSON, CSV, PDF, DOCX)
- REQ-Q016: The system shall implement containerized deployment using Docker and Kubernetes orchestration

5.5 Business Rules

User Account and Access Rules:

- BR001: Free tier users are limited to 3 CV generations per month with watermarked exports
- BR002: Premium users receive unlimited CV generations and interview sessions with priority AI processing
- BR003: Career coaches can manage up to 50 client accounts with bulk operation capabilities
- BR004: Trial users receive 7-day access to all premium features before subscription requirement

Content Generation and Quality Rules:

- BR005: AI-generated CV content must be reviewed by users before export or sharing
- BR006: Interview feedback scores are relative to user's experience level and industry standards
- BR007: Job matching scores below 60% trigger automatic improvement recommendation generation
- BR008: System-generated content includes attribution and disclaimers about AI assistance

Data Usage and Privacy Rules:

- BR009: User data shall not be used for training AI models without explicit consent
- BR010: Anonymized usage analytics may be used for system improvement and research purposes
- BR011: User content is automatically deleted 30 days after account closure unless legally required
- BR012: Enterprise clients can request data residency in specific geographic regions

AI Service and Processing Rules:

- BR013: AI processing requests are queued and processed in order during high-demand periods
- BR014: System automatically falls back to cached responses when AI services exceed rate limits
- BR015: Users can opt-out of AI features and use manual CV building tools exclusively
- BR016: AI model updates require user notification and consent for significant capability changes

6. Other Requirements

Legal and Regulatory Requirements:

- **REQ-L001:** The system shall comply with GDPR requirements including data portability, right to erasure, and consent management
- **REQ-L002:** The system shall meet CCPA compliance standards for California residents with opt-out capabilities
- **REQ-L003:** The system shall maintain SOC 2 Type II compliance for enterprise customer requirements
- **REQ-L004:** The system shall comply with accessibility standards (WCAG 2.1 AA) for inclusive user access

Integration and Compatibility Requirements:

- **REQ-I001:** The system shall integrate with major ATS systems for CV compatibility testing
- **REQ-I002:** The system shall support SCORM-compliant learning management system integration
- **REQ-I003:** The system shall provide Zapier integration for workflow automation capabilities
- **REQ-I004:** The system shall support single sign-on (SSO) integration for enterprise customers

Internationalization Requirements:

- **REQ-INT001:** The system shall support Unicode (UTF-8) encoding for all text processing
- **REQ-INT002:** The system shall adapt date, time, and number formats based on user locale
- **REQ-INT003:** The system shall support multiple currency display for pricing and salary information
- **REQ-INT004:** The system shall provide timezone-aware scheduling for interview practice sessions

Performance Monitoring and Analytics:

- **REQ-M001:** The system shall provide real-time performance dashboards for system administrators
- **REQ-M002:** The system shall implement user behavior analytics with privacy-compliant tracking
- **REQ-M003:** The system shall monitor AI service costs and usage with automated alerts

- **REQ-M004:** The system shall provide business intelligence reporting for subscriber metrics

Disaster Recovery and Business Continuity:

- **REQ-DR001:** The system shall maintain offsite backups with 4-hour recovery point objective (RPO)
- **REQ-DR002:** The system shall achieve 2-hour recovery time objective (RTO) for critical services
- **REQ-DR003:** The system shall implement geographic redundancy across multiple availability zones
- **REQ-DR004:** The system shall maintain documented disaster recovery procedures with regular testing

Appendix A: Glossary

AI (Artificial Intelligence): Computer systems that can perform tasks that typically require human intelligence, including natural language processing and content generation.

ATS (Applicant Tracking System): Software used by employers to collect, sort, scan, and rank job applications and resumes.

CV (Curriculum Vitae): A detailed document highlighting academic, professional, and personal achievements, also known as a resume.

GenAI (Generative Artificial Intelligence): AI systems capable of generating new content, including text, images, or other media based on input prompts.

LLM (Large Language Model): Advanced AI models trained on vast amounts of text data to understand and generate human-like text.

NLP (Natural Language Processing): Branch of AI that helps computers understand, interpret, and manipulate human language.

OAuth 2.0: Industry-standard protocol for authorization, allowing secure access to user data from third-party services.

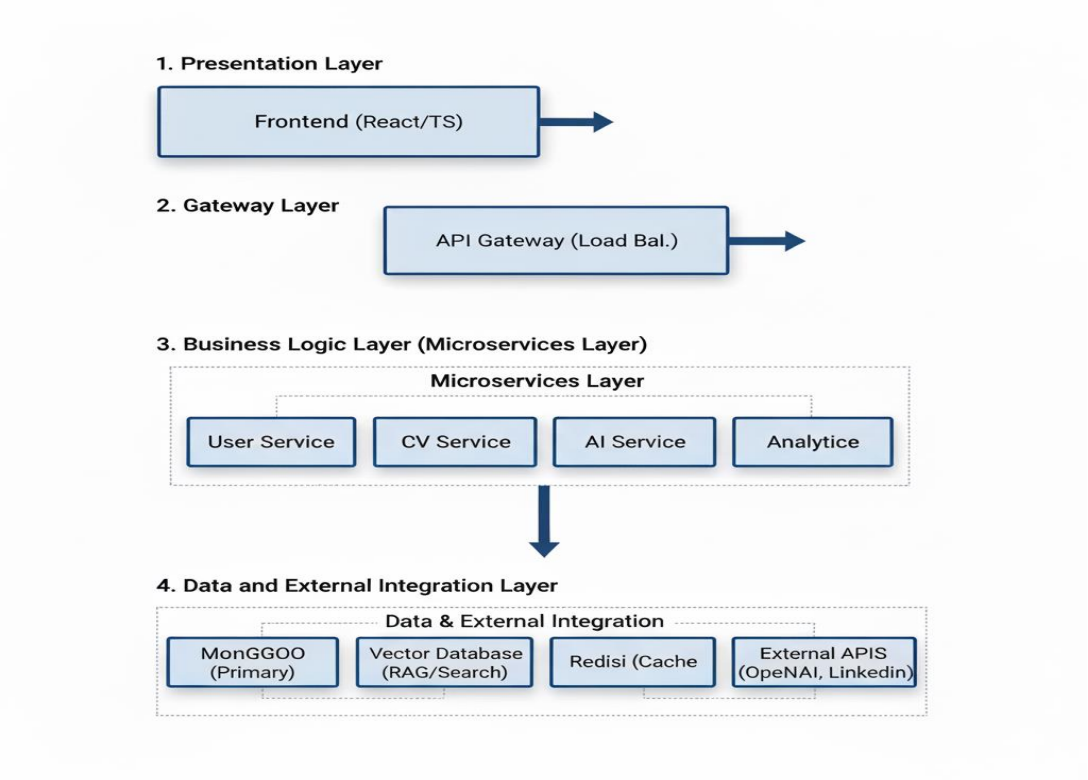
RAG (Retrieval-Augmented Generation): AI technique combining information retrieval with text generation for more accurate and contextual responses.

STAR Method: Interview technique structuring responses around Situation, Task, Action, and Result components.

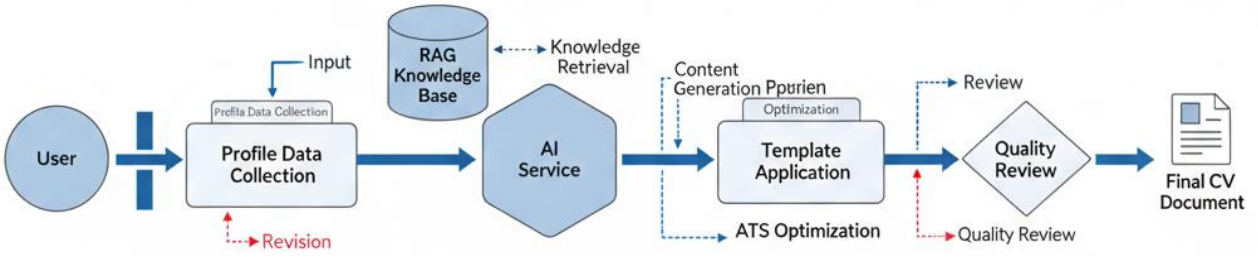
WebSocket: Communication protocol providing full-duplex communication channels over a single TCP connection for real-time features.

Appendix B: Analysis Models

System Architecture Overview:



Data Flow Diagram - CV Generation:



Entity-Relationship Model:

- **Users** (1:M) **CVs** (M:1) **Templates**
- **Users** (1:M) **InterviewSessions** (M:1) **Questions**
- **CVs** (M:M) **JobDescriptions** (compatibility analysis)
- **Users** (1:M) **ProgressTracking** (1:M) **Analytics**

Appendix C: To Be Determined List

TBD-001:

Final selection of secondary AI service provider for fallback capabilities (Target: Week 1)

TBD-002:

Specific voice recognition service integration timeline and technical requirements (Target: week4)

TBD-003:

Enterprise pricing model structure and volume discount tiers (Target: Week 1)

TBD-004:

Additional language support beyond English, Arabic, French based on market research (Target: Week 3)

TBD-005:

Integration partnerships with specific ATS providers for enhanced compatibility (Target: Week 3)

TBD-006:

web application development timeline and platform priorities (Target: week 2)

TBD-007:

Advanced analytics features including predictive job matching algorithms (Target: week 4)

TBD-008:

Specific compliance certifications required for enterprise market penetration (Target: Week 3)

TBD-009:

Integration capabilities with learning management systems for educational institutions (Target: week2)

TBD-010:

voice interview simulation features using AI avatars and real-time analysis (Target: week 4)