Software Requirements Specification (SRS)

for

SecondBrain: Intelligent Knowledge Assistant

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1. Introduction

1.1. Purpose

The purpose of this Software Requirements Specification (SRS) is to define the requirements for **SecondBrain**, an intelligent assistant powered by a Large Language Model (LLM). SecondBrain helps users (especially learners and professionals) manage large amounts of personal or study-related data by allowing them to upload and interact with their own materials. The assistant enables natural-language queries, summaries, quizzes, and insights directly from the user's uploaded content.

1.2. Scope

SecondBrain is a personalized Retrieval-Augmented Generation (RAG) knowledge assistant that processes user-provided information to deliver context-aware, personalized interactions. It allows users to:

- Upload and organize documents, notes, or folders into structured collections.
- Query and retrieve answers from their own uploaded materials.
- Generate summaries, overviews, and quizzes to enhance learning.
- Manage notes, bookmarks, and past conversations efficiently.

1.3. Definitions, Acronyms, and Abbreviations

LLM Large Language Model — a generative AI model capable of understanding and producing human-like text.

RAG Retrieval-Augmented Generation — architecture combining retrieval of external documents with language generation for context-based answers.

1.4. Overview of Document

This SRS follows IEEE 830 standards. Section 2 provides an overall system description, Section 3 defines specific requirements, Section 4 includes appendices (references), and Section 5 provides an index of key terms.

2. Overall Description

2.1. 2.1 Product Perspective

SecondBrain is a standalone software system combining a web (and optionally desktop) client with backend AI services. The backend handles document ingestion, text embedding, indexing, and retrieval, while the frontend provides interfaces for upload, querying, and result visualization. It integrates securely with third-party authentication services and a Large Language Model API to support Retrieval-Augmented Generation.

2.2. 2.2 Product Functions

At a high level, SecondBrain:

- Accepts user-uploaded files or folders of learning materials.
- Processes them into a private, searchable knowledge base.
- Allows natural-language querying and contextual dialogue.
- Generates summaries, quizzes, and overviews.
- Enables note-taking, bookmarking, and account management.

3. Specific Requirements

3.1. 3.1 Requirements Table Placeholder

Table 1: Functional and Non-Functional Requirements with Priority, Effort, Risk, and Stability

ID	Requirement	Priority	Effort (Days)	Risk	Stability
FR1	Allow users to sign up and log in securely with email or third-party authentication.	Must Have	3	Medium	Stable
FR2	View and edit account information and preferences.	Must Have	3	Low	Stable
FR3	Specify single or multiple documents/folders with study materials.	Must Have	2	Medium	Stable
FR4	Organize uploaded documents into projects, collections, or categories.	Should Have	3	Medium	May Evolve
FR5	Preview uploaded files within the application.	Should Have	3	Medium	Stable
FR6	Automatically process files to create a personal searchable knowledge base.	Must Have	3	High	Stable
FR7	Ask questions in natural language and receive context-based answers.	Must Have	3	High	Stable
FR8	Request summaries of individual documents or entire collections.	Should Have	4	Medium	May Evolve
FR9	Ask for topic-based overviews or explanations across multiple documents.	Could Have	3	High	Likely to Evolve
FR10	Generate quizzes based on learning materials and get scores.	Could Have	4	Medium	Likely to Evolve
FR11	Create or edit personal notes alongside uploaded documents.	Should Have	3	Low	Stable
FR12	Access and revisit previous conversations with the assistant.	Should Have	3	Medium	May Evolve

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ID	Requirement	Priority	Effort (Days)	Risk	Stability
FR13	Bookmark key responses or documents for quick access.	Could Have	3	Low	May Evolve
FR14	Delete files, notes, or entire account/data permanently.	Must Have	3	Medium	Stable
NFR1	System shall be available as a desktop application.	Could Have	4	Low	Stable
NFR2	Process uploads and generate responses within acceptable time limits (<5s queries, <2min uploads).	Must Have	4	High	Stable
NFR3	Encrypt all data in transit and at rest, ensuring confidentiality and compliance.	Must Have	3	Medium	Stable
NFR4	Maintain at least 99% uptime and protect against data loss during operation.	Should Have	2	Medium	Stable
NFR5	Provide an intuitive, responsive, and user-friendly interface.	Must Have	3	Medium	May Evolve
NFR6	Support increasing number of users and documents without significant performance degradation.	Should Have	2	High	Likely to Evolve

4. Conclusion

The **SecondBrain** system is designed to act as a personalized, intelligent knowledge assistant that empowers users to manage and interact with their own information efficiently. By combining Retrieval-Augmented Generation (RAG) architecture with a Large Language Model (LLM), SecondBrain offers a dynamic, context-aware environment for learning, research, and professional development.

This Software Requirements Specification (SRS) has defined the system's purpose, scope, overall architecture, and detailed functional and non-functional requirements. It serves as the foundation for design, implementation, and validation activities, ensuring that all stakeholders share a common understanding of the system's goals and constraints.

In conclusion, SecondBrain aims to enhance productivity and comprehension by transforming static personal data into an interactive and intelligent knowledge base. Its user-centric design, performance goals, and security measures make it a reliable and scalable solution for individuals seeking to bridge the gap between knowledge storage and actionable understanding.

5. Appendices

5.1. 4.1 Appendix A: References

- IEEE Std 830-1998: IEEE Recommended Practice for Software Requirements Specifications.
- OpenAI API and Documentation for LLM Integration.
- Retrieval-Augmented Generation (RAG) Architecture Documentation.

6. Index

Term	Description
LLM	Large Language Model — the generative AI backbone of SecondBrain.
RAG	Retrieval-Augmented Generation — architecture combining retrieval with language generation.
SecondBrain	Intelligent assistant for managing and querying personal knowledge bases.