# Feasibility Report for SecondBrain Project

Mohamed Amine El Kalai
Youssef Guerairate

October 2025

**Abstract**

SecondBrain is an intelligent assistant application powered by a Large Language Model (LLM). It enables users to upload a folder of documents, notes, or learning materials, which the AI then processes to understand the content and provide interactive support. The app allows users to query their personal data, generate quizzes, summarize information, and obtain insights directly based on their uploaded resources. In essence, SecondBrain acts as a personalized Retrieval-Augmented Generation (RAG) knowledge assistant that helps learners and professionals interact dynamically with their own knowledge base.

# Contents

# Chapter 1

# Technical Feasibility

## 1.1 Tools and Technologies

The following tools and frameworks are proposed for the implementation of SecondBrain:

| **Category** | **Tools / Frameworks** | **Purpose** |
|---|---|---|
| Backend (RAG Pipeline) | Python, LangChain, LlamaIndex | Building the retrieval and LLM orchestration pipeline |
| LLM Access | Groq API, OpenRouter, Llama 3 | Natural language processing and generation |
| Embedding Models | SentenceTransformers, OpenAI Embeddings | Creating vector representations of text for retrieval |
| Database / Vector Store | ChromaDB, Pinecone, FAISS | Storing and retrieving embeddings efficiently |
| Frontend | React, Vue.js, Streamlit | User interface for upload and chat |
| Backend Framework | FastAPI, Flask | API handling and backend logic |
| File Handling | PyPDF2, python-docx, txt parsers | Reading and preprocessing uploaded files |
| Deployment | Docker, AWS, Vercel | Hosting and scalability |
| Version Control | Git, GitHub | Collaboration and versioning |
| Authentication (optional) | Firebase Auth, OAuth | Securing user access |

These technologies are accessible, well-documented, and suitable for students learning about Retrieval-Augmented Generation systems.

# Chapter 2

# Market and User Feasibility

## 2.1 Target Users

- Students who want to generate quizzes or summaries from class notes.
- Researchers or professionals managing large knowledge bases.
- Content creators or educators building question banks.

## 2.2 Feasibility Factors

- The interface should remain simple and educationally oriented.
- Costs can be reduced using open-source or local LLMs.
- The app fits both academic and productivity markets.
- Easy onboarding for non-technical users.

## 2.3 Comparative Analysis

To evaluate SecondBrain's market feasibility, we compared it with several existing AI and knowledge-management tools.

| App | Description | Strengths | Weaknesses / Gaps |
|---|---|---|---|
| ChatGPT | General-purpose conversational AI | High accuracy, strong model performance | No personal document memory, limited personalization |
| Perplexity AI | Combines web search with reasoning | Web knowledge integration | Focuses on web data, not private content |
| Notion AI | Productivity and note-taking with AI features | Integrated task management and AI writing tools | Less focused on personalized knowledge retrieval or quiz generation |
| Obsidian (with AI plugins) | Markdown-based knowledge management tool | Strong local knowledge graph, privacy-oriented | Requires plugins for AI integration, lacks automatic quiz generation |

**Observation:** Most current tools either specialize in note-taking or AI chat but rarely combine both in a learning-focused, user-personalized system. And here's our Marketing Opportunity: SecondBrain bridges this gap by offering retrieval-based question answering and adaptive quiz generation tailored to the user's own documents. You can think of SecondBrain as your professor and study buddy **ALL IN ONE.**

## 2.4 Survey Results and User Insights

### 2.4.1 Graph results

To better understand user needs and expectations, a short survey was conducted among potential users of SecondBrain. The survey included six questions focusing on study habits, tool usage, and interest in AI-assisted learning.

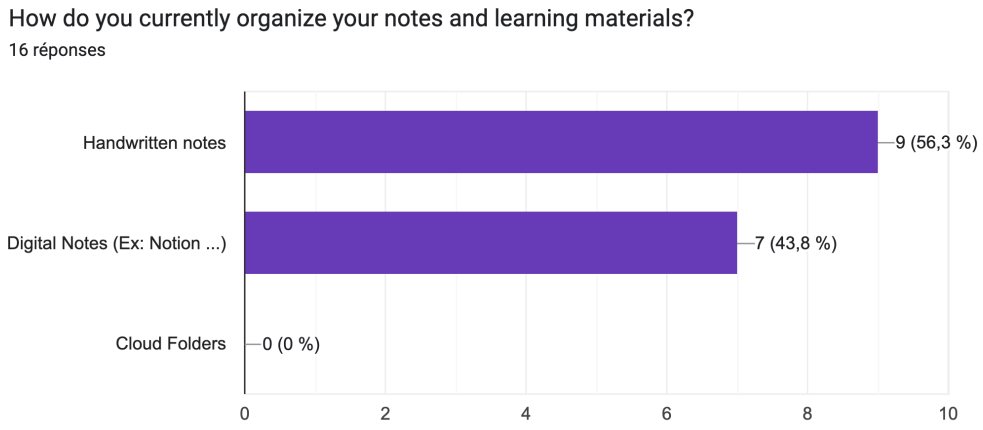


Figure 2.1: Survey results on note organization habits.

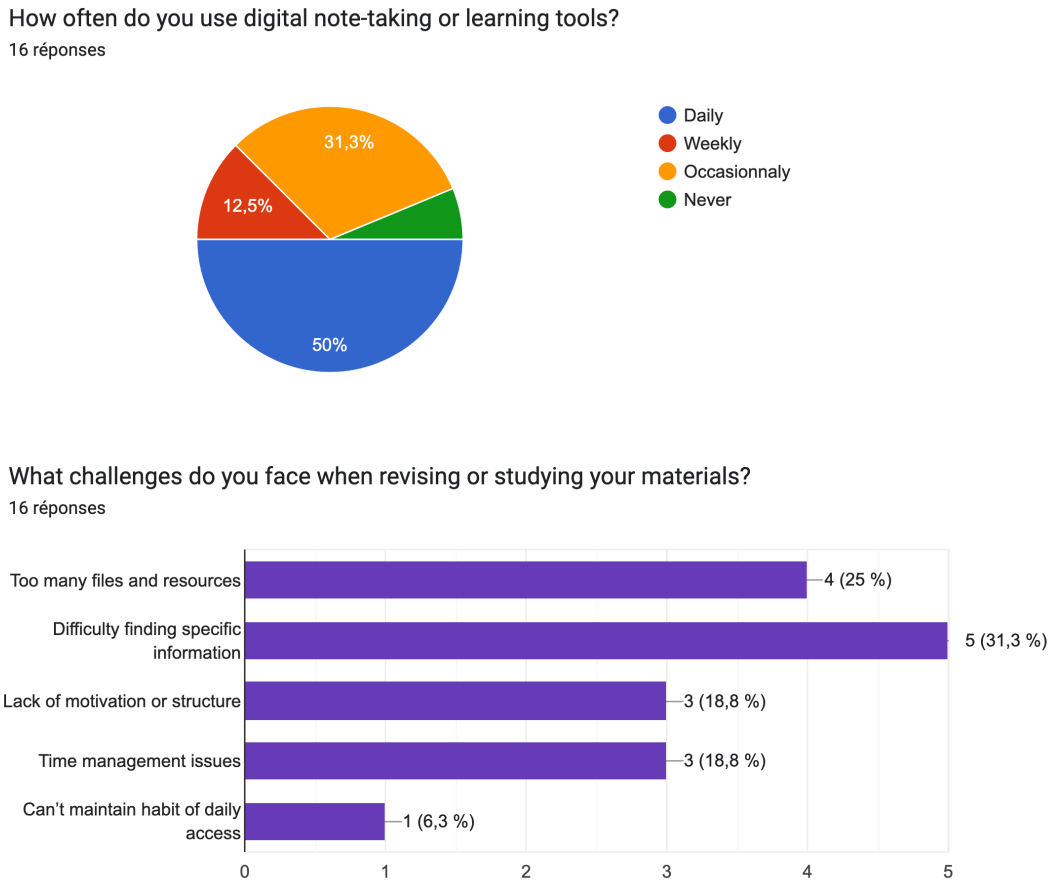


Figure 2.2: Survey results on note organization habits and study challenges.

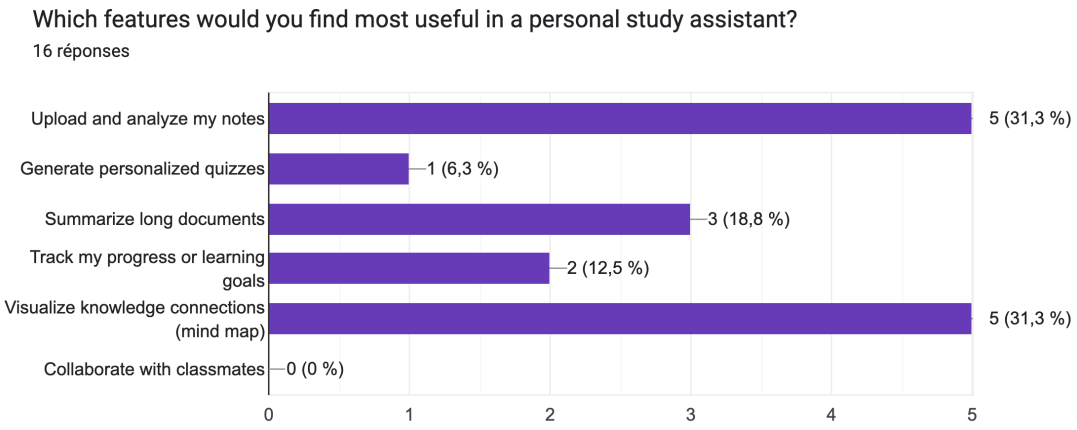


Figure 2.3: User interest in AI assistance and preferred features.

### 2.4.2 Conclusion

- Most users are students who actively use digital note-taking tools such as **Notion** or **Obsidian**.
- Users struggle mainly with **organizing materials** and **managing time**, which indicates a strong motivation for AI-based study tools.
- Many respondents appreciate that **SecondBrain combines note-taking and AI assistance** in a single application.
- To maximize success, users suggested adding features such as:
  - **Notes and Documents Upload** for centralized knowledge management.
  - **Mind Maps** for visualizing topic relationships.
  - **Long Document Summaries** to accelerate learning and revision.

# Chapter 3

# Schedule Feasibility

**Estimated Total Duration:** 7-8 weeks (To Be Confirmed afterwards )

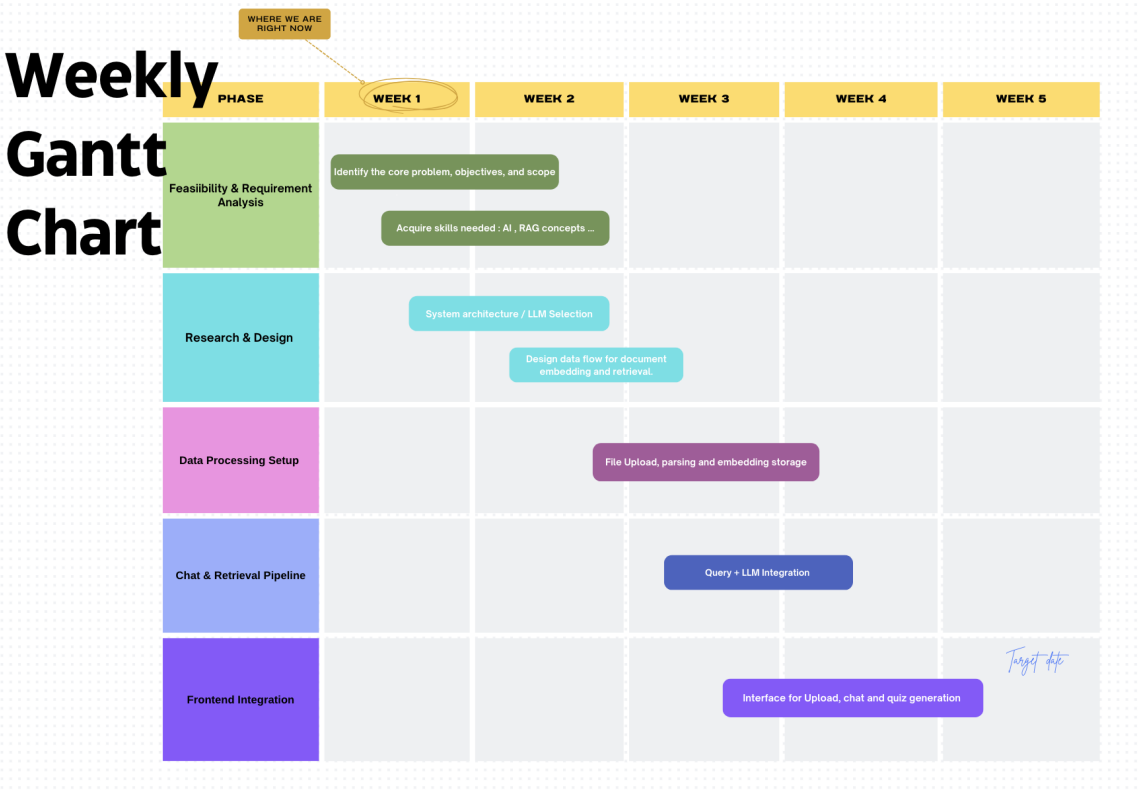


Figure 3.1: Project Schedule – Gantt Chart for SecondBrain Development

# Chapter 4

# Opportunities and Improvement Areas

As third-year computer science students with growing AI and software engineering skills, the following improvements can strengthen SecondBrain:

- Personalized learning experience with adaptive quiz generation.
- Local embedding storage (FAISS/Chroma) to minimize API costs.
- Analytics dashboard for user performance tracking.
- Collaborative note and quiz sharing features.
- Support for multi-format data (PDFs, images, handwritten notes).
- Focus on open-source and cost-efficient tools for sustainability.