

Knight Foundation School of Computing and Information Sciences

Summer 2025 Senior Design Project

SmartStudyAI: A Note Summarizer and Concept Grapher

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PROBLEM

Students often have to study large documents that they use as notes. When there is a lot of information in the document with too many concepts to memorize and to retain the information, it is often difficult to determine what the key concepts that should be studied are and what details are less useful to memorize.

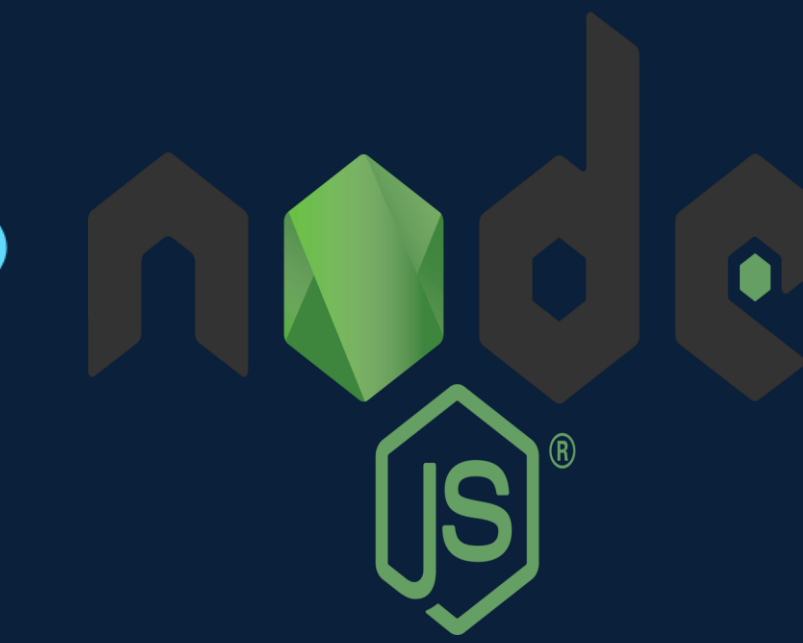
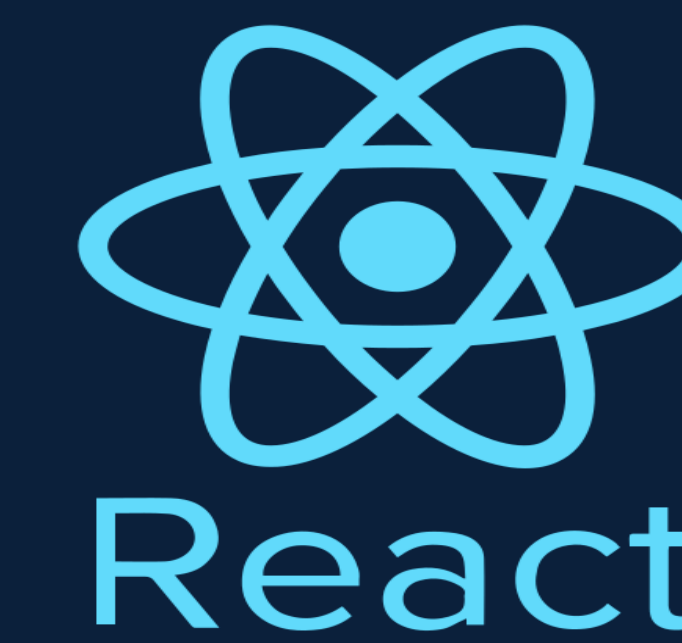
Therefore, SmartStudyAI offers a solution that could help find the important details in a document and extract them so that the user could make use of them in their study sessions.

CURRENT SYSTEM

Current note summarizer apps and websites: Scribbr, Notta, QuillBot, ClickUp, ChatGPT

Main limitation of current systems: Not having features other than the summarization and they are not intended for students who would want to study the text from the document

REQUIREMENTS

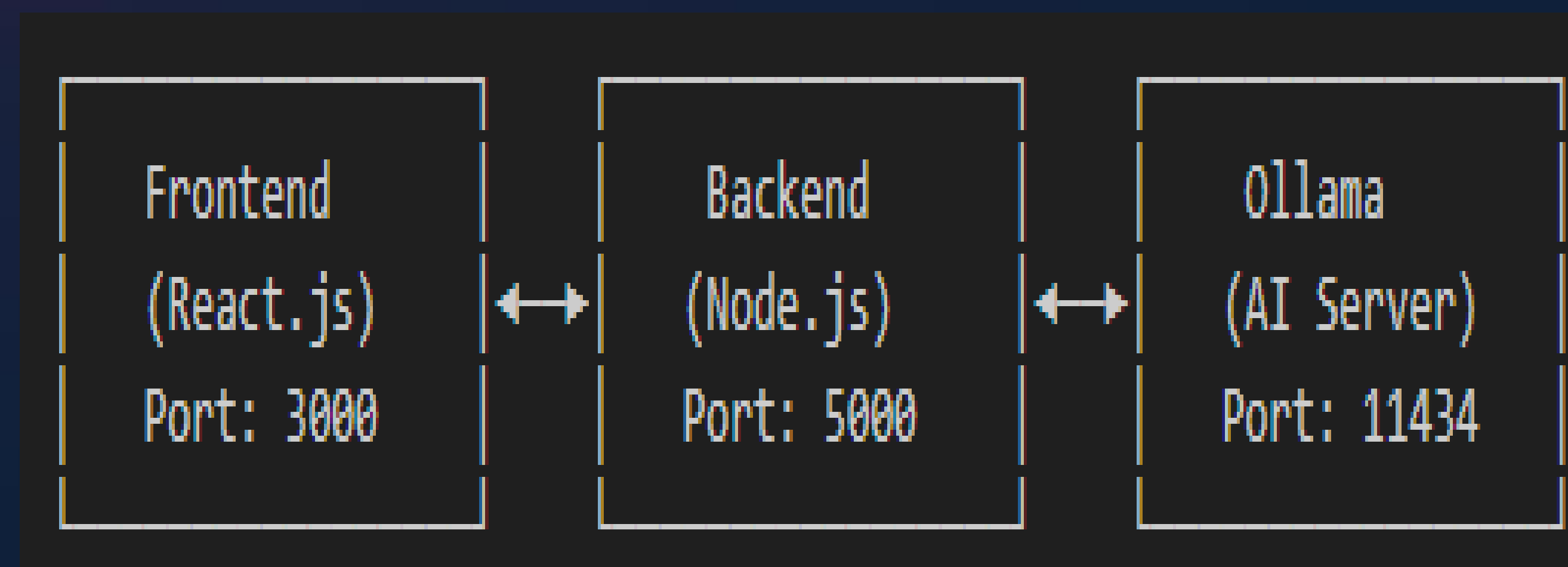


📋 Prerequisites

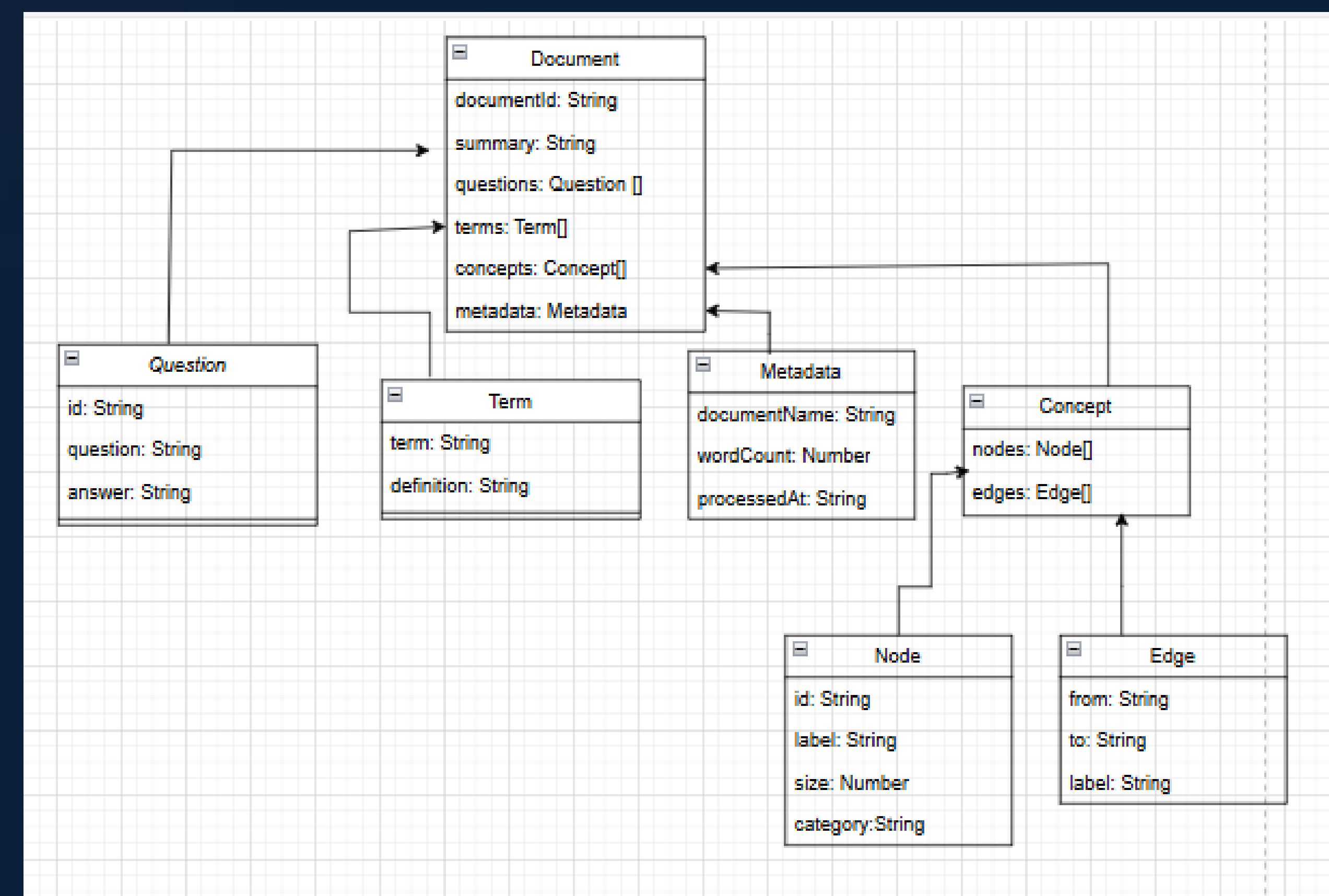
Before you begin, ensure you have the following installed:

- **Node.js** (v16 or higher) - [Download here](https://nodejs.org/)
- **npm** (comes with Node.js)
- **Ollama** - [Download here](https://ollama.ai/)

SYSTEM DESIGN



OBJECT DESIGN



The diagram depicts JSON objects

IMPLEMENTATION

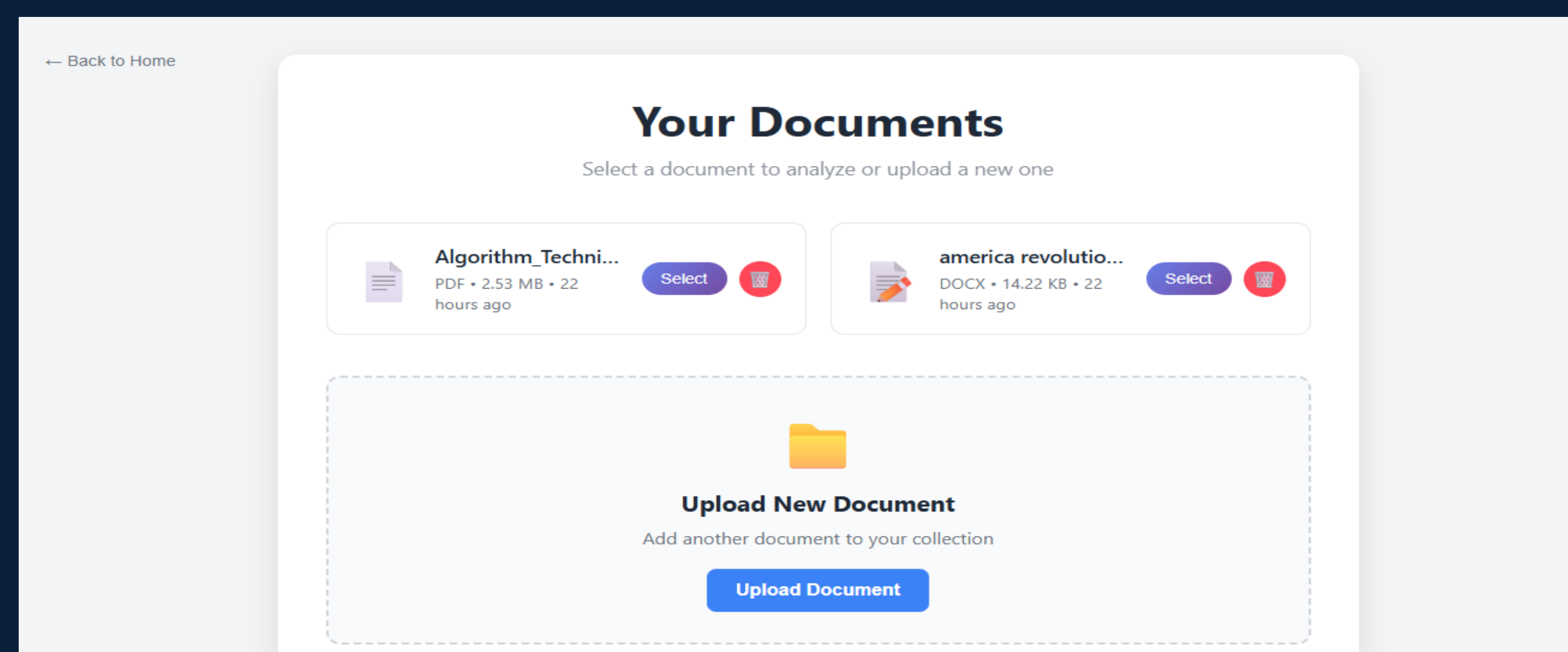


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### Frontend
- React.js - Modern UI framework
- CSS3 - Custom styling with gradients and animations
- JavaScript ES6+ - Modern JavaScript features

### Backend
- Node.js - Server runtime
- Express.js - Web framework
- Multer - File upload handling
- PDF-Parser - PDF text extraction
- Mammoth - DOCX text extraction

### AI Integration
- Ollama - Local AI model server
- LLaMA 2 / Gemma3 - Large Language Models
- Custom AI Service - Tailored prompts for study materials
```

VERIFICATION



The features of SmartStudyAI were verified to be working properly by uploading example documents including lecture notes from our classes

SUMMARY

SmartStudyAI offers a convenient way for students to study their notes by allowing users to generate a summary of the important concepts.

Users could upload a document and the text from the document is sent to the server in the backend and using an AI service, several operations could be performed such as generating a summary, quizzing the user using generated questions, finding important terms, and creating a concept graph and the results are displayed back to the user.

REFERENCES

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- <https://icon-icons.com/icon/react-original-wordmark-logo/146375>
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