



Florida International University

Summer 2025 Senior Design Project

Study Buddy

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PROBLEM

Students waste time creating or finding study materials. Existing flashcard apps lack personalization and don't adapt well to different learning sources or user memory retention patterns.



SYSTEM DESIGN

The Study Buddy system is composed of four main components:

1. User Interface (Frontend- React): Allows users to prompts, view flashcards and track their learning progress.
2. Backend Server (Python): Handles file parsing, sends data to the AI model for flashcard generation, manages user data and spaced repetition logic
3. AI Integration: Spaced Repetition Engine processing. Processes text from prompts to identify key concepts and generate question-answer flashcards.

VERIFICATION

Flashcard Quality Testing:

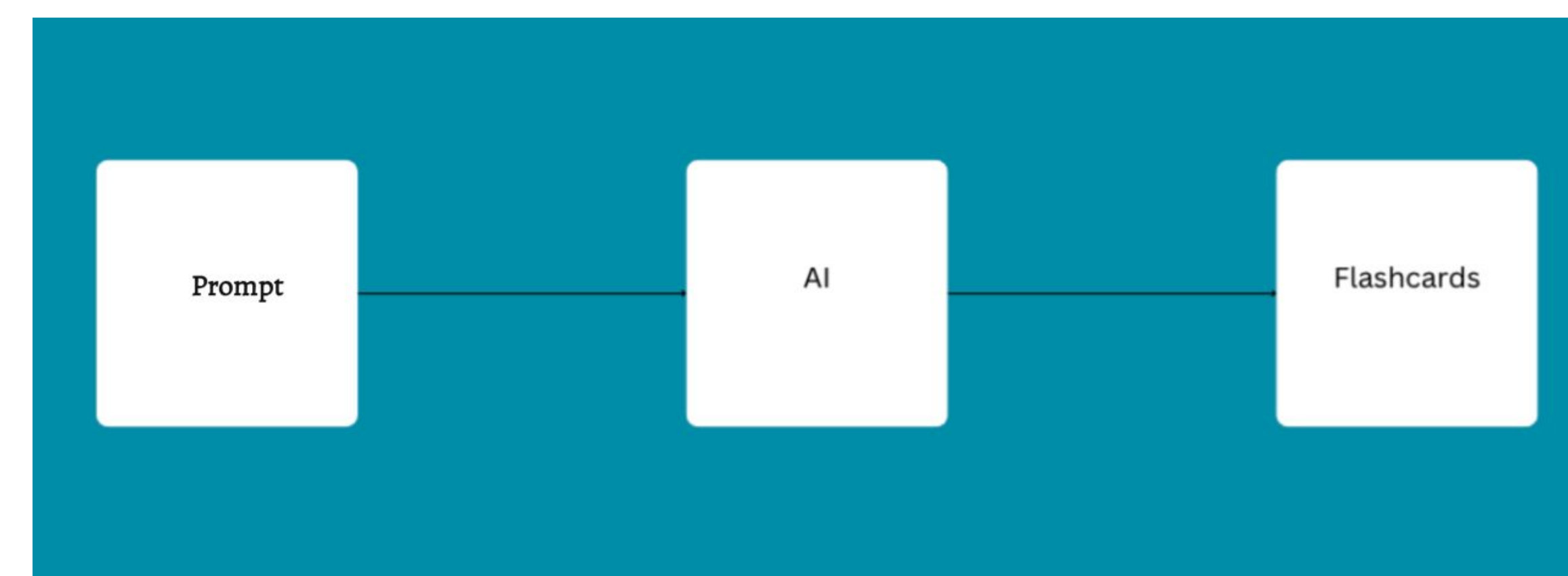
- Manually review Ai-generated flashcards for accuracy and relevance

Functional Testing

- Upload varios prompts
- Communication with API
- Flashcard Generation

CURRENT SYSTEM

Study Buddy automatically generates flashcards from prompts using language models. It uses spaced repetition to improve learning efficiency over time.



IMPLEMENTATION

1. Prompt Upload Module (Frontend)

- Built Using React
- Allows users to upload prompts
- Send uploaded prompts via APIS

2. Flashcard Generator

- Sends prompts to AI model via APIS
- Uses prompts to generate high quality Flashcards
- Collects responses in flashcard format

3. Flashcard Viewer+feedback(frontend)

- Displays flashcards one by one
- Lets users look and interact with flashcards

REQUIREMENTS

Functional Requirements:

- Users must be able to upload any kind of prompt for flashcards based on class material.
- The system must generate flashcards using AI from uploaded content.

Non-Functional Requirements:

- The UI should be responsive and intuitive.
- Backend should prompt uploads and flashcard generation within a timely manner.
- System must be scalable to handle multiple simultaneous users.
- AI outputs must be reliable and relevant to academic study materials.

SUMMARY

Study Buddy is an AI-powered study tool designed to streamline the learning process by automatically generating flashcards from lecture notes, textbooks, and PDFs. By combining OpenAI's language model with a spaced repetition system, it personalizes review sessions and boosts long-term retention. This project aims to reduce the time students spend manually creating study materials while increasing the effectiveness of their review sessions. With a modern React interface, Python backend, and intelligent scheduling, Study Buddy offers a smarter, more efficient way to prepare for exams.

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