

# CODECELL SUMMER INTERNSHIP

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## INNOVATIVE USE OF AI TOOLS FOR APPLICATION LIFECYCLE AND RESEARCH

# ***Generate Study Flashcards from Notes***

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# INTRODUCTION

## BRIEF OF THE PROJECT

The AI Flashcard Generator processes educational content through Natural Language Processing (NLP) to generate relevant and concise flashcards. It ensures easy learning and quick revision. Users can interact with the platform via a responsive UI to input their content and instantly receive a deck of flashcards.

## PROBLEM STATEMENT

PS-02 | Generate Study Flashcards from Notes Build a responsive flash card generator where users can input study material in various formats—typed text, PDFs, or voice notes. The app should process the content using LLMs and generate clear, relevant flashcards with question-answer pairs to aid revision.

## IDEA / APPROACH

- Users input study materials in various formats.
- The backend processes the input using LLM-based NLP tools to identify important concepts and questions.
- The system generates flashcards dynamically with Q&A pairs.
- Cards are displayed in a clean, responsive interface for review and self-testing.

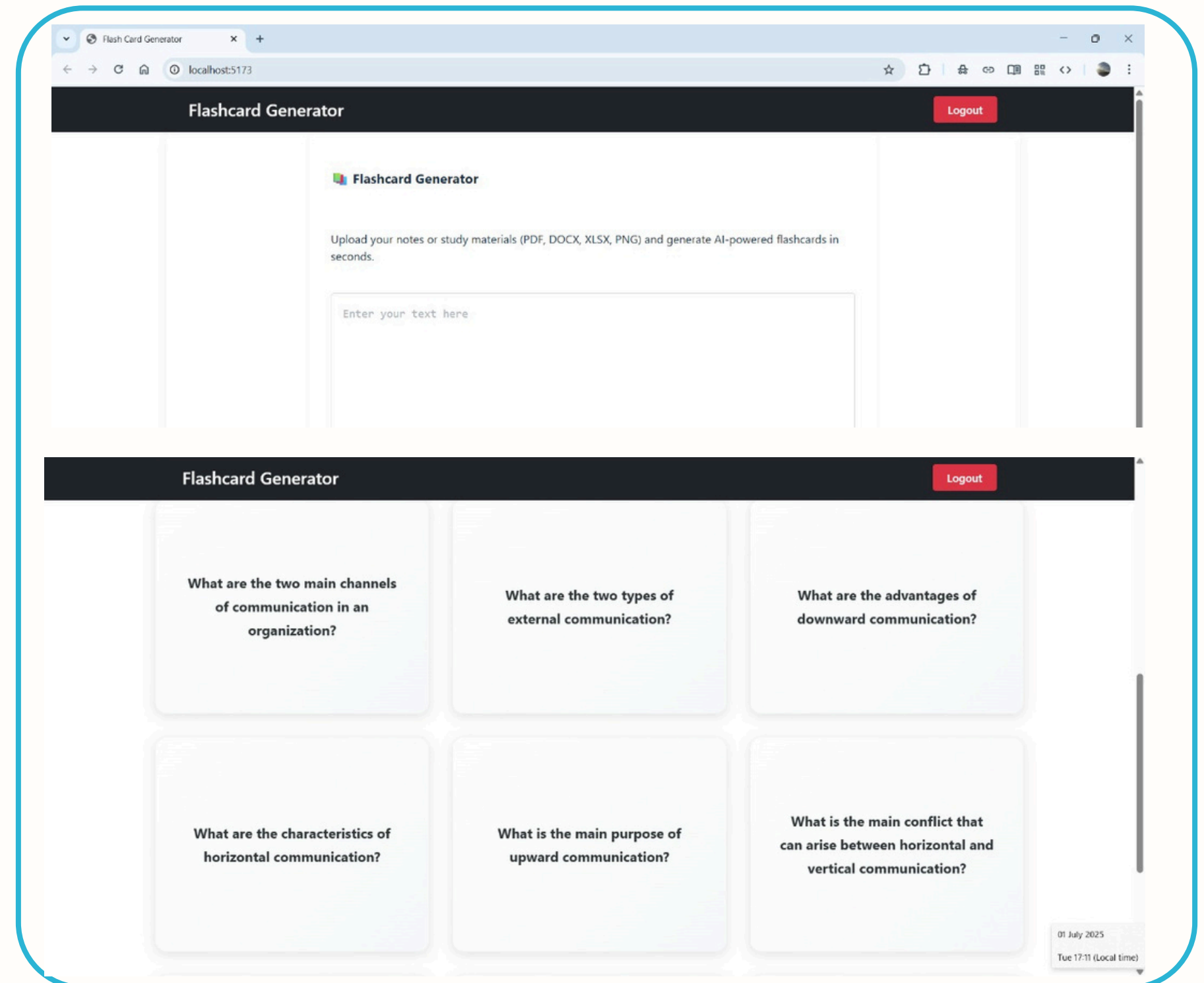
# TECH STACK & ARCHITECTURE

- Frontend: React.js, Tailwind CSS
- Backend: Node.js, Express.js
- AI Integration: OpenAI API (GPT-4)
- File Handling: Multer (for file uploads)
- PDF/Text Processing: pdf-parse, speech-to-text API
- Architecture: RESTful API + React frontend

# KEY FEATURES

- Upload PDFs, text, or voice notes
- LLM-generated Q&A flashcards
- Clean, responsive flashcard UI
- Support for multiple subjects and formats

# DEMO



# ROLE OF AI IN THE DEVELOPMENT/AI TOOLS USED

- **LLM (LARGE LANGUAGE MODEL): GPT-4 USED TO EXTRACT IMPORTANT QUESTIONS AND ANSWERS FROM NOTES**
- **SPEECH-TO-TEXT: CONVERTS VOICE INPUT INTO TEXT FOR FLASHCARD GENERATION**
- **NATURAL LANGUAGE PROCESSING (NLP): SUMMARIZES AND TRANSFORMS EDUCATIONAL CONTENT INTO MEANINGFUL REVISION CARDS**

## **FUTURE SCOPE / IMPROVEMENTS**

- **ADD USER LOGIN AND SAVE FLASHCARDS TO ACCOUNT**
- **MULTI-LANGUAGE SUPPORT FOR REGIONAL USERS**
- **INTERACTIVE REVISION QUIZ MODE**
- **INTEGRATION WITH PLATFORMS LIKE NOTION OR  
GOOGLE DRIVE**
- **MOBILE APP VERSION FOR ON-THE-GO LEARNING**