Project Report: AI-Powered Personalized Study Planner

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1. Introduction

This project is an AI-based Study Planner designed to help students automatically generate study plans and find relevant educational videos.

The project consists of both frontend and backend components.

The user interacts with the system by uploading a syllabus, which is processed to extract key topics.

A personalized study plan is then generated along with video recommendations for each topic.

The system is implemented using Python for backend operations and HTML/CSS for the frontend interface.

2. Objective

The core objective of this project is to build a personal study assistant that:
- Understands a student's unique syllabus and academic level.
- Recommends the most relevant YouTube videos and resources.
- Automatically generates an adaptive daily study plan.
- Supports learning with AI-driven features like topic extraction and video recommendations.

3. Key Features

- Syllabus Upload: Upload PDF or TXT syllabus files.

- AI-Based Topic Extraction: NLP tools extract key syllabus topics.
- YouTube Video Recommendation: suggest relevant educational videos.
- Personalized Scheduler: Generates smart daily/weekly study schedules.
- Study Level Selection: Supports school, college, university, or self-paced learners.

4. Tech Stack Used

1. Python (Flask) for the backend
2. HTML and CSS for the frontend
3. PDFplumber for PDF text extraction
4. Regular Expressions for processing syllabus
5. YouTube API (via simple links) for video recommendations
6. FPDF for PDF report generation

5 Project Structure :-

1 Backend

- app.py: The core Flask application handling the routes and logic.
- syllabus_processor.py : Extracts topics from the syllabus text.
- scheduler.py: Generates a personalized study schedule.
- video_recommender.py: Recommends YouTube videos based on topics.

2 FRONTEND:-

- index.html:** The home page introducing the application.
- upload.html:** A page where the user can upload a syllabus.
- dashboard.html:** Displays the extracted topics and recommended videos.
- result.html:** Displays the generated study plan

3 CSS (styles.css): Contains styling for all the HTML pages

WORKFLOW:-

1. The user visits the home page where they are greeted and can click a link to upload a syllabus.

2. After uploading a syllabus file (PDF/TXT), the backend extracts topics using the ”syllabus_processor.py” module.

3. On the dashboard, the extracted topics are displayed, and video recommendations for each topic are shown.

4. The user can generate a study plan, which is created by the `scheduler.py` module, and displayed in `result.html`.

5. The user can then access the personalized study schedule and relevant YouTube videos.

Features:

1. Syllabus Upload: Users can upload a PDF or TXT syllabus.

2. Topic Extraction: Automatically extracts topics from the syllabus text.

3. Video Recommendations: Provides links to relevant YouTube educational videos for each topic

4. Study Plan Generation: Generates a day-by-day study plan based on the syllabus.

5. Intuitive User Interface :Clean and simple frontend using HTML and CSS.

7. Challenges Faced

- Poorly formatted or scanned PDFs caused difficulty in text extraction.
- Matching vague chapter titles with precise videos was challenging.
- Needed to balance study loads to avoid user burnout.

8. Future Enhancements

- Add AI-generated quizzes.
- Voice-based syllabus uploads.

- Group collaboration features.
- OCR support for image-based syllabi.
- Mobile app version.

9. Conclusion

This AI-Based Study Planner is a useful tool for students who want to optimize their study schedules and find relevant learning resources.

By automating syllabus processing, schedule generation, and video recommendations, the system saves time and helps students focus on their studies.

The project has been implemented with Flask for backend and HTML/CSS for frontend, ensuring a smooth user experience and easy accessibility.