FINAL PROJECT REPORT

AGENTIC AI BASED STUDENT STUDY PLANNER

Submitted By

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1. INTRODUCTION

In the modern academic environment, students are required to manage multiple subjects, assignments, examinations, and deadlines simultaneously. Many students struggle with effective time management, regular revision, and self-evaluation. Traditional study planning methods, such as manual timetables or basic digital planners, do not provide intelligent feedback or adaptability.

With the rapid advancement of Artificial Intelligence, intelligent systems can now be designed to act autonomously and assist users in decision-making processes. **Agentic AI** refers to AI systems composed of multiple agents, each responsible for a specific task, working collaboratively to achieve a defined objective.

This project applies the concept of Agentic AI to develop a **Student Study Planner** that functions as an intelligent study companion. The system not only helps students plan their studies but also tracks progress, evaluates performance, and provides personalized recommendations based on user behavior.

2. PROBLEM STATEMENT

Despite the availability of various study planning tools, students continue to face several challenges:

- Ineffective time management

- Lack of structured and adaptive study plans

- Absence of regular self-assessment

- Difficulty in identifying weak subjects

- No intelligent guidance or feedback mechanism

- Manual and inefficient progress tracking

These limitations highlight the need for an intelligent, adaptive, and autonomous study planning system that can assist students throughout their learning process.

3. OBJECTIVES OF THE PROJECT

The primary objectives of this project are:

- To design and develop an intelligent study planner using Agentic AI principles

- To assist students in effective time management and study scheduling

- To generate structured, subject-wise study plans

- To provide self-assessment through MCQ-based tests

- To monitor and visualize study progress

- To identify weak subjects and recommend focused learning

- To provide AI-based explanations for core computer science subjects

4. SYSTEM OVERVIEW

The **Agentic AI Based Student Study Planner** is a web-based application that integrates multiple autonomous agents to support students academically. The system allows users to:

- Set daily study goals

- Track study time using a timer

- Visualize progress through charts

- Generate study plans for selected subjects

- Take subject-based MCQ tests

- Store important study notes

- Schedule study activities using a calendar

- Interact with an AI-powered study chatbot

Each functionality is managed by a dedicated agent, ensuring modularity, autonomy, and intelligent decision-making.

5. AGENTIC AI APPROACH

5.1 Concept of Agentic AI

Agentic AI systems consist of multiple intelligent agents that operate independently while collaborating toward a common goal. Each agent perceives inputs, processes information, and performs actions relevant to its assigned task.

5.2 Agents Implemented in the System

- **Planner Agent**
  Generates structured study plans based on selected subjects and learning levels.

- **Tracker Agent**
  Monitors study duration, calculates completed and remaining time, and visualizes progress.

- **Quiz Agent**
  Conducts MCQ-based tests and evaluates user performance.

- **Recommendation Agent**
  Analyzes study time and test scores to identify weak subjects and suggest improvements.

- **Chatbot Agent**
  Provides concise explanations and key points for core computer science subjects.

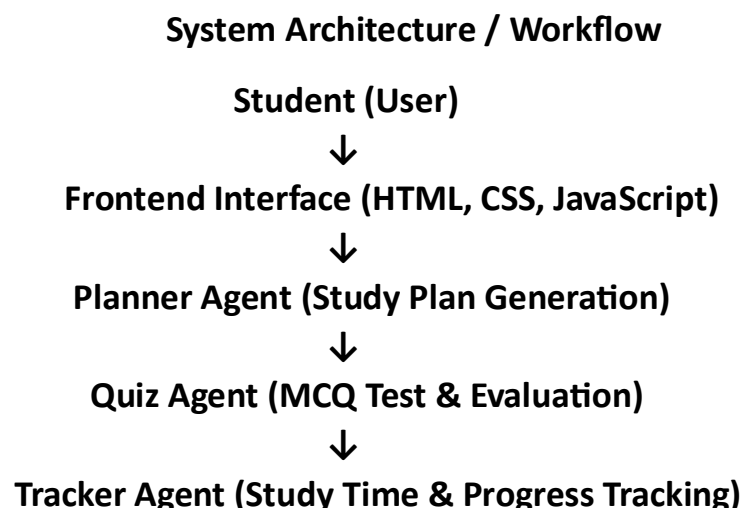These agents collectively enable the system to function autonomously and intelligently.
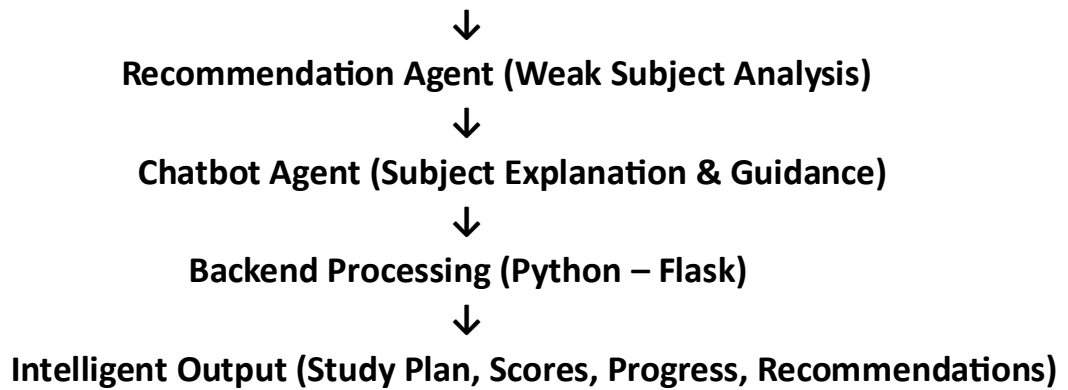
6. SYSTEM ARCHITECTURE

The proposed system follows a **client–server architecture** that separates user interaction, intelligent processing, and data handling to ensure modularity, scalability, and maintainability.

Architecture Components

- **Frontend:**
  Developed using HTML, CSS, and JavaScript. It provides an interactive user interface that allows students to set study goals, track time, take tests, save notes, interact with the study bot, and manage schedules through the calendar.

- **Backend:**
  Implemented using Python with the Flask framework. The backend handles intelligent processing such as study plan generation and chatbot responses through agent-based logic.

- **Agentic AI Logic:**
  Multiple agents operate independently to perform planning, tracking, evaluation, recommendation, and explanation tasks. These agents collaborate to provide intelligent outputs.

- **Data Storage:**
  Browser Local Storage is used to store notes and user progress, enabling quick access without external databases.

- **Visualization Layer:**
  Chart.js is used to visually represent study progress, helping users understand their performance intuitively.

Workflow

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System Architecture / Workflow

Student (User)
↓
Frontend Interface (HTML, CSS, JavaScript)
↓
Planner Agent (Study Plan Generation)
↓
Quiz Agent (MCQ Test & Evaluation)
↓
Tracker Agent (Study Time & Progress Tracking)

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Recommendation Agent (Weak Subject Analysis)

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Chatbot Agent (Subject Explanation & Guidance)

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Backend Processing (Python – Flask)

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Intelligent Output (Study Plan, Scores, Progress, Recommendations)

7. MODULE DESCRIPTION

7.1 Dashboard Module

The dashboard acts as the central control panel of the system. It displays daily study goals, a real-time study timer, completed and remaining study time, progress charts, and AI-based subject recommendations. This module helps students continuously monitor and regulate their study behavior.

7.2 Study Planner Module

This module generates structured, subject-wise study plans. Each plan is divided into learning levels such as Basic, Intermediate, and Advanced, along with exam-oriented points. It helps students follow a clear and organized learning path.

7.3 Test Module

The test module conducts MCQ-based assessments to evaluate student understanding. After submission, scores are calculated instantly, allowing students to assess their performance and identify weak areas.

7.4 Notes Module

The notes module enables students to store important study points along with timestamps. This supports quick revision and reinforces key concepts learned during study sessions.

7.5 Study Bot Module

The study bot acts as an intelligent tutor. It answers syllabus-related questions in subjects such as SQL, Operating Systems, Network Security, and Artificial Intelligence by providing short explanations and key points.

7.6 Calendar Module

The calendar module allows students to schedule study activities by specifying subject, date, and time. This promotes disciplined study habits and effective time management.

8. TOOLS AND TECHNOLOGIES USED

- **HTML:** Used for structuring web pages

- **CSS:** Used for styling and responsive layout

- **JavaScript:** Handles frontend logic, timers, tests, and charts

- **Chart.js:** Used for graphical visualization of study progress

- **Python:** Implements backend logic and AI agents

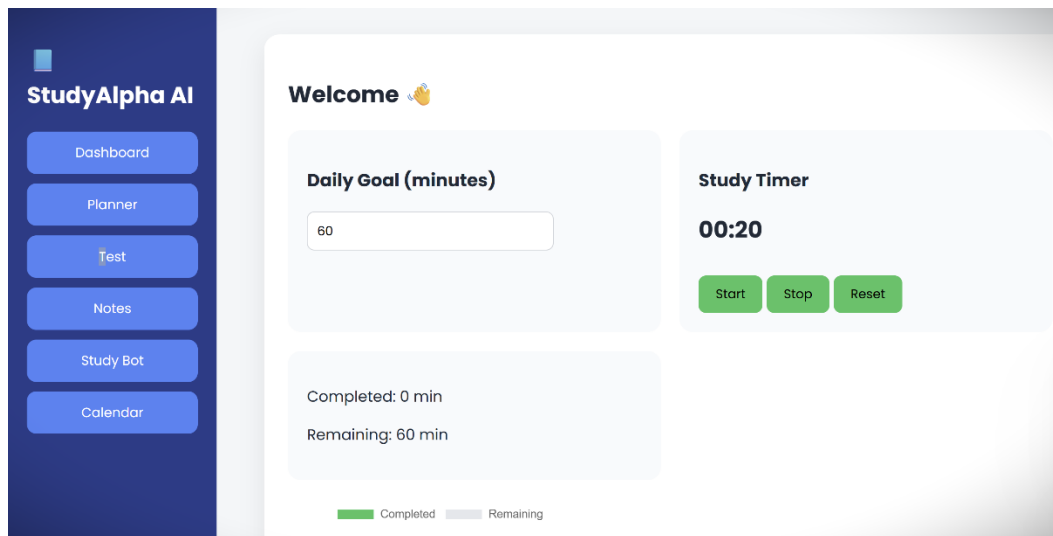- **Flask:** Lightweight web framework for server-side processing

9. IMPLEMENTATION DETAILS

The implementation of the **Agentic AI Based Student Study Planner** is carried out by dividing responsibilities between the frontend and backend components. The frontend is developed using HTML, CSS, and JavaScript and is responsible for all user interactions. It dynamically updates the interface based on user actions such as starting the study timer, generating study plans, attempting tests, saving notes, and scheduling activities.

JavaScript is used extensively to handle real-time functionalities including study timer execution, automatic calculation of completed and remaining study time, MCQ test evaluation, and progress visualization using charts. The frontend ensures a responsive and user-friendly experience.

The backend of the system is developed using the Flask framework in Python. It integrates the **Planner Agent** and **Chatbot Agent**, which process user inputs and generate intelligent outputs such as study plans and subject explanations.

The separation between frontend and backend ensures efficient processing, easy maintenance, and smooth communication between system components.

10. RESULTS AND DISCUSSION

The developed system successfully achieves all the objectives defined at the beginning of the project. The study planner generates structured and subject-wise study plans that assist students in organizing their learning process. The study timer accurately tracks study duration, and the progress charts provide clear visual feedback on performance.

The MCQ test module effectively evaluates student understanding and helps identify weak areas. Based on study time and test performance, the system provides intelligent recommendations that guide students toward focused learning. The study chatbot delivers concise and syllabus-based explanations, enhancing conceptual understanding.

Overall, the results demonstrate that the system functions efficiently and provides meaningful support to students in managing their studies.

11. CONCLUSION

The **Agentic AI Based Student Study Planner** successfully demonstrates the practical application of Agentic Artificial Intelligence in the education domain.

By integrating multiple intelligent agents, the system enables personalized study planning, continuous progress monitoring, and effective self-assessment.

The project highlights how agent-based systems can move beyond traditional static applications to provide intelligent assistance. The developed system serves as a reliable study companion and significantly improves learning efficiency and academic performance.

12. FUTURE SCOPE

The current system can be further enhanced in several ways:

- Integration with database systems for persistent data storage

- Implementation of user authentication and personalized profiles

- Adoption of machine learning techniques for adaptive study recommendations

- Development of a mobile application version

- Expansion of the system to include additional academic subjects

13. REFERENCES

- Russell, S., & Norvig, P., *Artificial Intelligence: A Modern Approach*

- Flask Official Documentation

- Chart.js Documentation

- Wikipedia – Computer Science Topics

Source Code

GitHub repo link:

Malavika: https://github.com/malavika345256/AUagentic

Kavi Varshini : https://github.com/Kavivarshini13/-student-study-planner