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Research Paper

AI STUDY PLANNER AND REVISION SCHEDULER

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Abstract

The **AI Study Planner and Revision Scheduler** is an Artificial Intelligence-based educational system designed to help students organize their studies, manage academic tasks, and revise learning materials effectively. Students often struggle to create a balanced study schedule because they have multiple subjects, assignments, examinations, and different levels of understanding. The proposed system uses AI to create a personalized study plan according to the student's academic goals, available time, priorities, and learning progress.

The system allows students to enter information such as subjects, topics, examination dates, assignment deadlines, available study hours, and preferred study times. It analyzes this information and creates a structured timetable that distributes study activities across available days. The system considers topic difficulty and priority so that important or difficult subjects can receive more study time.

A major feature of the system is **AI-based revision scheduling**. Instead of simply assigning topics once, the system schedules revision sessions at suitable intervals. It can use concepts from spaced repetition and performance-based scheduling to recommend when a topic should be reviewed again. Students can complete quizzes or self-assessments, and the system can adjust future revision sessions according to their performance.

The system continuously monitors study progress and can modify the plan when the student misses a session, completes a topic early, or performs poorly in an assessment. It can recommend additional practice for weak areas and reduce unnecessary revision for topics that the student has already mastered. Notifications and reminders can help students stay consistent with their planned study activities.

Overall, the **AI Study Planner and Revision Scheduler** provides a personalized and adaptive approach to academic planning. It can help students manage their time, reduce last-minute exam preparation, improve revision consistency, and focus on important learning areas. Future enhancements can include AI-generated study materials, intelligent quiz generation, voice-based planning, integration with calendars and Learning Management Systems, and advanced learning analytics.

I. INTRODUCTION

Effective time management is an important part of academic success. Students often need to manage several subjects, assignments, examinations, projects, and extracurricular activities simultaneously. Without proper planning, students may postpone difficult topics and depend on last-minute preparation. A well-organized study plan can help learners distribute their workload and make better use of available time.

Traditional study planning methods include paper timetables, notebooks, calendars, spreadsheets, and basic reminder applications. These methods allow students to organize tasks, but they generally require students to manually decide how much time should be allocated to each topic. They may also fail to adapt when a student misses a study session or performs poorly in a particular subject.

Artificial Intelligence can improve study planning by analyzing academic information and learner behavior. AI can identify priorities, estimate study requirements, recommend suitable schedules, and adapt plans based on progress. Machine learning and recommendation techniques can be used to understand study patterns and identify topics that require additional attention.

The **AI Study Planner and Revision Scheduler** is designed to automatically generate personalized study schedules. Students provide their subjects, topics, examination dates, deadlines, available study hours, and learning preferences. The system analyzes these inputs and creates a balanced schedule that includes new learning, revision, practice, and assessment activities.

An important feature of the proposed system is its adaptive nature. The schedule changes according to student performance and actual study behavior. If a student misses a session, the system can reorganize the remaining schedule. If an assessment shows that a topic is weak, additional revision can be scheduled. This creates a flexible study plan that evolves with the learner.

II. LITERATURE SURVEY

Traditional study-planning systems generally use calendars, task lists, notebooks, spreadsheets, and reminder applications. These tools allow students to record academic activities and create personal timetables. However, most of them depend on manual planning and do not automatically determine the optimal order or duration of study sessions. They also provide limited personalization based on learning performance.

Digital learning platforms have introduced features for course management, assignment tracking, examination preparation, and progress monitoring. Learning Management Systems can record completed lessons, assessment scores, and course progress. However, many platforms focus primarily on delivering educational content rather than generating a complete personalized study and revision schedule.

Research on **spaced repetition** has shown the usefulness of reviewing learning material at appropriately distributed intervals. Revision systems can schedule repeated exposure to information to support long-term retention. Flashcard-based applications commonly use algorithms to determine when learners should review individual items. However,

these systems may focus mainly on small learning units rather than planning an entire academic workload involving multiple subjects and deadlines.

Adaptive learning research has explored the use of learner performance to modify educational content and recommendations. Systems can identify weak areas and provide additional practice while allowing learners to progress faster through familiar material. Such approaches demonstrate the value of adapting learning activities to individual needs, but integrating adaptive learning with complete timetable planning remains challenging.

AI-based recommendation systems can analyze learner preferences, performance, deadlines, and previous activities to generate personalized recommendations. Machine learning can identify patterns in study behavior and predict which topics may require attention. Generative AI can additionally create summaries, explanations, questions, and personalized learning activities. However, AI-generated schedules need to consider realistic time constraints and avoid creating excessive workloads.

Existing research demonstrates that combining AI-based planning, adaptive learning, spaced repetition, and learner analytics can create more effective study-planning systems. Challenges remain in balancing multiple subjects, adapting to missed sessions, accurately estimating revision needs, and maintaining realistic schedules. The proposed **AI Study Planner and Revision Scheduler** addresses these challenges by integrating personalized timetable generation, priority analysis, performance tracking, spaced revision, adaptive rescheduling, and intelligent reminders.

III. SYSTEM ANALYSIS

System Analysis

The **AI Study Planner and Revision Scheduler** is designed to create and manage personalized academic schedules for students. The user first enters subjects, topics, examination dates, assignment deadlines, available study hours, and preferred study times. The input-processing module organizes the academic information and identifies important constraints. An AI priority engine evaluates topics based on difficulty, importance, deadlines, and learner performance. The system creates a learner profile containing study preferences and previous progress. A schedule-generation engine distributes learning and revision activities across available time slots. A revision module schedules repeated reviews using performance-based and spaced-repetition principles. Students can complete quizzes or assessments to provide performance information. The system analyzes these results and identifies strong and weak topics. An adaptive scheduling engine modifies future sessions when the learner misses tasks or requires additional practice. A notification module provides reminders for upcoming study and revision sessions. Finally, the dashboard displays the daily timetable, revision schedule, progress, upcoming deadlines, and personalized study recommendations.

Existing System

Existing study-planning methods commonly use paper timetables, calendars, spreadsheets, reminder applications, and basic educational planners. Students manually enter subjects, topics, examination dates, and study sessions into these tools. The

student must decide which topics should be studied first and how much time should be allocated to each subject. Traditional planners generally do not analyze topic difficulty or previous assessment performance. Revision is often performed manually, and students may forget to revisit topics at appropriate intervals. Basic reminder applications can notify students about scheduled tasks but usually cannot intelligently modify the schedule. If a student misses a study session, the remaining timetable often needs to be reorganized manually. Existing systems may also provide limited recommendations for weak subjects. They generally do not combine academic deadlines, learner performance, available time, and revision requirements into one intelligent planning process. As a result, students may create unrealistic schedules or spend too much time on some topics while neglecting others. Traditional tools provide useful organization but offer limited adaptive and AI-based planning.

Disadvantages of Existing System

- Requires manual creation of study schedules.
- Limited personalization based on student performance.
- Does not automatically prioritize difficult topics.
- Revision schedules are often created manually.
- Limited support for spaced repetition.
- Does not adapt efficiently when study sessions are missed.
- Limited analysis of weak and strong subjects.
- Basic reminders do not provide intelligent recommendations.
- Difficult to balance multiple subjects and deadlines.
- May create unrealistic or overloaded schedules.
- Limited continuous learning analytics.
- Requires frequent manual timetable adjustments.

Proposed System

The proposed **AI Study Planner and Revision Scheduler** uses Artificial Intelligence to automatically generate personalized study and revision schedules. The student provides subjects, topics, examination dates, assignment deadlines, available study hours, and learning preferences. The system analyzes this information and creates a learner profile containing academic priorities and study preferences. An AI priority engine evaluates topics according to difficulty, deadlines, importance, and previous performance. The scheduling engine allocates suitable study sessions across available time slots while maintaining a balanced workload. A revision engine applies spaced and performance-based revision principles to determine when topics should be reviewed. Students can complete quizzes and assessments, allowing the system to measure their understanding. Weak topics receive additional revision and practice sessions, while well-understood topics may require less frequent review. If a student misses a session, the adaptive engine automatically reorganizes future activities. Intelligent notifications remind students about important study and revision tasks. The dashboard provides a clear view of daily tasks, upcoming examinations, progress, and recommended activities. This creates a flexible study plan that continuously adapts to the student's academic needs.

Advantages of Proposed System

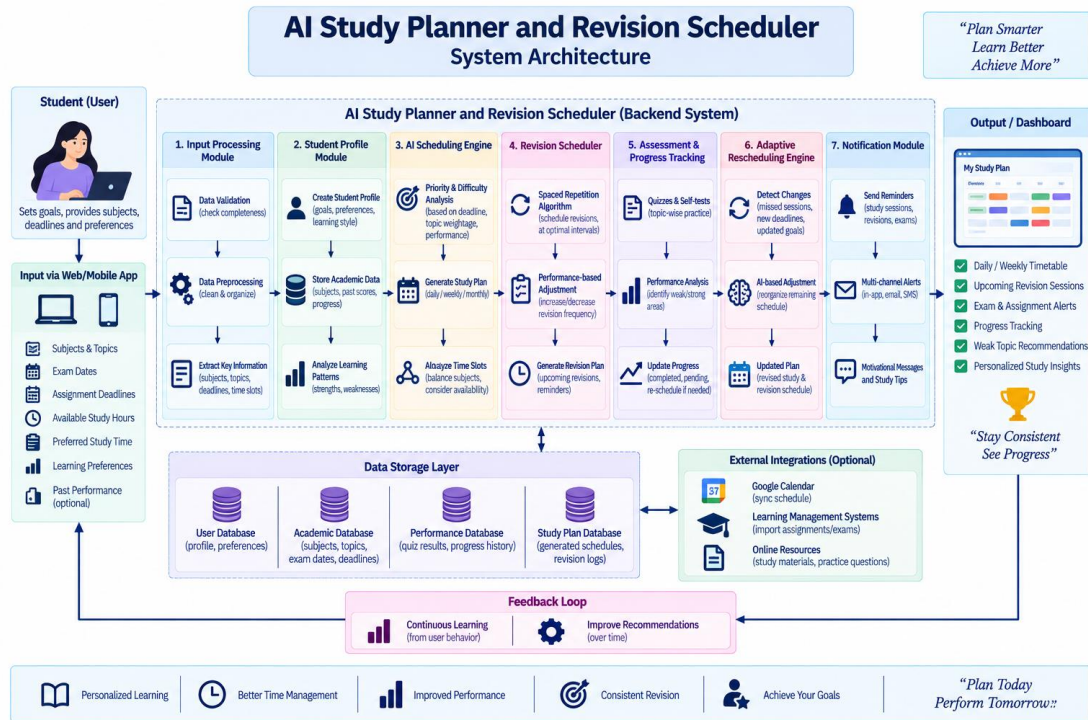
- Automatically creates personalized study schedules.
- Prioritizes topics based on difficulty and deadlines.
- Provides intelligent revision scheduling.
- Supports spaced-repetition-based review.
- Adapts schedules according to student performance.
- Identifies weak and strong learning areas.
- Automatically reschedules missed study sessions.
- Balances multiple subjects and academic deadlines.
- Provides personalized study recommendations.
- Sends intelligent reminders and notifications.
- Reduces last-minute examination preparation.
- Helps students manage study time effectively.

IV. METHODOLOGY

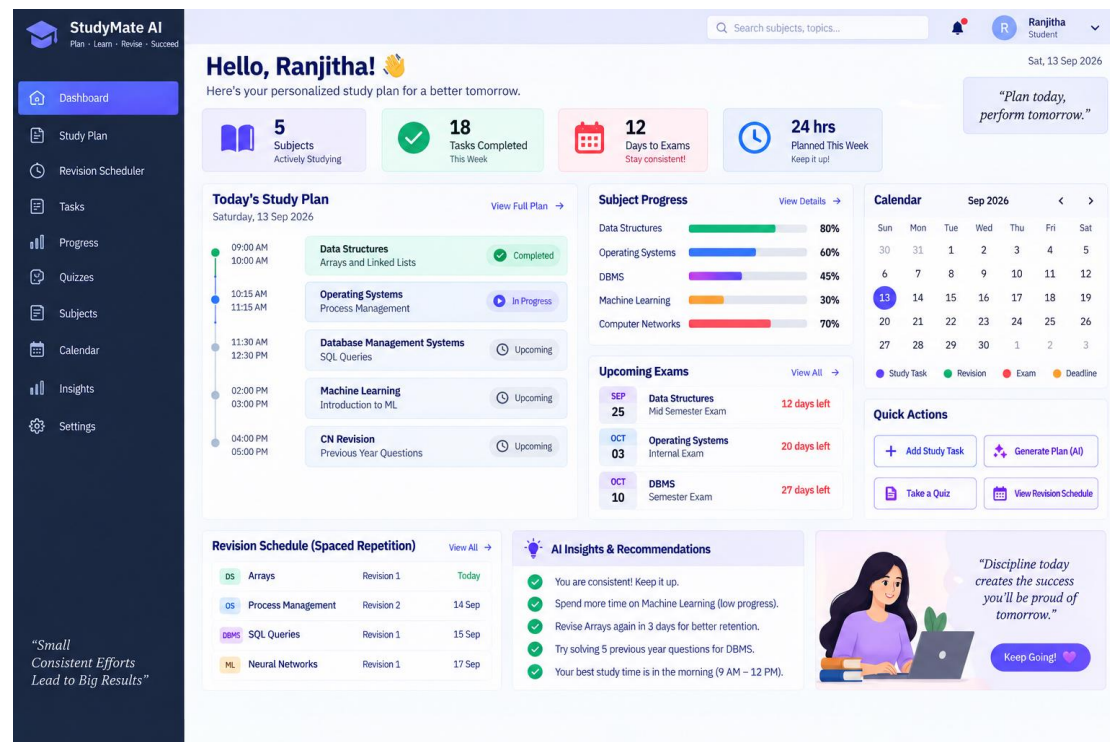
The methodology begins when the student enters subjects, topics, examination dates, assignment deadlines, available study hours, and preferred study periods. The system validates and organizes the academic information using an input-processing module. An AI analysis engine evaluates topic difficulty, priority, deadlines, and previous learning performance. The system creates a personalized learner profile containing academic requirements and study preferences. A scheduling algorithm identifies available time slots and distributes learning activities across the student's timetable. The system allocates additional time to difficult or high-priority topics when necessary. A revision engine schedules repeated reviews using spaced and performance-based revision principles. Students complete study sessions, quizzes, and assessments, and the system records their progress. Performance analysis identifies topics where additional practice or revision is required. An adaptive scheduling module updates future activities when performance changes or sessions are missed. A notification system sends reminders about upcoming learning and revision activities. Finally, the personalized dashboard presents the updated timetable, progress, revision schedule, upcoming deadlines, and AI-based study recommendations.

SYSTEM ARCHITECTURE

The AI Study Planner and Revision Scheduler consists of several interconnected modules that work together to create an adaptive academic planning system. The User Interface allows students to enter subjects, topics, deadlines, available study hours, and preferences. The Input Processing Module validates and organizes academic information. The Student Profile Module maintains learning preferences, performance, completed activities, and progress information. The Priority and Difficulty Analysis Engine evaluates topics based on deadlines, difficulty, importance, and learner performance. The AI Schedule Generation Engine creates a balanced timetable using available study periods. The Revision Scheduling Engine applies spaced and performance-based revision principles to determine review intervals. The Assessment Module conducts quizzes and records learning results. The Performance Analysis Module identifies weak and strong topics. The Adaptive Rescheduling Engine modifies future study activities based on progress, missed sessions, and changing deadlines. The Notification Module sends reminders for important activities. Finally, the Personalized Student Dashboard displays the daily schedule, revision plan, progress, deadlines, and AI-generated study recommendations.



V. RESULT AND OUTPUT



VI. CONCLUSION

The AI Study Planner and Revision Scheduler provides an intelligent and personalized solution for helping students organize their academic activities and manage their study time effectively. The system reduces the difficulty of manually preparing study

timetables by automatically considering subjects, topics, examination dates, assignment deadlines, available study hours, and learning priorities.

By combining Artificial Intelligence, adaptive scheduling, learner analytics, and spaced-repetition techniques, the system can create suitable study and revision schedules for individual students. It identifies difficult or weak topics and provides additional revision and practice opportunities, while well-understood topics can be reviewed at appropriate intervals.

The adaptive scheduling feature allows the system to respond to changes in the student's learning progress. When a student misses a study session, performs poorly in an assessment, or receives a new academic deadline, the system can adjust future activities. Notifications and progress tracking further help students remain consistent with their study plans.

Overall, the AI Study Planner and Revision Scheduler makes academic planning personalized, flexible, organized, and adaptive. It can help students improve time management, maintain consistent revision, reduce last-minute preparation, and focus on important learning areas. Future enhancements can include AI-generated study materials, intelligent quiz generation, voice-based planning, calendar and LMS integration, predictive performance analysis, and advanced personalized learning recommendations.

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