Problem Statement & Goals
Project Name: Course Buddy

Team 5

Jingyao Qin, qinj15
Qianni Wang, wangq131
Shuting Shi, shis20
Chenwei Song, songc12
Qiang Gao, gaoq20

Table 1: Revision History

Date	Developer(s)	Change
2023/9/27	Shuting Shi	Revision 0
Date2	Name(s)	Description of changes
...	...	...

The project is a time management tool designed to assist students in studying and completing coursework efficiently and in an organized manner.

1 Problem Statement

1.1 Problem

In an era where students are confronted with increasing academic workloads and diverse commitments, managing time and tasks has become a significantly challenging shot.

This project aims to ease the burden which students are undergoing by developing an application tailored to the specific needs of students. Our application employs a user-friendly interface and leverages the power of machine learning to automate task generation, prioritize assignments intelligently, and facilitate progress tracking. Additionally, it integrates with popular calendar platforms in the current industry, provides time usage predictions, fosters collaborative studying, incorporates facial recognition technology, and offers flexible task customization. Therefore, This project encompasses the development of a website and mobile app, a centralized database, a social network component, and a comprehensive training pipeline.

1.2 Inputs and Outputs

Characterize the problem in terms of “high level” inputs and outputs. Use abstraction

so that you can avoid details.

1.2.1 Automated Task Generation

Input: course outline/syllabus document in PDF format
Output: customized daily task schedule

1.2.2 Intelligent Task Prioritization

Input: Task details including due dates, percentage of the final grade, task complexity(may manually input by users), and course credits.
Output: Prioritized task list with highlights

1.2.3 Progress Visualization

Input: Task list and progress updates.
Output: Visual representation of task progress within the user interface.

1.2.4 Calendar Integration

Input: User's calendar events from platforms like Google Calendar and Outlook Calendar.
Output: Integrated calendar with task deadlines.

1.2.5 Time Usage Prediction

Input: User's logged time and progress data.
Output: Estimated time needed for completing tasks.

1.2.6 Study Plan Adjustment

Input: User's input on task progress.
Output: Adjusted study plan based on progress updates.

1.2.7 Pomodoro Timer

Input: User settings for Pomodoro intervals.
Output: Timer for Pomodoro technique

1.2.8 Study with Peers

Input: User connections, video chat requests.
Output: Real-time video chat and collaborative study sessions.

1.2.9 Facial Recognition

Input: User's dynamic facial movements for attention level detection.
Output: Feedback on user's attention level

1.2.10 Flexible Modification

Input: User requests to modify tasks or study plans.
Output: Customized tasks and study plans tailored to user needs.

1.3 Stakeholders

Students in various levels of education, from high school to college institutions, have an overwhelming volume of schoolwork.

Teachers and institutions who seek success and foster management skills of the student.

The target users are not constrained by demography or institution type and can be anywhere worldwide.

1.4 Environment

1.4.1 Server Hardware

Web Server, Database Server, Machine Learning Server

1.4.2 Client Devices

Desktop Computers, Mobile Devices

1.4.3 Video Conferencing Hardware

Webcams, Microphones, Speakers

1.4.4 Development Tools

Web Development, UI/UX Design Tools

2 Goals

2.1 Automated Task Generation

The foremost goal is to create a feature that allows users to upload course outlines in PDF format, enabling the application to automatically generate tasks based on due dates. This feature aims to reduce manual data entry efforts and in turn, enhances student learning efficiency.

2.2 Intelligent Task Prioritization

Implement machine learning algorithms to intelligently prioritize tasks based on due dates, percentage of final grade, task complexity, and course credits. The goal is to help users identify and focus on the most critical tasks and help students manage their coursework more effectively to improve overall academic performance.

2.3 Progress Visualization

This application creates a user-friendly interface that enables students to track the progress of their tasks easily and straightforwardly. This visual representation of task completion status aims to help students control the pace of learning and avoid late assignment submissions.

2.4 Calendar Integration

The finished product enables integration with popular calendar platforms in the market such as Google Calendar and Outlook Calendar, and ensures synchronization of coursework deadlines with students' existing schedules, reducing the likelihood of missed deadlines.

2.5 Time Usage Prediction

The finished product estimates the time required to complete specific tasks based on users' logged time and progress data which allows students to allocate their study time effectively and efficiently.

2.6 Study Plan Adjustment

This application allows users to input their progress percentages, and dynamically adjust study plans to accommodate their individual learning pace, which optimizes students' study schedules and reduces their stress.

2.7 Pomodoro Timer

The finished product helps users enhance their study efficiency through focused time management and supports productive study sessions with scheduled breaks, improving concentration and also benefiting students' health.

3 Stretch Goals

3.1 Study with Peers

The product could have a collaborative feature that enables students to connect with classmates and friends for video-based study online sessions, which facilitates group learning and collaboration, enhancing students' understanding of course materials.

3.2 Facial Recognition

The product could implement facial recognition technology to detect users' attention levels during study sessions, which offers insights into users' engagement and concentration, encouraging the establishment of focused study habits for students.

3.3 Flexible Modification

The product could let users modify and tailor generated tasks and study plans according to their specific needs and preferences which accommodates individual learning styles and evolving study requirements.

4 Conclusion

By addressing the identified problem and achieving these goals, our project aims to provide students with a comprehensive, user-centric solution that empowers them to manage their time and tasks effectively, reduce academic stress, and enhance their overall academic success and well-being.