Smart Schedule

Project Description

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Overview

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SmartSchedule is a web-based platform designed to help students manage their courses more smoothly and effectively. The system automates the process of selecting courses for registration based on the student's academic status, preferences, and university course offerings. By integrating Flask (Python) as the backend and MySQL as the database, the platform provides a RESTful API that enables students to access course offerings, track their enrolled classes, and generate optimized schedules effortlessly.

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Objectives

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1. Simplify Course Selection

2. Prevent Scheduling Conflicts

03. Accessibility

04. Smooth Database Integration

05. Future Scalability

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Background

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Problem

Selecting courses is a crucial issue in each student's study plan since good management of courses surely ensures a smooth and comfortable learning process. However, managing course registration each semester can be stressful, complicated and time-consuming for students. This issue is caused by the manual course searching, the complexity of different available sections, and the variety of choices for the plan.

Aim

This project aims to simplify the student course selection process by providing a structured and automated scheduling system with modern web applications and API-driven automation. With this system, students can focus on their education rather than their administrative tasks.
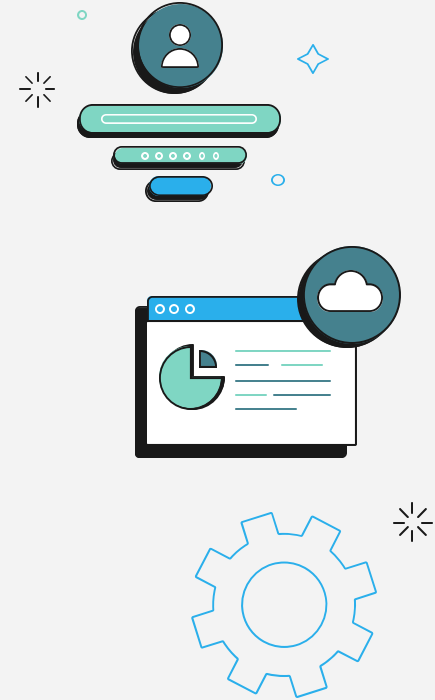
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Literature Review

Number	Authors	Description	Advantages	Problems
[1]	Li and Womer (2009)	A hybrid MILP/CP Benders Decomposition algorithm for scheduling multi-skilled personnel.	Effective for complex planning and scheduling problems.	Requires expertise in Benders Decomposition
[2]	Garrido and Onaindia (2010)	AI planning techniques for e-learning, integrating temporal and resource constraints.	Supports multi-criteria optimization and time/resource constraints	Practical implementation challenges not extensively discussed
[3]	Ajanovski (2013)	A system for creating teacher and teaching schedules based on specific requirements.	Facilitates efficient teacher scheduling	Limited information on system functionalities
[4]	Yang and Xie (2017)	A genetic algorithm-based approach for university course scheduling with coevolution.	Efficiently generates high-quality scheduling solutions	May struggle with local optima.

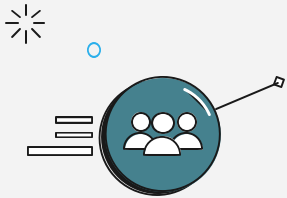| Number	Authors	Description	Advantages	Problems
[5]	Hossain et al. (2019)	A simulated annealing multi-objective algorithm for university course timetabling.	Outperforms traditional genetic algorithms	Limited information on algorithm implementation
[6]	Tavakoli et al. (2020)	A three-stage heuristic algorithm for university course timetabling.	Improves course presentation rate	Requires further validation in other academic departments
[7]	Yu Chen et al. (2022)	A genetic algorithm for university class scheduling, aligning satisfaction with preferences.	Aligns satisfaction values with preferences	Limited information on algorithm implementation
[8]	Shaaban et al. (BAU FYP)	A web-based scheduling system using Next.js, Puppeteer, and DialogFlow for BAU students.	Automates course registration, prioritizes data security and user-friendliness	Scheduling algorithm may require further optimization for complex constraints.

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Applications

University Students

The target audience of the platform will be university students, who are in need of a course schedule manager.

Academic Advisors

The platform can be used by advisors to assist students in choosing courses and meeting academic milestones.

University Administrators

The platform can also assist administrators in overseeing course listings and enrollment statistics more efficiently.
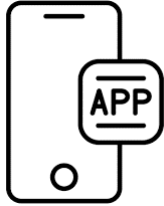
Future Integration

The platform can be developed further to include features including academic advising chatbots, integration with learning management systems (LMS) in the university
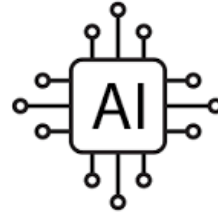
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Alternative Designs

Alternative Designs

Mobile Application

Desktop Application

AI-Powered Scheduling

Integration with Existing Systems

References

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[7] Chen, Y., Ghasemi, P., Bayanati, M., Ebrahimi, M., & Khalijian, S. (2022). A novel optimization approach for educational class scheduling with considering the students and teachers' preferences. Discrete Dynamics in Nature and Society, 2022, 5505631. doi:10.1155/2022/5505631

[8] Beirut Arab University FYP Project (2023). Streamlining Course Scheduling: Revolutionizing Timetabling for BAU Students.