

Project Synopsis

1) Name of Student

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3) Project Group No.

4) Practical Batch

B1

5) Proposed Topic

Web application to generate timetables using AI

Name/Title of the Project

Web application to generate timetables using AI

Abstract

This project aims to develop a web-based application that utilizes Artificial Intelligence to automate the generation of timetables for educational institutions. The application will consider constraints such as faculty availability, classroom allocation, and course schedules to create efficient and conflict-free timetables. The system will also allow for real-time updates and user-friendly customization, ensuring adaptability to changing requirements.

Motivation

Manually creating timetables is a time-consuming and error-prone process, especially for large institutions with complex schedules. The motivation behind this project is to leverage AI to streamline this process, reducing administrative workload and ensuring optimal resource allocation. By automating this task, institutions can focus more on their core educational objectives.

Problem Formulation/Objectives

1. To develop an AI-powered system capable of generating conflict-free timetables.
2. To incorporate user-friendly interfaces for inputting and adjusting constraints.
3. To optimize resource allocation, including faculty and classrooms.

Methodology/Planning of Work

1. Requirement analysis and system design.
2. Development of the web application framework using technologies such as Django or Flask.
3. Integration of AI algorithms, such as genetic algorithms or constraint satisfaction techniques, for timetable generation.
4. Implementation of user interfaces for inputting constraints and viewing timetables.
5. Testing and validation of the system using real-world data.
6. Deployment and user feedback for further improvements.

Facilities Required for Proposed Work

Software:

- Python with libraries such as NumPy, Pandas, and TensorFlow.
- Web framework: Django or Flask.
- Database: MySQL or PostgreSQL.
- Frontend technologies: HTML, CSS, JavaScript.

Hardware:

- A standard computer system with at least 8GB RAM and a multi-core processor.

Testing Technologies Used

1. Unit testing for individual components.
2. Integration testing to ensure seamless interaction between modules.
3. User acceptance testing to validate the system's usability and performance.

Real Life Application

The web application can be used by educational institutions, coaching centers, and corporate training organizations to automate the creation of timetables. This will save time, reduce errors, and improve resource management.

Bibliography/References

1. Articles and research papers on AI-based scheduling algorithms.
2. Documentation of Python libraries such as NumPy and TensorFlow.
3. Official documentation of Django/Flask frameworks.
4. Tutorials and resources on web application development.