Cover Page

**AI-Powered Student Management System**

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# System Overview Objective

The purpose of the AI-Powered Student Management System is to give educational institutions the ability to effectively track and handle student performance. To help educators and administrators make proactive decisions, the system combines real-time data analytics with AI-driven insights.

Essential Elements

Performance tracking: Combines grades, assignments, and attendance.

Actionable insights to enhance student outcomes are provided by real-time analytics. Identifying kids at risk and anticipating performance trends are examples of predictive ability.

# Systems Architecture for Architectural Design**:**

The system's architecture is modular:

Data collection (attendance, grades, assignment scores) is done by the input layer. Processing Layer: Applying AI algorithms to data analysis.

Reports and forecasts are shown in the output layer.

# Stack of Technology

Python frameworks (Django or Flask) for the backend. Frontend: JavaScript, CSS, HTML.

PostgreSQL or MongoDB is the database.

AI tools for machine learning models include PyTorch and TensorFlow.

# Design Perspectives and Trends

### Patterns for Designs

Model-View-Controller, or MVC, divides the system into three interrelated parts: Data storage and business logic are handled by the model.

View: User interfaces for various positions.

Controller: Oversees the logic and interaction of the system.

The singleton pattern controls global settings such as user roles and database connections.

### Opinions

Admin View: A summary of all the metrics, courses, and students.

Professor View: Get access to attendance records, assignment tracking, and class performance data.

Student View: Customized dashboards with feedback on assignments and performance reports.

# Uml diagram

## Class Diagram

A screenshot of a computer

Description automatically generated

The characteristics of the Student Performance class are assignments, attendance, and overall.

The generate\_ai\_ report function is part of the Performance Report class. The Performance Report class is invoked by the Main class.

## Sequence Diagram

A diagram of a performance report

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In other words, the Main class interacts with the User.

The AI report is produced by the Main class using the Performance Report function. Student Performance provides the data that is retrieved by the Performance Report class.

## Activity Diagram

A diagram of a student

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The activity diagram serves as an explanation of the decision-making process involved in creating the student performance report. If there is a student, the report is created. If not, the message "No data available" is shown.

# Code

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1. **Conclusion**

* The AI-Powered Student Management System streamlines the process of monitoring and managing student performance, attendance, and assignments.
* With real-time data analytics and AI-driven insights, institutions can take proactive measures to enhance student outcomes.
* This project demonstrates the potential of integrating AI technology in academic environments to create smarter, more efficient workflows.

-Future Scope: Expanding functionalities such as predictive analytics for dropout risks and personalized learning recommendations.

# Prospective Scope

Improve forecasts with advanced predictive analytics by incorporating deep learning models.

Resources are suggested via personalized learning according to each student's performance.