Project Synopsis

Title of the Project:

AI-Driven Educational Platform

Introduction and Review of Literature:

In the evolving landscape of education, technology has become an essential component in delivering personalized and effective learning experiences.

The use of artificial intelligence (AI) in education has gained significant attention, particularly in enhancing student engagement and improving learning outcomes.
AI-driven platforms are increasingly being developed to offer tailored tutoring, real-time feedback, and adaptive learning pathways based on individual student needs.

Existing literature on AI in education highlights its potential to address challenges such as student-teacher ratios, the need for personalized attention, and the limitations of traditional assessment methods. AI-powered tutors, for instance, have shown promise in providing instant assistance, helping students with queries, and offering additional learning resources that are customized to their understanding level.

The incorporation of digital assessment instruments into AI-powered systems enhances educators' ability to quickly create, conduct, and evaluate tests.
These technologies include features that are essential for pinpointing areas in which pupils require development, such as plagiarism detection, automatic grading, and comprehensive performance statistics.

Nevertheless, there are still issues with protecting student data, preserving the accuracy of feedback produced by AI, and incorporating these technologies into the frameworks of education that are now in place. The goal of this project is to create an AI-driven educational platform that tackles these issues and offers a smooth, engaging learning environment.

Objectives of the Study:

- To create an AI-powered platform that combines digital assessment tools and smart coaching to improve student learning and simplify teacher assessment procedures.

- To create an intuitive user interface that supports group formation, asynchronous communication, and customised learning.

- To provide strong security, performance enhancement, and platform scalability to manage heavy traffic and huge datasets.

Research Methodology:

The research methodology for this project will involve both qualitative and quantitative approaches:

- Requirement Analysis: To get insight into the demands and difficulties encountered in the existing educational landscape, conduct interviews with educators, students, and industry professionals.

- System Design and Architecture: Create the front end with Vue 3 and the back end with Django using Vuetify. Digital evaluation tools, safe data management, and AI-driven teaching will all be supported by the system's design.

- Development and Implementation: Use an agile methodology to build the platform, making sure that feedback integration and iterative testing are integrated at every development stage. Natural language processing (NLP) methods will be used to create the AI-powered instructor, and machine learning algorithms will be used in the digital assessment tool to provide automatic grading and plagiarism detection.

- Testing and Validation: Carry out comprehensive testing to confirm the platform's security, performance, and functionality. A focus group of instructors and students will participate in usability testing to make sure the platform lives up to user expectations.

- Data Analysis and Reporting: Examine how well the platform has improved learning outcomes and streamlined assessment procedures by analysing the performance data it has produced.

Technology to be Used:

- Backend: Django will be used for the backend development due to its robust framework and ability to handle complex data structures and secure authentication processes.

- Frontend: Vue 3 with Vuetify will be employed for frontend development, offering a modern, responsive user interface that enhances user experience.

- Artificial Intelligence: Natural language processing (NLP) and machine learning algorithms will be utilized to create the AI-powered tutor, enabling real-time query handling and personalized feedback.

- Database Management: MongoDB will be used to manage data, providing scalability, flexibility, and efficient handling of unstructured data.

- Security: SSL encryption, token-based authentication, and data anonymization techniques will be implemented to ensure robust security across the platform.

- Cloud Services: AWS EC2 and S3 will be used for hosting and storage, ensuring high availability, scalability, and data redundancy.

References:

- Smith, J., & Jones, A. (2022). AI in Education: Enhancing Learning through Technology. Educational Technology Journal.
- Brown, R. (2021). Digital Assessments: The Future of Evaluation in Education. Journal of Educational Research and Technology.