Project title

Personalized learning

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1. Introduction

***Objective:**

*****To provide a personalized learning experience using AI.

*****To analyse learner's behaviour and recommend appropriate resources.

*****To use IBM Watson and Generative AI models for intelligent tutoring.

***scope:**

*****Supports students across various subjects.

*****Offers AI-driven quizzes, progress reports, and content recommendations.

2. Abstract

Available on web and mobile platforms for accessibility
The purpose of this project is to create a personalized AI-powered educational platform, Edu Tutor AI, that provides tailored learning experiences for students. Using Generative AI with IBM technologies, the system analyses learners' performance and adapts study plans accordingly. The platform supports various subjects, offers real-time doubt clarification, interactive quizzes, and progress tracking. It aims to enhance learning efficiency, reduce study time, and increase knowledge retention by providing customized learning paths.

3. Architecture

*The architecture includes:

*Front-end: User interface for students and tutors.

*Back-end: AI models, database, and APIs.

*Database: Stores user profiles, progress, and content.

*AI Engine: Provides recommendations, generates personalized content, and evaluates student performance.

*Cloud Deployment: IBM Cloud for hosting services and scalability.

Workflow:

1. User logs in → AI analyses previous performance → Generates personalized content → Tracks progress → Provides feedback.

4. System Requirements

Hardware:

Processor: Intel i5 or higher

RAM: 8 GB minimum

Storage: 20 GB

Software:

Operating System: Windows/Linux/Mac

Backend: Python, Flask/Django

AI Models: IBM Watson, Generative AI models

Database: MySQL/PostgreSQL

Frontend: React/Angle

5. AI Implementations

*Natural Language Processing (NLP): For understanding user queries and generating responses.

*Recommendation System: Suggests relevant topics and study materials.

*Generative AI: Creates practice questions, explanations, and summaries.

*Speech-to-Text & Text-to-Speech: For accessibility and interactive learning

6. Authentication

*Secure user login using JWT tokens

*Role-based access for students and admins.

*Data encryption for user privacy.

7. User Interface

Simple, responsive design.

Features:

Dashboard showing progress.

Chat for AI-based tutoring.

Personalized content feed.

Quizzes and performance analytics.

8. Testing

*Unit Testing: For AI model responses.

*Integration Testing: For API and database interactions.

*User Acceptance Testing: To ensure system meets expectations.

9. Conclusion

Edu Tutor AI provides a smart, scalable, and personalized learning experience by integrating AI and IBM Cloud technologies. It empowers students to learn effectively at their own pace.

10. Future Enhancements

*Adding multilingual support.

*Incorporating voice-based interactions.

*Implementing virtual reality classrooms for immersive learning.