Project Title: AI-Powered Assessment & Adaptive Learning Platform

Project Objective

This 8-week project focuses on building an **AI-based assessment platform** that evaluates student responses for accuracy, originality, and conceptual understanding. Students will leverage **AI evaluators, plagiarism detection, and adaptive learning algorithms** to provide feedback, recommend improvements, and generate personalized learning paths. The platform will **map course curricula to syllabus content, assess answers against ground truth, and adaptively guide students based on AI-driven recommendations**.

Learning Objectives

By completing this project, students will:

- Understand **AI-based assessment techniques**, including **ground truth evaluation and plagiarism detection**.
- Learn how to **map course curricula** dynamically based on **syllabus and learning objectives**.
- Build **AI-powered expert panel evaluators** that provide multi-perspective feedback.
- Implement **adaptive learning recommendations** to guide students based on their performance.
- Develop a **scalable web-based AI assessment platform** that enhances personalized learning.

Project Scope & Tasks

Week 1-2: Understanding AI-Driven Assessment & Curriculum Mapping

- Study **assessment methodologies** and how AI can enhance student evaluations.
- Implement **curriculum mapping algorithms** to align assessments with the syllabus.
- Design **a structured grading rubric** for AI-based evaluation.

Week 3-4: Plagiarism Detection & Ground Truth Answer Evaluation

- Integrate **plagiarism detection APIs (Turnitin, GPTZero, AWS Comprehend)**.
- Implement **LLM-based answer evaluation** using **exact match, semantic similarity, and reasoning checks**.
- Build an **AI evaluator panel** that simulates expert graders providing feedback.

Week 5: AI Expert Panel for Concept Understanding & Feedback

- Train **multiple AI agents** to provide different perspectives on student responses (fact-checker, conceptual depth analyzer, language clarity checker).
- Implement **LLM-as-a-Judge** techniques to provide structured improvement feedback.
- Evaluate **student misconceptions and learning gaps** based on AI feedback.

Week 6-7: Adaptive Learning & Personalized Recommendations

- Develop **adaptive learning algorithms** that suggest content based on student weaknesses.
- Implement **recommendation systems** using **RAG-based personalized learning resources**.
- Use **reinforcement learning-based curriculum adjustment** to improve student outcomes.

Week 8: Final Platform Deployment & Demonstration

- Deploy the **AI assessment platform** with **real-time student evaluations**.
- Showcase **adaptive learning recommendations in action**.
- Present findings on **AI's role in personalized education and self-paced learning**.

Tools & Frameworks

- **AI Models for Assessment:** GPT-4, Claude, Llama, Mistral, OpenAI Evals.
- **Plagiarism Detection:** GPTZero, Turnitin, AWS Comprehend, BERT-based text similarity.
- **RAG & Knowledge Retrieval:** LlamaIndex, FAISS, Pinecone for personalized learning suggestions.
- **Adaptive Learning & Recommendations:** Reinforcement Learning, Personalized Learning Models.
- **Front-End & Deployment:** React, Streamlit, AWS Lambda, API Gateway.

Expected Outcome

By the end of the project, students will:

- Develop an **AI-based assessment system** that **evaluates, detects plagiarism, and provides expert feedback**.
- Implement an **adaptive learning path generator** that adjusts recommendations based on student performance.
- Design an **AI-driven syllabus mapping system** that aligns course content with evaluation needs.
- Demonstrate their **AI-powered assessment platform at the final showcase**, providing real-time student evaluations.

This project will prepare students for careers in **AI-driven EdTech, assessment automation, and personalized learning technologies**, equipping them with **skills in AI evaluation, curriculum adaptation, and educational AI systems**.