Hackathon Idea

Project Name: Intelligent Assessment Platform

Technology Stack: ReactJS, Java Spring Boot, MongoDB
AI Tools: CrewAI, Ollama, Lama2 (7B)

Overview

The Intelligent Assessment Platform facilitates efficient learning and assessment for students while empowering teachers with AI-generated content and analytics. It streamlines content creation, adaptive testing, and retesting processes based on topic-wise performance analysis.

Key Features

1. **Teacher's Workflow**:
    - Teachers upload content (e.g., Unit-1).
    - AI processes the content and generates topic-wise multiple-choice questions (MCQs) in the following format:
        - **Question**
        - **Choices**
        - **Answers**
    - The generated MCQs are stored in a database for future reference.
    - Teachers review the AI-generated questions and select specific ones to assign to students.
2. **Student's Workflow**:
    - Students access tests assigned by their teachers.
    - Test submissions are processed, and results are calculated topic-wise.
    - Results include analysis of weak areas, determined using the **elbow point algorithm**:
        - The elbow point identifies topics with the highest frequency of incorrect answers.
    - Retesting is offered based on thresholds set by the teacher.
3. **Adaptive Retesting**:

- Retests focus on weak areas (determined by the elbow point and teacher-defined thresholds).
- Students take adaptive mock tests until they meet performance thresholds.
- The platform reuses stored questions for retesting, optimizing the learning process.

System Workflow

1. **Content Upload**:
   - Teachers upload unit content.
   - AI tools (CrewAI, Ollama, Lama2) process the content and generate MCQs.
   - AI outputs data in JSON format, which is sent to the backend for storage in MongoDB.
2. **Question Selection**:
   - Backend retrieves topic-wise MCQs from the database.
   - Teachers review and select questions for student assignments.
3. **Test Execution**:
   - Students access and complete assigned tests.
   - Backend evaluates the results, calculating scores topic-wise.
4. **Result Analysis**:
   - The elbow point algorithm identifies weak areas by analyzing incorrect answers.
   - The backend compares scores with teacher-set thresholds to determine retest needs.
5. **Retesting Process**:
   - If required, students take retests focusing on weak topics.
   - Retests repeat until performance meets the threshold.

Objectives

- Automate content creation with AI for faster preparation of assessments.
- Store and reuse questions to reduce redundancy and enhance adaptability.
- Provide actionable insights to teachers through detailed performance analysis.
- Offer an adaptive learning experience for students through targeted retests.
