STEP MENTOR

Brief about the Idea: The idea involves developing a system that helps the Students practice questions. It will generate clear problem statements using GenAI, suggest relevant formulas, and present solutions step-by-step in the given time frame; the prototype features GenAI API for question descriptions and chatbot and machine learning for formula suggestions.

Opportunity :

How different is it from any other existing ideas out there?

The proposed model stands out with its comprehensive learning support, leveraging advanced technologies like Prompt Engineering and Machine learning. It *offers a personalized learning experience akin to having a personal tutor. These features distinguish it from existing platforms, ensuring a unique and effective study tool for JEE students.*

How will it be able to solve the problem?

The app solves the problem of effective question practice for JEE students through several key mechanisms:
Comprehensive Guidance: By providing step-by-step solutions, formula suggestions, and chatbot assistance, the app guides students through the question-solving process, ensuring they understand each step thoroughly.

Free Accessibility: Offering free access to all users, the app removes cost barriers and ensures inclusivity, allowing students from diverse backgrounds to benefit from high-quality educational support.

Empowerment through Practice: By facilitating regular practice and providing detailed explanations and assistance, the app empowers students to develop their problem-solving skills and deepen their understanding of physics concepts, ultimately improving their performance in the JEE exam.

List of features offered by the solution :

GenAI Question Description*: Automatically generate clear and concise descriptions for questions using the Prompt Engineering and GenAI model.*

- **Stepwise Solution Presentation**: *Divide solutions into step-by-step explanations, guiding students through each problem-solving stage in the given time frame*.
- **Formula Suggestions**: *Analyze question contexts and suggest relevant formulas to users to aid problem-solving.*
- ***Chatbot Assistance****: Integrate a chatbot assistant powered by GenAI to provide real-time support, explanations, and tips for solving questions*.
- **Web Dashboard**: *Provide a user-friendly web-based dashboard for easy navigation, question selection, and access to features.*
- **User Authentication**: *Implement secure user authentication to ensure privacy and access control.*
- **Question Practice**: *Offer students a comprehensive database of questions from previous years of JEE to practice and improve their skills.*
- **Personalized Learning**: *Adapt to each student's pace and needs, providing customized guidance and support throughout the learning process.*

- **Feedback Mechanism**: *Incorporate a feedback mechanism for users to provide input, report issues, and suggest improvements.*
- **Free Accessibility**: *Provide free access to all features, ensuring inclusivity and affordability for students from diverse backgrounds.*

Technology used :

The "StepMentor" could utilize Google GenAI tools for machine learning, data processing and prompt engineering. Specifically:

- **TensorFlow**: Use prompt engineering to guide model development for predicting solutions.
- **BigQuery**: Employ prompt-based queries to extract insights from historical data, aiding model training.
- **AutoML**: Utilize prompt engineering in AutoML for tailored model development.
- **Gemini for Natural Language Understanding**: Integrate Gemini for natural language understanding, enhancing interactions and responses within the system.
- **Cloud AI Platform for Prompt-based Deployment**: Deploy prompt-based models, including Gemini, to provide real-time response and natural language responses based on input parameters.
- **Google Cloud Natural Language API**:It could be used for tasks such as generating question descriptions, analyzing solutions, or providing chatbot assistance.
- **Google Cloud Vision API**: It could be useful for analyzing diagrams or graphs within questions and solutions.
- **Google Dialogflow**: It could be used to implement a chatbot assistant within the question practice app

- **Google Cloud Text-to-Speech API**: It could be used to provide voice-based interaction with the app, enhancing accessibility and user experience.