Theme: Application of AI in Education

Project Presentation: April 23rd - 25th (Presentation slot: 20 minutes)

Evaluation Criteria:

- Demonstration: 30 marks
- Presentation: 10 marks
- Write-up: 10 marks

Topics: (Choose Any One)

1. **Enhanced Automated Essay Grading with Explainability**
   - **Goal:** Develop an AI model that grades essays and provides explanations for the score.
   - **Public Datasets:**
     - Kaggle ASAP-AES (https://www.kaggle.com/c/asap-sas/)
     - Other potential datasets from educational institutions or research labs (explore options)
   - **Model Development:**
     - Leverage open-source models like BART or T5 for fine-tuning.
     - Explore libraries like Hugging Face Transformers (https://huggingface.co/docs/transformers/index)

2. **Science Subject Translation for Bengali Learners (20% of Focus):**
   - **Goal:** Build a model that translates scientific content from English to Bengali.
   - **Datasets:**
     - Utilize Supera Benchmark Dataset for English-Bangla Machine Translation (https://ieee-dataport.org/open-access/supara-benchmark-benchmark-dataset-english-bangla-machine-translation)
     - Explore additional science-specific datasets if available.
   - **Model Development:**
     - Investigate pre-trained models from OpenAI (https://openai.com/) or Bhasini (https://bhashini.gov.in/) for Bengali translation.
     - Fine-tune the chosen model for scientific domain translation.

3. **Student Performance Analysis and Prediction (20% of Focus):**
   - **Goal:** Analyze student performance data to identify patterns and predict future performance.
   - **Datasets:**
     - Public datasets like UCI Machine Learning Repository's Student Performance dataset (https://archive.ics.uci.edu/ml/datasets/Student+Performance)
     - Investigate World Bank's Learning Poverty Global Database ([invalid URL removed]) for broader analysis.
   - **Analysis Techniques:**
     - Perform correlation analysis to identify relationships between performance in different subjects.
     - Explore regression models to predict student performance based on background factors (if available in datasets).

Deliverables:

1. **Working Prototype:**
   - Implement the core functionalities of chosen topics in Google Colab or a similar environment.
   - Ensure clear and user-friendly interfaces for interaction.
2. **Presentation:**
   - Develop a 15-minute presentation (including Q&A) explaining the project goals, methodology, results, and future plans.
   - Include visuals like demos, charts, and graphs to illustrate key points.
3. **Writeup:**
   - Prepare a 10 -page writeup documenting the project in detail.
   - Include sections on:
     - Introduction and Motivation
     - Literature Review (related research on AI in education)
     - Methodology (data acquisition, model development, evaluation)
     - Results and Analysis (performance metrics, visualizations)
     - Future Implementation Plan (roadmap for further development and deployment)
   - Ensure proper citation of references and clear technical explanations.