Model Training R&D (Product Based)

As part of our **R&D (Research and Development)** process, we studied a variety of open-source GitHub repositories focused on **automated essay scoring, feedback generation, and NLP applications**. This phase was essential for exploring technical approaches, benchmarking model performance, and understanding the scope of existing tools.

Important Notes:

- None of these were selected because our requirement was feedback on mistakes and suggestions for improvement along with rubrics scores specific to each test-type. We were able to get good accuracy scores but still our requirement was not satisfied.

- Our deployed solution is **entirely based on LLaMA3-70B and prompt engineering**, with **no code, models, or data** reused from any of these sources.
- A **sample HTML output(LSTM.html) from one trained model** is included for reference only. Many other experiments were conducted during R&D.

1. Automatic Essay Scoring

- **Link:** https://github.com/sankalpjain99/Automatic-Essay-Scoring
- Built with LSTM and Flask.
- Uses the HP Essays dataset to train an automated essay grader.
- Helped evaluate how sequence models score essays based on pre-processed text.

2. Automated Essay Grading System

- **Link:**https://github.com/hazem-alabiad/automated-essay-grading-system
- Combines ML, DL, and NLP libraries such as Scikit-learn, Keras, Gensim, NLTK, and Plotly.
- Helped evaluate multi-model performance and visual analytics on essay scoring.

3. Automatic Essay Grading and Feedback

- **Link:**https://github.com/aniruddhadave/Automatic-Essay-Grading-and-Feedback
- Focused on real-time grading along with feedback suggestion.
- Helped us understand the structure of combined scoring + feedback systems.

4. English Language Learning Prediction with AI

- **Link:**https://github.com/suhasmaddali/English-Language-Learning-Prediction-with-AI-and-Machine-Learning
- Applies NLP techniques like sentiment analysis and topic modeling.
- Provided insights on analyzing language proficiency beyond basic scoring.

5. DeepEssay

- **Link:**https://github.com/Logisx/DeepEssay
- Targeted at IELTS essay evaluation using ML-based models.
- Tested during exploration phase but found limited accuracy.

6. EssayScore_FYP

- **Link:**https://github.com/tingwei3931/EssayScore_FYP
- A final year project using neural networks for essay scoring.
- Limited documentation and configuration issues prevented full evaluation.

7. Essay Grading IELTS

- **Link:**https://github.com/ADHIKSHA/Essay-Grading-IELTS
- Uses Django, NLTK, and Keras.
- Encountered installation issues, noted here for completeness.

8. Transformer-BERT by Krishnaik06

- **Link:**https://github.com/krishnaik06/Trnasformer-Bert
- Provided template code for transformer-based NLP classifiers.
- Referenced during initial transformer experiments on essay quality.

9. Colab Notebook – BERT Essay Evaluation

- **Link:**https://colab.research.google.com/drive/16-N6aI7bDx9gCdb_NIgM9xP3jSntD7CG?usp=sharing
- Used BERT in a supervised essay classification setting.
- Helped test how pre-trained transformer models performed on essay-level tasks.