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GEN AI PROJECT PHASE 1 SUBMISSION DOCUMENT

Phase 1: Proposal & Idea Submission

1. Project Title:

AI Poetry Generator

2. Domain:

Generative AI | NLP | Creative Text Generation

3. Problem Statement:

The creation of expressive, structured, and thematically resonant poetry is a challenging artistic endeavor that typically requires both linguistic creativity and deep emotional resonance. While generative AI has made significant strides in text generation, poetry remains a frontier where language models can be trained to produce not only coherent but also artistically impactful literary works. The challenge lies in guiding AI to produce poetic forms that are both syntactically correct and rich in metaphor, rhythm, and emotional depth. This project aims to address this by building an AI-powered poetry generator that crafts meaningful and stylistically diverse poems based on user-defined themes, emotions, styles, and forms.

4. Proposed Solution:

The proposed solution is to develop an AI Poetry Generator using pre-trained language models from HuggingFace. The solution will:

- Accept user inputs for theme, emotion, style, form, and length of the poem.
- Utilize generative models (like GPT-2, GPT-3, or Mistral) to craft structured, meaningful poetry.
- Apply prompt engineering to fine-tune the generation process for poetic forms such as Sonnets, Haikus, Odes, and Free Verse.
- Integrate a user-friendly web interface built with Streamlit, allowing for easy input customization and real-time poem generation.
- Provide options to save and download generated poems, making it both a creative and practical tool.

5. Objectives:

- To develop a user-interactive application that generates poetry based on user-defined criteria.
- To explore different LLMs for poetic structure and thematic depth.
- To optimize prompt engineering for improved coherence and artistic expression.
- To design an intuitive UI that allows users to experience AI-driven poetry generation in real-time.

- Optional: To implement evaluation metrics for poetic quality, coherence, and thematic consistency.

6. Expected Outcome:

- A fully functional web-based poetry generation application.
- The ability to generate stylistically diverse and thematically rich poems.
- A seamless user experience for crafting and exploring poetry with AI assistance.
- The potential to extend the application into storytelling or lyric generation.

7. Tools & Technologies to be Used:

- **Python** (Primary programming language)
- **Transformers library** (HuggingFace for language models)
- **Pre-trained models:** GPT-2, GPT-3, Mistral, or similar generative models
- **Streamlit** (for the interactive web interface)
- **Jupyter Notebook** (for model experimentation and prompt engineering)
- **Google Colab / Local GPU** (for running large language models)

8. References:

- HuggingFace Transformers Documentation
- OpenAI GPT Models Documentation
- Research papers on AI-driven creative writing and generative poetry
- Projects on AI-generated literature and poetry from GitHub