**Phase 1: Proposal & Idea Submission**

**1. Project Title:**

**Single Sentence Completion using Generative AI**

**2. Domain:**

Generative AI | NLP | Sentence Completion

**3. Problem Statement:**

Text generation is a fundamental task in Natural Language Processing (NLP), enabling systems to produce coherent and contextually relevant text. This project focuses on generating a single, grammatically correct, and contextually appropriate sentence completion based on a user-provided input sentence. The model will address challenges such as minimizing repetitive phrases, maintaining coherence, and producing logically complete sentences.

**4. Proposed Solution:**

This project implements a sentence completion model using a pre-trained GPT-2 model. The solution is structured as follows:

* Accepts a user-provided sentence fragment as input.
* Generates a single, concise sentence as the continuation of the input.
* Controls the randomness of the output using temperature settings.
* Mitigates repetitive content using a repetition penalty.
* Provides a user-friendly interface using **ipywidgets** to control parameters such as temperature and repetition penalty.

**5. Objectives:**

* Implement a single-sentence completion system using a pre-trained GPT-2 model.
* Integrate **ipywidgets** for interactive input, parameter adjustment, and output display.
* Minimize repetitive outputs using repetition penalty settings.
* Ensure sentence completions are grammatically coherent and contextually relevant.

**6. Expected Outcome:**

* A functional notebook that generates a single, complete sentence based on user input.
* A user interface with adjustable parameters for temperature and repetition penalty.
* Evaluation of output quality based on coherence, grammaticality, and logical consistency.

**7. Tools & Technologies to be Used:**

* **Python** (Primary programming language)
* **Transformers library** (HuggingFace)
* **GPT-2 Model** (Pre-trained)
* **ipywidgets** (Interactive interface)
* **Jupyter Notebook / Google Colab** (Execution and testing)

**8. References:**

* HuggingFace Transformers Documentation
* [GPT-2 Model Overview](https://openai.com/research/gpt-2)
* [IPyWidgets Documentation](https://ipywidgets.readthedocs.io/en/latest/)