🧬 *AI Dungeon Story Generator — Project Report*

📘 Introduction

The **AI Dungeon Story Generator** is an interactive text-based storytelling application that uses natural language generation (NLG) techniques to create engaging, genre-specific narratives. Inspired by classic text-based adventure games, this project allows users to input a prompt and receive multiple creative story continuations powered by advanced generative models. The goal is to simulate a dynamic dungeon master or storyteller capable of generating rich, immersive tales across multiple genres like fantasy, sci-fi, and mystery.

📄 Abstract

In this project, we designed a web-based application that leverages **pretrained language models** such as **GPT-2** or **GPT-Neo** to generate creative narratives from user-defined prompts. The system provides multiple story continuations to simulate branching story paths, a hallmark of choose-your-own-adventure games. A **Gradio-based interface** was built for ease of use, and additional features like genre selection, story saving, and customizable output length were implemented to make the experience more tailored and interactive.

This project showcases how **transformer-based NLP models** can be used beyond factual summarization or chat applications, extending into the realm of **interactive fiction and entertainment**.

🛠️ Tools Used

Tool/Library	Purpose
Python	Core programming language
Hugging Face Transformers	Provides GPT-2 models for text generation
Torch (PyTorch)	Deep learning backend used by the models
Gradio	Rapid web app framework for deployment
Datetime & OS	Utility modules for file saving and timestamps

🧩 Steps Involved in Building the Project

1. Environment Setup

- Installed necessary libraries: transformers, torch, and Gradio.
- Loaded GPT-2 model using Hugging Face's pipeline interface.

2. Model Integration

- Used the "text-generation" pipeline with the GPT-2 model.
- Enabled temperature-based sampling to allow creative, non-repetitive outputs.
- Configured model settings such as top_k, top_p, and max_length for flexibility.

3. User Input Handling

- Users enter a story prompt and select a genre (e.g., fantasy, sci-fi, mystery).
- The genre modifies the context to guide the story generation.

4. Story Generation Logic

- Generated multiple variations using num_return_sequences.
- Each output is shown in a clean format with headers like “Option 1”, “Option 2”, etc.

5. Interface Development (Gradio)

- Created a responsive and interactive UI using Gradio widgets:
    - Text area for prompt input
    - Dropdown for genre selection
    - Sliders for story length and number of outputs
    - Buttons for generating and saving stories

6. Saving Functionality

- Implemented file-saving logic to store generated stories locally with timestamped filenames.
- Created a folder structure (/stories/) to organize outputs.

7. App Deployment

- Launched the Gradio app using the output link.
- The app runs on localhost and can be deployed on cloud platforms.

🏁 Conclusion

The AI Dungeon Story Generator project demonstrates the powerful capabilities of transformer-based models like GPT-2 in the field of **creative writing and interactive fiction**. By blending NLP technology with intuitive UI/UX via Gradio, the application provides users with an engaging platform to explore storytelling across multiple genres.

This project not only serves as an entertaining tool for writers, gamers, and AI enthusiasts but also highlights the potential of generative AI in the realm of creative content generation. Future enhancements could include character memory, world-building tools, and story continuation from saved checkpoints.