Interactive Story Generation

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1 PROJECT BACKGROUND

Storytelling [1] has been one of the most essential parts of human culture for many years. People tell stories to others to share their experiences, beliefs, and values via paintings, carvings, movies, podcasts etc. Nowadays, due to technological advancements and the increase in the use of Artificial Intelligence, our ability to tell stories has been expanded. AI-based storytelling has become popular nowadays but it is the most difficult task and it is challenging to produce consistent, coherent and engaging narratives. This encompasses issues such as maintaining logical plot progression, developing well-rounded characters, and ensuring that the story's pacing remains appropriate. The AI may struggle with generating stories that flow naturally and captivate the audience, leading to disjointed or unsatisfying narrative experiences. Additionally, balancing creativity with coherence presents a complex problem, as the AI must innovate within established storytelling frameworks while still adhering to logical constraints.

1.1 Project Objective

This project aims to build a platform for interactive story generation where Large Language Models such as GPT-3, Llama etc., are used at the backend for generation tasks. Moreover, the platform also incorporates the feature of the story recitation.

2 PROJECT JUSTIFICATION

The problem of generating coherent and engaging narratives in the interactive AI generator is crucial due to its direct impact on user experience and the effectiveness of the tool. Engaging storytelling is fundamental to capturing and retaining users' attention, fostering immersion, and eliciting emotional responses. Without compelling narratives, users are less likely to interact with the AI generator, leading to diminished satisfaction and decreased utility of the tool. Moreover, it is crucial to solve this issue since it is necessary to expand the potential of Generative AI in several fields such as therapy, education, and entertainment. It also has the potential to increase the explainability of the AI models, especially Large Language Models so that it will help researchers to enhance the AI models for various applications in future [2].

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3 RELATED WORK

Various research work has been done by several researchers in the field of AI-based Story Generation. A few of the works are given below:

1. Parag Jain et al. [3] have developed a deep learning model on story generation using a syntax-based Statistical Machine Translation model and Recurrent Neural Networks on the Visual Storytelling Dataset.

2. Leah Pathan Khan et al. [4] have developed a keyword-based story generation model by finetuning the GPT 2 model on the private dataset created by themselves and achieved the BLEU score of about 0.704 averaging over 10 genres.

3. Mathews R.F. et. al. [5] have developed the procedural story generation model using a handcrafted event network and a dynamic artificial social network created for each new story.

4. SeokKyoo Kim et. al. [6] have developed a story generation algorithm using Constraint Based Narrative structure implemented in Storytelling Markup Language.

4 METHODOLOGY TO BE ADOPTED

In this project, we have planned to fine-tune the LLMs (Large Language Models) such as GPT 3 [7], Llama[8] etc., for story generation tasks on several publically accessible datasets as well as on datasets created by ourselves. We were also planning to add a story recitation feature by using the pre-trained NextGPT [9] model. We will also try to build the website for that using HTML, Bootstrap CSS and JavaScript.

5 EVALUATION OF THE WORK

The work will be evaluated based on several criteria:

1. User Engagement: The level of user engagement will be measured through user surveys, interaction time, and feedback.

2. Narrative Coherence: The narrative coherence of the generated story will be evaluated using NLP metrics such as Perplexity, BLEU, Meteor, UGE Score and user feedback on the narrative flow.

3. Dynamic Personalization: By assessing the effectiveness of personalization algorithms by analyzing user preferences and satisfaction over time.

4. Story Recitation Feature: Evaluating the quality of speech synthesis through objective measures and user feedback on the recitation feature.

6 POTENTIAL CONTRIBUTIONS TO THE WORK

Potential Contributions to the work are listed below:

1. Seamless User Interaction: Developing techniques to ensure natural and intuitive interaction between users and the evolving narrative.

2. Coherent Narrative Flow: Implementing algorithms to maintain a coherent and engaging storyline throughout user interactions.

3. Dynamic Personalization Models: Creating machine learning models that adapt the story dynamically based on user choices, enhancing the overall personalization.

4. Story Recitation Feature: Introducing a novel feature for converting generated text into speech, adding an audio dimension to the storytelling experience.

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