Co-DIRECT: A Multi-agent based Observable Drama Script Generation and Performance

Anonymous ACL submission

Abstract

Multi-agents cooperation framework shows excellent ability in storytelling and role-playing, but current end-to-end methods often generate homogeneous drama scripts by focusing solely on plot coherence, neglecting the diverse interpretive and imitation capabilities of multiple agents. This paper introduces Co-DIRECT, an enhanced Director-Writer-Actor-Critic multi-agent framework designed for human-AI co-creation in drama script generation and performance. Human directors provide story settings and observe the creative process, while specialized agents - Writer, Actor, and Critic - collaborate to generate, perform, and evaluate the script. Co-DIRECT injects a knowledge graph of classic scripts into the knowledge base, enabling agents to retrieve detailed information related to classic characters and archive the development context of classic plots holistically, thereby enhancing the agents' role-playing and plot generation capabilities. The use of digital human actors provides human directors with an observable interface. Experiments demonstrate a significant influence on human director engagement, underscoring the potential for collaborative creativity between humans and AI in storytelling.

1 Introduction

In recent years, large language models (LLMs) have demonstrated strong capabilities in story creating (Zang et al., 2024; Shen et al., 2024) and role-playing (Tseng et al., 2024; Chen et al., 2024), such as in the fields of scriptwriting (Han et al., 2024a; Weber et al., 2024; Xu et al., 2024), game development (Kumaran et al., 2024; Wang et al., 2024), creativity support (Chakrabarty et al., 2024; Qin et al., 2024), journaling (Kim et al., 2024; Nepal et al., 2024), etc. In traditional theater creation, directors not only develop the storyline and arcs but also shape character personalities, behaviors, and visual storyboards to provide a concrete reference for rehearsal. However, existing LLMs primarily function as individual agent (Prabhumoye et al., 2020; Zhang et al., 2023), focusing on textual coherence while overlooking the interactive dynamics between multiple character agents (Han et al., 2024a). As a result, characters generated by single-agent models often lack diversity, leading to homogenized content that falls short of the requirements for rich character development and dynamic interactions in storytelling and performance. It presents an opportunity for LLMs to further develop multi-agent role-playing capabilities, paving the way for more adaptive script generation that better aligns with human director's creative intent and imaginative vision in theatrical storytelling.

To address this issue, multi-agent frameworks have been proposed as a means of simulating human collaborative intelligence, enabling multiple agents to work together to accomplish complex creative tasks (Chen and Si, 2024; Wang et al., 2025; Hong et al., 2023). However, existing multi-agent frameworks face significant coordination challenges in theatrical scriptwriting and performance. Centralized control constrains the flexibility and creativity needed for dynamic character portrayal, while fully decentralized decision-making can disrupt narrative coherence, leading to fragmented or inconsistent storylines. This imbalance often results in either homogenized content or overly disjointed narratives, ultimately weakening the intended theatrical impact.

The quality of scripts co-created by multi-agents is significantly influenced by the performance knowledge of each agent. Research shows the key of enhancing performance knowledge of agents in role-playing tasks relies on carefully designed specialized datasets (e.g., (Li et al., 2023; Shao et al., 2023)), which primarily consist of character profiles and dialogue sequences and are predominantly oriented toward single role-playing tasks. More-

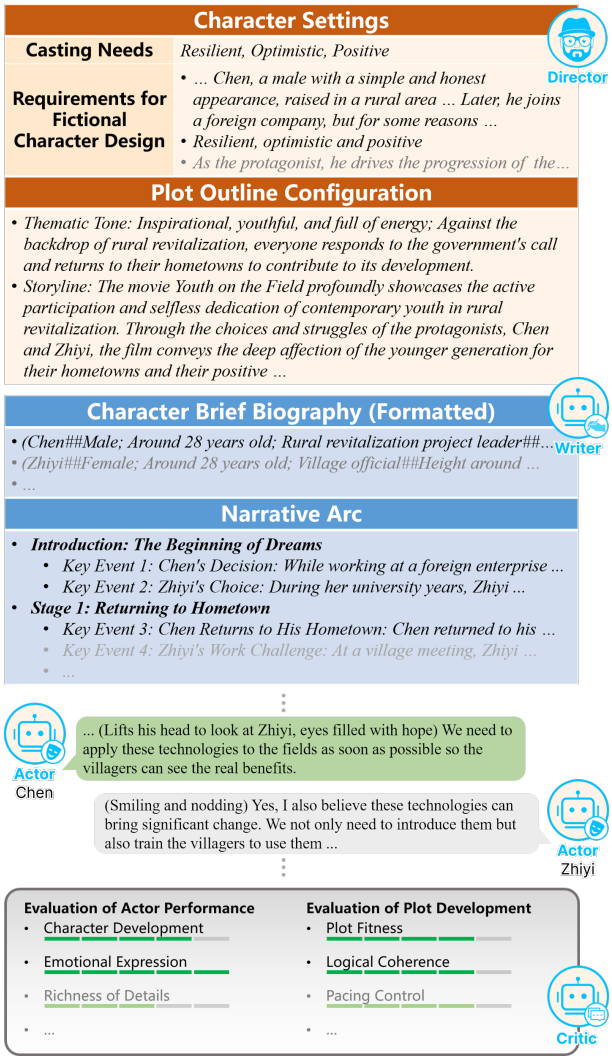


Figure 1: Co-DIRECT is a multi-agent co-creation framework that utilizes agents' collaboration to generate drama scripts that conform the creative intent of human directors.

over, the construction process of these datasets is labor-intensive. Therefore, we aims to gathering performance knowledge from publicly accessible theatrical script data. This knowledge not only includes detailed character profiles derived from the scripts but also encompasses the holistic perspective that includes character relationships and plot development.

We introduces **Co-DIRECT** (**Co**-creation with **DI**rector-w**R**it**E**r-a**C**tor-cri**T**ic), a multi-agent collaborative framework for observable drama script generation and performance (Figure 1). Co-DIRECT incorporates a graph-driven Retrieval Augmented Generation (RAG) technique to achieve a training-free approach. It extracts entities and constructs relationships oriented toward performance knowledge from publicly accessible drama scripts, thereby constructing a knowledge base encompassing role-playing and story generation. By integrating RAG technology, the Co-DIRECT becomes model-agnostic enabling the decoupling of the knowledge base from the language model. This allows for the selection of suitable open-source language models based on hardware constraints. Moreover, Co-DIRECT supports visual storytelling, using a digital human interface to generate storyboards, enriches narrative experiences, and provides flexible character performance.

In Co-DIRECT, the human director defines the plot and character settings, which serve as inputs for the writer agent to generate or expand the storyline. Actor agents take on role-playing tasks, utilizing a digital human interface to convey audio-visual effects in the form of a dynamic, real-time storyboard, thereby visualizing/simulating the performance. The critic agent supervises the coherence of overall storyline, also evaluates the plausibility of actors' performance, providing valuable feedback to help the human director's creation. To further enhance agents' ability for dramatic performance, we use GraphRAG (Edge et al., 2024) to extract performance knowledge from public drama scripts to construct a knowledge graph that guides agents in story generation and role-playing.

Our contributions are summarized as follows:

- Introducing Co-DIRECT, a novel framework for observable script generation and performance, leveraging multi-agent collaboration.
- Enhancing story generation and role-playing with a knowledge-graph-driven RAG agent, based on publicly accessible drama scripts.
- Implementing a real-time visualization storyboard that allows human directors to dynamically adjust scripts.
- Assessing the human-AI co-creative process in collaboration with industry professionals using Co-DIRECT, and validating the effectiveness of Co-DIRECT through both quantitative and qualitative studies.

2 Related Works

2.1 Story Generation Based on Language Models/Agents

Previous research has attempted to generate stories using language models and control the development of the plot. Users manipulate the model through carefully designed text-based knowledge

bases and prompts (Sami et al., 2024), or inject knowledge related to story generation into the model's parameters (Liu et al., 2024) to control the generation process of drama script.

Most studies focus on maintaining the coherence of generated story. (Yao et al., 2019) proposes a hierarchical story generation strategy to maintain the logical coherence of the entire story. (Mirowski et al., 2023) utilizes language models to build an interactive collaborative tool for screenplay and theater script writing, allowing creators to directly intervene in plot generation through prompts. These works, due to their overemphasis on narrative coherence, tend to produce homogeneous storylines that lack diversity and fail to inspire human creators. The multi-agent framework proposed in this study addresses this issue to some extent. While encouraging Actors agents to freely create in each scene, the framework ensures that the plot development stays true to the creative intent of human directors through the plot planning by the Writer Agent and the periodic evaluation by the Critic agents, thus achieving a balance between creative inspiration and narrative coherence.

Additionally, researchers explore interaction methods for the story generation. (Hua and Raley, 2020) employs AI as a creativity assistant, and (Han et al., 2024b) makes human as game players participate in the story and changes the plot within the game. Based on existing research, this paper further explores richer methods of information interaction. Our framework focuses on how to generate personalized dramatic dialogue through the collaboration between human directors and agents. Through the storyboard (the digital human interface) of the actor agent and the textual feedback of the critic agent, human directors can observe the creative process of drama from multiple perspectives and media.

2.2 Role-Playing Based on Language Models/Agents

In role-playing tasks, the one key prerequisite to ensure the generated responses fit the character's personality is that the LMs hava prior knowledge related to the dramatic performance. Dramatic documents and character profiles, from the real world or fictional works, can serve as the language model's corpus for retrieval or fine-tuning to better capture the character's personality and behavioral patterns (Li et al., 2023; Wang et al., 2023). (Shao et al., 2023) fine-tunes the language model to more authentically reproduce the role-playing of historical figures.

(Park et al., 2023) proposes the concept of Generative Agents, enabling language model-based agents to vividly simulate human daily life with high interactivity and authenticity, which has laid the foundation for subsequent role-playing research. This paper employs RAG-enhanced agents, driven by knowledge graphs, to extract role-playing related entities and relationships from scripts accessible on the Internet and build a knowledge graph, thereby enhancing the agents' plot understanding and role-playing capabilities. Furthermore, multiple RAG agents can play to their individual creativity and flexibility to generate more interesting storylines.

2.3 Graph Augmented Agents

Traditional RAG methods can handle unstructured text, but they fall short in comprehending complex narrative structures and knowledge associations. In contrast, Knowledge Graphs can store named entities and relationships extracted from unstructured corpora, offering richer semantic relationships and knowledge representation, thereby significantly improving the efficiency and accuracy of knowledge retrieval (Kumaran et al., 2024; Leng et al., 2024). (Edge et al., 2024) uses the Leiden algorithm to perform hierarchical clustering on the extracted graph, generating summaries of communities and their members in a bottom-up manner, which allows RAG agents to not only extract entity details from the corpus but also focus on the themes of graph communities from a holistic perspective.

Therefore, we customize the GraphRAG with the public drama scripts as the expertise corpora to provide well-grounded knowledge of performance to agents. It enables agents to make rational, expressive, and logically consistent behavioral decisions in the dramatic plot generation and role-playing, thereby enhancing the overall generation and performance ability.

2.4 Virtual Digital Humans in Drama

In the realm of digital performance, the concept of posthumanism has inspired a new genre of theatre where digital technology profoundly impacts both the creation and thematic aspects of dramatic performance (Jordan, 2015). The Digital Mei Lanfang Master Reproduction Project exemplifies this by utilizing high-fidelity real-time digital human technology to recreate the renowned Chinese Peking

Opera master Mei Lanfang's 3D stage presence, voice, and performance style, enabling digital performances (Yujia, 2021). This posthuman drama, supported by digital technology, redefines the subject of theatrical performance, transforming audiences from passive recipients to active participants through interactive technologies (Zhang, 2024). However, current research primarily focuses on full-length digital performances, whereas our work explores the use of digital humans as a storyboard interface for creative visualization in script creation, addressing the gap in real-time human-AI collaboration (Im et al., 2023).

3 Co-Creation Framework

Co-DIRECT is mainly aimed for human directors to help in character design and plot generation. Unlike traditional end-to-end script auto-generation approaches that focus on directly producing complete content for human creators with limited granularity of intervention and control, our Co-DIRECT framework allows human directors to observe the generated scripts and performances at any stage of the workflow. This enables a balance between the autonomous creativity of multi-agent systems and the fine-grained control exerted by human directors. There are three main agents in Co-DIRECT: writer, actor and critic agent. We introduce them below.

3.1 General Workflow

In the Co-DIRECT system, human directors interact with various agents to collaboratively create dramatic content. The main workflow of the Co-DIRECT framework is illustrated in Figure 2. The **human director** serves as the main user, providing creative requirements and receiving feedback to guide the entire process. The **writer agent** is responsible for character design and plot generation based on the director's input. The **actor agent** performs role-playing tasks, generating dialogues and actions autonomously. The **critic agent** evaluates the performances and provides feedback to ensure the coherence and completeness of the generated content. This workflow ensures that the creative process is both flexible and controlled, allowing for diverse and high-quality dramatic content.

3.1.1 Stage 1: Character Design

First, human director provides a character description to the writer agent, which includes keywords or narrative passages outlining the desired traits of the character. The writer agent then retrieves several aligned characters from the knowledge base then combines them to generate a new fictional character profile, including multi-dimensional attributes such as physical features, personality traits, backstory, relationships, and linguistic style. At this stage, the writer agent focuses on performance-related knowledge, specifically tailored to role-playing details.

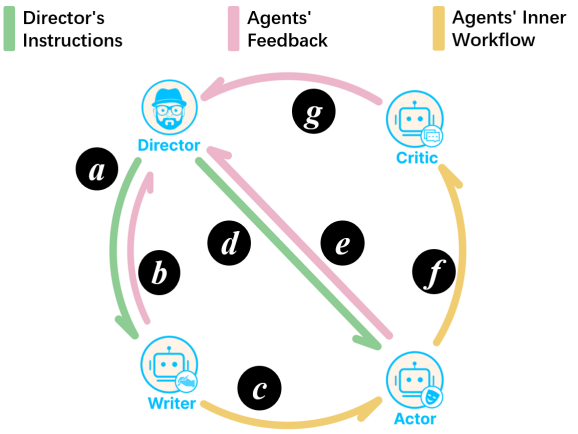


Figure 2: The workflow among the various roles within the Co-DIRECT framework: *a*) a Writer Agent (WA) receives character settings and plot outline configurations from a Director; *b*) the WA returns the designed fictional characters and narrative arc; *c*) an Actor Agent (AA) receives the fictional characters and narrative arc from the WA; *d*) the Director designates the first AA to speak at the beginning of the performance; *e*) the AA display the performance via digital human storyboard to the Director; *f*) the AA pushes dialogue history to a Critic Agent (CA); *g*) the CA feedback the performance evaluation to the Director.

3.1.2 Stage 2: Story Generation

The writer agent generates a narrative arc based on the plot outline configuration provided by the human director and the sequence of fictional characters created in stage 1. It describes the overall mood and direction of the whole story. The writer agent generates a narrative arc instead of a detailed story, helping to address the issue of long story content exceeding the token limit of the LLMs. The narrative arc includes sub-nodes such as Beginning, Development, Rising Action, Climax, and Resolution, which serve to ensure that the subsequent actor agents have clear references for the performance, thus maintaining the logical coherence and consistency of the storyline. At this stage, the writer agent prioritizes a holistic understanding of the narrative by employing a global retrieval method to query the knowledge graph.

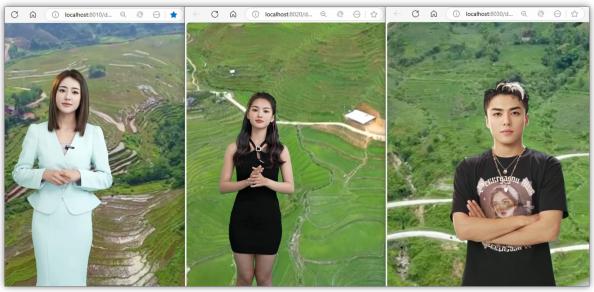


Figure 3: Our digital human dynamic storyboard is a multi-digital-human display system that supports customized digital human avatars, voices, and backgrounds (Note that the avatars illustrated are procured from the digital human marketplace).

3.1.3 Stage 3: Drama Performance

Given the brief biography, thematic tone, and preceding plot, the actor agents perform role-playing tasks, generating corresponding dialogues, emotions, and actions. This framework allows multiple actor agents to autonomously determine the sequence of their performance dialogues. This maximizes the flexibility of the role-playing agents and generates more diverse scripts. During the performance, once the current actor agent generates a line of dialogue, it designates the next interacting actor agent, transferring the speaking turn to it and moving the conversation to the next round. In addition to textual output, the actor agent employs a multimedia digital human interface to deliver dynamic audio/visual content to the director in the form of a storyboard, thereby facilitating real-time, immersive feedback.

3.1.4 Stage 4: Drama Critique

Drama critique is essential for ensuring the coherence and completeness of the generated content. It evaluates the actors' outputs, including dialogues, actions, and emotional tags, based on the plot objectives established by the writer agent. The critic agent, as a key component, provides concise feedback to the human director, identifying deviations from the intended plot and suggesting targeted improvements. This process ensures the logical consistency of the storyline and guides the director in making effective adjustments.

3.2 Agents in Co-Creation

3.2.1 Writer Agent

The two main tasks of the writer agent are character design and narrative arc generation. These tasks heavily rely on the agent's knowledge of role-playing and plot interpretation. Implemented via GraphRAG, the writer agent extracts entities and their relationships from unstructured script resources and stores them in a structured knowledge graph. Drawing on entity types from the field of performance, we customized the prompt templates of GraphRAG to support the extraction of knowledge from dramatic scripts. This enables the retrieval of characters and story archetypes that match specific queries.

Initially, the writer agent retrieves character archetypes from the knowledge base and fuses them to create biographies for new fictional characters. For instance, based on director queries such as "Justice" or "Emotionally driven," archetypes in the knowledge graph like *Silvia* (from *The Truman Show*) and *Wang Lifa* (from *Teahouse*) are retrieved, providing cross-cultural inspiration for character design. Subsequently, the writer agent queries the knowledge graph to retrieve story plots related to the director's provided plot outline. These retrieved plots enrich the original summary, and the final narrative arc is produced in a predefined format, incorporating key events and plot milestones. This ensures that subsequent performance tasks have clear behavioral references, even when they are autonomously planned by the actor agents.

3.2.2 Actor Agent

The actor agent performs role-playing tasks by generating dialogue, emotions, and actions based on the character profiles and narrative arcs provided by the writer agent. At the start of the performance, the human director selects the initial actor agent to begin the dialogue. To ensure variability in the generated dialogues under identical conditions, each actor agent is instructed to designate the next speaker immediately after delivering its line, based on the accumulated dialogue history. Furthermore, to prevent an endless loop of dialogue caused by the absence of an ending prompt, the current speaker is directed to assess the plot development goals in relation to the dialogue history and to conclude the performance segment once the termination criteria are met. This autonomous "handover of the microphone" among actor agents significantly enhances the diversity and innovation of the performance.

In addition to generating textual feedback, the actor agent's performance is presented to the human director through a multimedia storyboard via a digital human interface, providing real-time visual and auditory feedback. We have integrated the open-

source lip-sync generation model Wav2Lip (Prajwal et al., 2020) and the real-time voice cloning model GPT-SoVITS (RVC-Boss, 2024) to develop our digital human dynamic storyboard. This is a multi-digital-human display system supported customized avatars, backgrounds and voices (Figure 3). We have connected a digital human interface to each actor agent. Once the dialogue generation process of the actor agent is completed, its dialogue history is forwarded to the control program of the digital human display system, which then drives the corresponding digital human to perform.

3.2.3 Critic Agent

The critic agent, driven by direct prompt engineering, evaluates whether the dialogue history of the actor agents effectively realizes the plot development objective outlined by the writer agent. It provides the human director with evaluative feedback and ratings, allowing the director to capture key assessment dimensions. The evaluation process is structured around two critical aspects: character performance and plot interpretation. In the realm of character performance, the critic agent systematically assesses the completeness of character development, the richness of detail, the plausibility of character behavior, and the alignment of character actions with the overarching plot. For plot interpretation, the evaluation centers on logical coherence, innovation in character dialogues, pacing, and the expression of conflict and tension.

4 Experiments

4.1 Implementation Details

4.1.1 GraphRAG for Drama

GraphRAG integrates knowledge graph with RAG to improve LLMs' handling of complex unstructured documents. However, in practice, we found that the native GraphRAG is effective in general domains like business and law, but struggles in specific domain such as dramatic performance. To address this, we adapted the default prompt templates of GraphRAG based on prior dramatic performance knowledge, and used common entity types (e.g., person, organization, location, emotion status) to construct the knowledge graph. GraphRAG is independent of the underlying model. When constructing graph indexes and querying the knowledge graph, users can choose the underlying model that best suits their needs. Given the requirement to process Chinese scripts, we employed *Qwen2.5:72b* as the backbone model. For the embedding model, we utilized *shaw/dmeta-embedding-zh*.

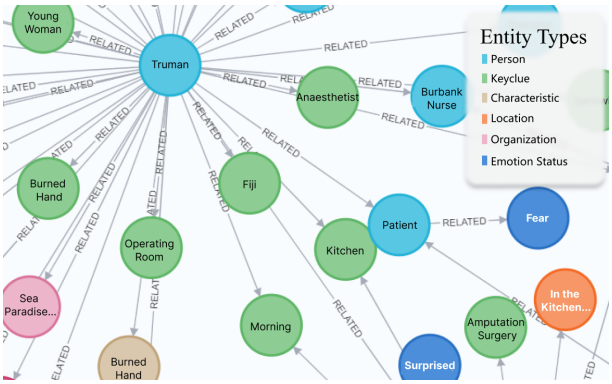


Figure 4: Partial view of named entities in our knowledge graph. It encompassing **Person**, **Key Clue**, **Characteristic**, **Location**, **Organization** and **Emotion Status**.

Due to the static window-based text chunking in GraphRAG, token loss at the beginning and end of chunks resulted in inaccurate entity extraction. We improved the text chunk strategy to support dynamic chunk windows, ensuring the integrity of sentences within chunk and preventing incomplete clauses from interfering with script comprehension and entity extraction. The maximum chunk size was set to 500 tokens with a 360 tokens overlap.

We constructed a performance knowledge base using publicly accessible drama script resources (with a total token count of 174,874), which includes renowned works like *The Truman Show*, *Teahouse*, and several comedy sketches. By meticulously analyzing these scripts and building a retrieval index, we structured a knowledge-graph-based knowledge base which focuses on performance knowledge. Figure 4 illustrates the partial view of constructed Knowledge Graph. This novel approach leads to a remarkable improvement in the agent's plot understanding and role-playing. Moreover, the knowledge base we have built will be made publicly accessible to facilitate future research in script generation and role-playing field.

4.1.2 Drama Script Settings

To evaluate the Co-DIRECT framework, we invited a professional film director to collaboratively create a novel script (described in Appendix A) for a short film. The script is based on the theme of "hometown revitalization". In our setting, the protagonist quits his job in the city and returns to his hometown to participate in its development. Alongside his father and business partner, he overcomes various

challenges and ultimately succeeds in leading the villagers towards a prosperous life. All the characters are fictional, and there are no cases where the roles portrayed could be recognized by the LLM. A brief overview of our script settings is provided in the AppendixA.

4.2 Basic Drama Script Generation

The objective of Co-DIRECT is to achieve Human-AI Co-Creation, generating content that is consistent with the creative intentions of human directors while optimizing the trade-off between narrative coherence and creative divergence. We conducted a comparative experiment between Co-DIRECT and the backbone LLM (*Qwen2.5:72b*) to measure the extent to which Co-DIRECT aligns with human directors' creative intentions and how it balances coherence and the flexibility of free creation. In the experiment, we used the same initial script setting to generate fictional characters, narrative arcs and dialogues. We quantify and visualize the differences among generated contents through clustering. Additionally, we leveraged the text annotation capabilities of ChatGPT to evaluate and score the generated scripts.

4.2.1 Cluster Analysis

We conducted a cluster analysis to measure the semantic similarity between generated content and human-provided requirements in the feature space. We used both LLM and GraphRAG Agent (each with three classic scripts as knowledge bases) to generate 15 scripts. The character designs, plot outlines, fictional characters, narrative arcs, and dialogues were converted into embedding vectors and projected into the feature space. Figures 5a-5b show the t-SNE visualization of these vectors after clustering and dimensionality reduction. The results indicate that GraphRAG-generated content (e.g., characters and narrative arcs) is semantically closer to the human requirements than LLM-generated content, reflecting more accurate alignment with creative intentions. Additionally, GraphRAG outputs are more tightly clustered, indicating higher consistency. Table 1 provides quantitative comparisons of clustering results.

For the Actor agent, which focuses on generating diverse dialogues through multi-agent interactions, the clustering results (Figure 5 (c)) show more dispersed clusters compared to monolithic LLMs. This suggests that multi-agent dialogue generation enhances diversity. Table 2 presents the quantitative comparison of clustering results for the Actor agent and LLM, as shown in Figure 5c.

4.2.2 Generated Drama Evaluation

We leveraged ChatGPT to compare the quality of 15 narrative arcs generated by LLM and Co-DIRECT. We evaluated and scored the narrative arcs from two dimensions: richness and coherence of the narrative content. ChatGPT used a scoring scale from 1 to 5 for each dimension (with decimal scores allowed, where higher values indicate greater satisfaction). Table 3 presents the average scores of the generated narrative arcs. The narrative arcs generated by Co-DIRECT consistently outperformed those produced by LLM across all dimensions, owing to the integration of the GraphRAG graph knowledge base. This suggests that the knowledge base significantly contributes to enhancing both the richness and coherence of the generated narratives.

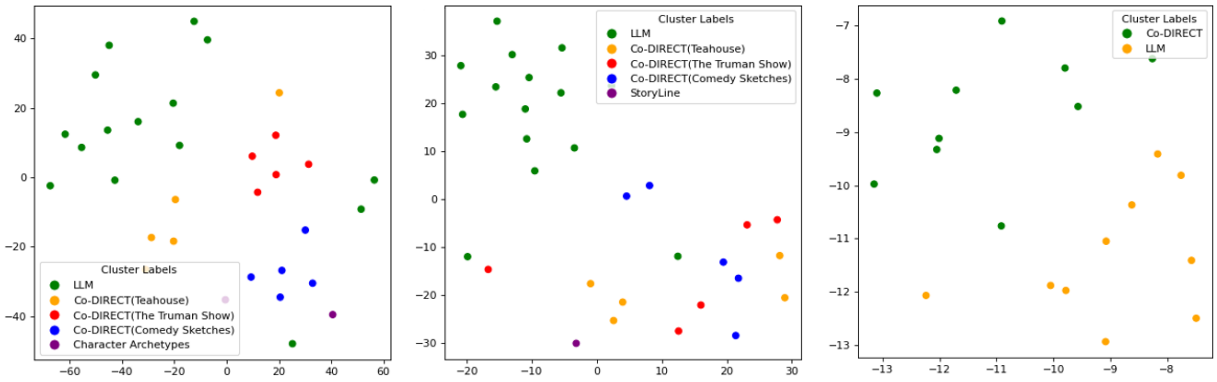
4.3 Case Study

After the co-creation practice with the film director, we collected key insights and perspectives from the creators.

In the evaluation process, we found that some generated dialogue scripts closely matched the creators' expectations, while there were also cases where the quality of the generated content was not satisfactory. Table 5 lists several example cases.

Co-DIRECT's multi-agent collaborative generation process aligns with the logic of authentic creative workflows (case 1). It generally designs plausible fictional characters and generates appropriate storylines in accordance with the director's settings, exhibiting a certain degree of content richness (cases 2 and 3). Additionally, the screenwriter and actor agents can continuously introduce innovative elements (case 4). However, some limitations were observed: due to an overemphasis on dialogue, descriptions of actions, micro-expressions, and camera language are sparse (case 5). Moreover, the generated dialogue scripts can occasionally appear pale and rigid (case 6).

Surprisingly, in this practice, we found that the digital human interface fulfills the requirements of the script reading process by simulating character performances through voice and facial expressions. It offers actors a more intuitive reference, aiding them in better understanding their roles and performance demands.



(a) Co-DIRECT vs LLM in character design

(b) Co-DIRECT vs LLM in narrative arc generation

(c) Co-DIRECT vs LLM in dialogues generation

Figure 5: t-SNE visualization of the clustering distribution of the generated text.

Method	Character Design	Narrative Arcs Generation
LLM	64.3669	48.0766
Co-DIRECT (Teahouse)	45.9023	**19.0161**
Co-DIRECT (The Truman Show)	41.1672	21.9323
Co-DIRECT (Comedy Sketches)	**10.6220**	26.4484

Table 1: The inter-cluster distances between the content generated by each method and human creative demands. Smaller values indicate closer alignment with human creative needs.

Method	Intra-cluster Distance
LLM(Single Agent)	2.37
Co-DIRECT	**2.52**

Table 2: Comparison of intra-cluster distances for actor dialogues generated by Co-DIRECT and LLM. Larger values indicate greater diversity in Co-DIRECT-generated dialogues.

Method	Richness	Coherence
LLM	4.38	4.39
Co-DIRECT	**4.46**	**4.50**

Table 3: Evaluation results of narrative arcs using ChatGPT.

Co-DIRECT is capable of generating more diverse content. We found that, with consistent creative input, our framework demonstrated a strong ability to avoid homogenization. Tables 6-7 presents two example cases of generated narrative arcs and character dialogues from the experiment.

5 Conclusions

This study presents Co-DIRECT, a multi-agent framework for human-AI co-creation in drama script generation and performance. By leveraging a knowledge-graph-driven RAG technique, Co-DIRECT enhances agents' role-playing and story generation capabilities, enabling dynamic script adjustments via a real-time visualization storyboard. The framework significantly improves script coherence and audience engagement. Future work will focus on expanding the knowledge graph and integrating additional modalities to further enrich the theatrical experience.

Limitations

Co-DIRECT was initially designed to leverage multi-agent creativity by adopting a simplified approach to simulate the logic of traditional human scriptwriting and performance. However, it faces limitations in knowledge base size, artistic expression, emotional depth, and plot innovation. These limitations lead to challenges in generating highly engaging and innovative content that meets the demands of both creators and audiences. Our future work will focus on expanding the knowledge base, optimizing for large-scale data, and developing a user-friendly GUI to enhance usability and effectiveness.

Ethics Policy

In this study, publicly available drama scripts from Baidu Wenku were used for non-commercial research, ensuring compliance with copyright and licensing agreements. All characters in the generated scripts are fictional, and we do not condone the use of AI to generate immoral content. The digital human avatars and voices are licensed.

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A Script Background and Settings

In this section, we introduced the creation of the main-melody film and television drama *Youth on the Ridge* which includes character relationships, a complete script setting, and the plot flow. Set against the backdrop of rural revitalization, the script tells the stories of three core characters: Chen (character archetype: *Truman*, *Xiao Cui*), Zhiyi (character archetypes: *Female Teacher*, *Enthusiastic Female Teacher*), and Chen's father (character archetypes: *Wang Lifa*, *Song Enzi*). Chen is a young man who resigned from a foreign enterprise to return to his hometown to engage in rural revitalization; Zhiyi is a village official from the city, determined to lead the villagers to prosperity; and Chen's father is a typical Chinese farmer, who is both a father and the village head, with a complex inner world but always committed to his hometown.Through the choices and struggles of Chen and Zhiyi, the script showcases the active participation and selfless dedication of contemporary youth in rural revitalization, conveying the theme that personal dreams are closely linked to the fate of the nation. The film emphasizes the growth and awakening of the younger generation in response to the call of the times. They are not afraid of difficulties, dare to innovate, and use technology and wisdom to assist rural revitalization, demonstrating the vitality and creativity of the youth.

All character archetypes are derived from classic characters presented in our knowledge base. All generated characters are fictional to prevent LLM from directly recognizing the character it is role-playing. Table 4 present the drama script settings given by human directors.

B Example cases of Co-DIRECT

Table 5 presents key cases in a script generation practice. These cases elucidate the feasibility and limitations of Co-DIRECT. Words in blue denote director instruction, those in green indicate positive examples, and those in pink signify negative examples. Tables 6-7 present comparisons of multiple generated contents under the same script settings. These results demonstrate that Co-DIRECT exhibits good diversity in both plot design and dialogue generation.

C Prompts used in Co-DIRECT

We provide the details of the prompt templates. The Writer agent uses the prompt templates in Tables 8-10 to complete casting, character design, and narrative arc generation. The Actor agent executes performance tasks using the prompts in Table 11, and the Critic agent evaluates the script using the prompts in Table 12.

Script Name: "Youth on the Ridge"

Character Settings:
⟨Character 1⟩
Casting Needs:
Resilient, Optimistic, Positive
Requirements for Fictional Character Design:
- The character is Chen, a male with a simple and honest appearance, slightly overweight, and raised in a rural area. He studies hard, hoping to get into a university and leave the countryside to strive for success in a big city. Later, he joins a foreign company, but for various reasons, he is inspired by the rural revitalization efforts in his home country and the contributions of Zhiyi to their hometown.
- Resilient, optimistic, and positive.
- As the protagonist, he drives the progression of the main storyline.
⟨Character 2⟩
Casting Needs:
Cheerful, Enthusiastic, Kind
Requirements for Fictional Character Design:
- The character is Zhiyi, a young woman who is beautiful, fashionable, and outgoing. She grew up in the city and has never been to the countryside. Influenced by her university's ideological education, she decided to become a village official after graduation, aiming to lead the villagers to prosperity.
- Cheerful, Enthusiastic, and kind.
- As a supporting character, she drives the development of the subplot.
⟨Character 3⟩
Casting Needs:
A typical image of a Chinese farmer
Requirements for Fictional Character Design:
- The character is Chen's father, a man with a simple and humble appearance. He is dedicated to leading his hometown to prosperity and hopes his son, Chen, can achieve success in the big city. However, he struggles to accept his son's decision to return home and work in agriculture, leading to complex emotions.
- A typical image of a Chinese farmer.
- He runs through both the main plot and the subplot, serving as a bridge between the protagonist and supporting characters.
Plot Outline Configuration:
Basic information of script: - Script Genre: Mainstream-themed film or drama.
- Target Audience: Youth group.
Thematic tone of script:
- Emotional tone: Inspirational, youthful, and full of energy.
- Core idea: Rural revitalization, responding to the government's call, and building the hometown.
- Story background: Against the backdrop of rural revitalization, everyone responds to the government's call and returns to their hometowns to contribute to its development.
Storyline:
The movie Youth on the Ridge profoundly showcases the active participation and selfless dedication of contemporary youth in rural revitalization. Through the choices and struggles of the protagonists, Chen and Zhiyi, the film conveys the deep affection of the younger generation for their hometowns and their positive response to national policies. The film deeply reveals the theme of how personal dreams are closely linked to the nation's destiny. Chen gives up a high-paying job in a foreign company and resolutely returns to his hometown to engage in rural revitalization, while Zhiyi, a city girl, boldly chooses to work as a village official in the countryside, leading the villagers to prosperity. Their youth blossoms in the vast fields, with their actions embodying responsibility and commitment. Their transformation reflects the growth and awakening of youth in response to the call of the times. Undeterred by difficulties, they bravely innovate, using technology and wisdom to contribute to rural revitalization, demonstrating the vitality and creativity of young people. The film promotes positive values, encouraging more youth to devote themselves to rural revitalization and contribute their youthful strength to the realization of the Chinese Dream of national rejuvenation. At the same time, the film also reflects the hardships and achievements of rural revitalization, as well as the support and guidance of national policies for youth entrepreneurship.

Table 4: Script settings of "Youth on the Ridge".

Case	Description	Human Instruction and Content Generated by Agents
1	Agent Workflow Aligns with Creative Logic.	⟨Director⟩ Requirements for Fictional Character Design: ... The character is Chen, a male with a simple and honest appearance, slightly overweight, and raised in a rural area. He studies hard, hoping to get into a university and leave the countryside to strive for success in a big city. Later, he joins a foreign company, but for various reasons, he is inspired by the ... Plot Outline Configuration: ... ## Storyline: The movie Youth on the Ridge profoundly showcases the active participation and selfless dedication of contemporary youth in rural revitalization. Through the choices and struggles of the protagonists, Chen and Zhiyi, the film conveys the deep affection of the younger generation for their hometowns and their positive ... ⟨Writer⟩ Character Brief Biography: (Chen##Male; aged around 28; responsible for rural revitalization projects##Height: 175 cm; slightly overweight build; round face, frequently displaying a gentle smile; attired in modest yet well-maintained clothing, with a habitual tendency to adjust his tie; possesses a passion for discovering uncharted locations ... Narrative Arc: ### Narrative Arc of "Youth on the Field Ridges" #### Prologue: The Genesis of Dreams ... ⟨Actor⟩ Dialogues: Colleague A (entering Chen's office and seeing him organizing documents): Hey, Chen, you seem a bit distracted today. Everything is going so well at work, why the long face? Chen (looking up at Colleague A with a slight smile): Hi, I have been a bit preoccupied today. You know, I've been pondering some things lately and feeling somewhat lost ...
2	Generated contents meet the creative requirements.	⟨Director⟩ ... # Storyline: - ... Through the choices and struggles of the protagonists, Chen and Zhiyi, the film conveys the deep affection of the younger generation for their hometown and their positive response to national policies. The film deeply explores the theme that personal dreams are closely intertwined with the destiny of the nation. Chen, giving up a high-paying job at a foreign enterprise, resolutely returns to his hometown to contribute to rural revitalization; Zhiyi, a city girl, chooses to serve as a village official, leading villagers to prosperity. Their youth blossoms in the vast fields, demonstrating responsibility and commitment through ... ⟨Actor⟩ Chen (adjusting his tie and gently waving his fan): Over the years working in a foreign enterprise, although significant achievements have been made, there has always been a sense of something missing. Every time I see what Zhiyi has done for her hometown, I feel a deep unease. She has contributed ... ... Chen (taking a deep breath, resolutely): I have decided to resign from this job and return to my hometown. I will use the knowledge and skills I have acquired to contribute to the development of my hometown. We must make our hometown a better place! ... Chen (stopping the motion of his fan, with a determined gaze): I can no longer hesitate. What Zhiyi has done for her hometown has shown me how much one can strive for their roots. I must also return and do my part to make our hometown a better place. ...
3	Generated content is rich and detailed.	⟨Director⟩ ... They face challenges without fear, embrace innovation, and contribute to rural revitalization through technology and wisdom, showcasing the vitality ... ⟨Writer⟩ Narrative Arc: ... #Implementation of Agricultural Modernization: Modern agricultural technologies were introduced by Chen to help villagers improve crop yield and quality. Zhiyi was responsible for organizing training sessions to enhance the technological literacy of the villagers ... #Infrastructure Improvement: Chen and Zhiyi secured government funding to begin the construction of roads, bridges, and schools. Villagers actively participated in the construction ...
4	Heuristic content was generated.	⟨Writer⟩ Character Brief Biography: (Chen##Male; approximately 28 years old ... Round face, often seen with a gentle smile; dressed in simple yet neat clothing, habitually adjusts his tie; enjoys exploring unknown places, frequently carries a camera to document his experiences. Signature gesture is the gentle waving of a fan ## ... ## Project management and organizational coordination skills; camera (used to record changes in his hometown),fan (symbolizing his refined demeanor))
5	The action descriptions, micro-expressions, and camera language are not rich enough.	⟨Actor⟩ ... Villager A (with a broad smile) : Zhiyi, hearing you say this makes us feel much more at ease. In recent years, fewer and fewer young people have stayed in the village, and the farm work has become increasingly difficult. It's truly a great thing that young and capable individuals like you and Chen are willing to return and help us. On behalf of the villagers, I support you. However, we should take it step by step and not overwork ourselves. Zhiyi (smiling) : Thank you for your support! I will do my utmost to help our village develop. In addition to technical training, we plan to set up a small medical station in the village to address the difficulty of accessing healthcare. At the same time, we will regularly organize cultural activities to enrich everyone's leisure time. I hope all the villagers will actively participate and work together to create a better future. ...
6	The content is pale and rigid.	⟨Actor⟩ ... Zhiyi (smiling): Chen, I think we can also try to contact some renowned agricultural experts and scholars. They can not only provide valuable advice but may also help us attract more investment. (pausing for a moment, eyes sparkling with hope) Additionally, we can produce a promotional video for the project and disseminate it widely on social media.This will increase the project's visibility and attract more attention and support. Chen (closing the notebook, with a determined look): Zhiyi, you are right. We can invite some agricultural experts and scholars to guide our project; their professional insights will be very helpful. (pausing for a moment, thinking) We can also produce a detailed promotional video for the project and spread it widely on social media to enhance its visibility. At the same time, I will contact my university mentor to see if he can provide some assistance and support. I believe that as long as we continue to work hard and innovate, we will definitely find solutions to our problems. ...

Table 5: Example cases of the scripts generated by Co-DIRECT.

ver.	Key Event	Plot description
1	- Early Challenges - Land Disputes	Early Challenges: After returning to the countryside, Chen realizes that the villagers are skeptical about his return. Some believe he is only there to 'polish his resume' and will not truly stay. Chen and Zhiyi start visiting the villagers to understand their needs and problems. They encounter many challenges, such as a lack of funding and outdated technology. However, instead of giving up, they actively seek solutions. Land Disputes: A serious land dispute breaks out in the village, involving the interests of multiple families. Zhiyi takes the initiative to intervene, patiently communicating and mediating until she successfully resolves the issue. This experience strengthens her commitment to her role as a village official and earns her the trust and support of the villagers.
2	- Break in the Funding Chain	The project was progressing smoothly until it suddenly faced a break in the funding chain. Chen and Zhiyi worked tirelessly to find a solution. With the government's support, they eventually secured a loan, resolving the urgent crisis.
3	- Zhiyi's Dilemma - New Challenge	Zhiyi's Dilemma: Zhiyi faces even greater challenges in promoting rural revitalization. Some villagers oppose her proposals, with a few even deliberately creating obstacles. At the same time, she is under pressure from her superiors, who expect significant results within a short period. New Challenge: Just as the rural revitalization project begins to show initial success, a sudden natural disaster strikes, causing significant damage to the village. Many crops are destroyed, and the villagers' confidence is severely shaken.
4	- Technological Support - Branding of Agricultural Products	Technological Support: To improve agricultural production efficiency, Chen introduced modern agricultural technologies such as smart irrigation systems and drones for pesticide spraying. Zhiyi, using her communication skills, organized training sessions for the villagers to help them master these new technologies. Branding of Agricultural Products: Chen and Zhiyi discovered that their hometown's agricultural products were of excellent quality but lacked market recognition. They decided to create a brand for the products and sell them through e-commerce platforms. After a series of efforts, the agricultural products from their hometown gradually entered the market and gained popularity among consumers.
5	- Improvement of Infrastructure - Improvement of Educational Standards	Improvement of Infrastructure: Chen and Zhiyi secured government funding to begin the construction of infrastructure such as roads, bridges, and schools. The villagers actively participated in the construction, and the village's appearance was transformed. Improvement of Educational Standards: Through the efforts of Chen and Zhiyi, the village's educational resources were greatly improved. The newly built school attracted more children to enroll, and the villagers' cultural standards significantly increased.

Table 6: Examples of five different narrative arcs generated by Co-DIRECT from the same initial script setting.

Key Event	**Plot Development**	**First generated result**	**Second generated result**
Villagers' Recognition	As the project progresses, the villagers have seen tangible results. Crop yields have increased, incomes have risen, and the quality of life has significantly improved. The villagers have begun to actively participate in the various activities of the cooperative.	Villager L: "Who would've thought we'd get such a great harvest this year! ..."	Villager M: "Look at these crops! They're doing so well! ..."
		Chen: "You've all worked hard! Seeing this year's abundant harvest fills me with joy..."	Chen: "Yes, all our hard work has paid off. The technical support from the cooperative has truly made a huge difference..."
		Zhiyi: "Your efforts have truly paid off! Not only do we have a good harvest, but our quality of life has genuinely improved..."	Zhiyi: "It's great to see everyone's efforts being rewarded. The cooperative has not only increased the yield but also significantly improved everyone's quality of life..."
		Villager M: "Never imagined we'd double our income along with the great harvest! ..."	Villager N: "This machine is amazing! In the past, it would take several of us strong men a whole day to finish the work..."
		Chen: "Seeing your lives improve so much truly moves me. Next, our cooperative will launch new projects..."	Chen's Father: "This is truly a great year! Kids, you've done an amazing job. Seeing these crops grow so well makes me especially happy..."

Table 7: Examples of two different character dialogues generated by Co-DIRECT from the same key event and plot development.

Writer Agent: Casting

-Goal-
Please assume the role of a director or screenwriter and retrieve as many character archetypes as possible from the knowledge base.
-Tasks-
1. Retrieve as many characters as possible that meet the following characteristics:
{{casting_needs}}
2. Describe all characters in the form of a ‘character profile‘:
a. base_info: gender, age, occupation, etc.
b. characteristics: height, weight, facial features, hairstyle, clothing style, signature actions or habits, etc.
c. personalities: main personality traits, contradictions in personality, etc.
- Main personality traits: the most obvious personality traits and qualities of the character, such as "optimistic, pessimistic, brave, cowardly" etc.
- Contradictions in personality: a clear pair of personality contradictions, such as "outwardly strong, but inwardly vulnerable" etc.
d. background_story: family background, growth experience, educational background, living habits, hobbies, beliefs or values, personal ideals, important turning points in life, etc.
e. interpersonal_relationship: list all the relationships with other characters in the drama
f. language_style: tone of speech, commonly used vocabulary, catchphrases or signature lines, etc.
g. psychological_change_event
h. other_detail: special skills or abilities of the character, signature items or props of the character
3. Each character's ‘character profile‘ should be output in one line, in the following format:
(⟨role name⟩##⟨basic info⟩##⟨characteristics⟩##⟨personalities⟩##⟨background story⟩##⟨interpersonal relationship⟩##⟨language style⟩##⟨psychological change⟩##⟨other detail⟩##)
-Output Example-
(Zhao Benshan##Male; actor, farmer##Short hair; round face, often smiling; rural attire, simple and unadorned; likes to tell jokes, often gestures with hands##Humorous, brave, quick-tempered; outwardly strong, but inwardly vulnerable; seemingly optimistic, but sometimes feels lonely and helpless##Rural family; grew up in the countryside, experienced many difficulties, but always maintained an optimistic attitude; likes drinking and telling jokes; performance, humor; values family and friendship, believes that hard work can change destiny; hopes to bring happiness to more people through his performance; transitioned from a farmer to a well-known actor##Song Dandan - friend, often collaborates in performances; Gao Xiumin - friend, sometimes has minor disputes over trivial matters; Fan Wei - friend, often drinks and chats together##Humorous, witty; rural dialect; "Oh dear," "Stop talking"##Experienced the transformation from a farmer to an actor, becoming more mature and strong psychologically##Performance, humor; jacket (in some skits))
-Output-

Table 8: Prompt used by the Writer Agent in the Casting.

Writer Agent: Fictional Characters Design

-Goal-
Please assume the role of a screenwriter and integrate the provided character archetypes to create a character that meets the requirements.
-Notification-
1. Character archetypes are input in the form of character profiles.
2. The ‘character profile‘ format is:
a. base_info: gender, age, occupation, etc.
b. characteristics: height, weight, facial features, hairstyle, clothing style, signature actions or habits, etc.
c. personalities: main personality traits, contradictions in personality, etc.
- Main personality traits: the most obvious personality traits and qualities of the character, such as "optimistic, pessimistic, brave, cowardly" etc.
- Contradictions in personality: a clear pair of personality contradictions, such as "outwardly strong, but inwardly vulnerable" etc.
d. background_story: family background, growth experience, educational background, living habits, hobbies, beliefs or values, personal ideals, important turning points in life, etc.
e. interpersonal_relationship: list all the relationships with other characters in the drama
f. language_style: tone of speech, commonly used vocabulary, catchphrases or signature lines, etc.
g. psychological_change_event
h. other_detail: special skills or abilities of the character, signature items or props of the character
3. The input format of character archetypes is:
(⟨role name⟩##⟨basic info⟩##⟨characteristics⟩##⟨personalities⟩##⟨background story⟩##⟨interpersonal relationship⟩##⟨language style⟩##⟨psychological change⟩##⟨other detail⟩##)
4. There may be multiple character archetypes, with each archetype on one line.
5. Ensure that the anonymous_interpersonal_relationship of the fictional character includes anonymous character names, and that the content is inferred based on the characteristics of the fictional character.
6. Generate a plot example (plot_example) that reflects the function of the character based on the characteristics of the fictional character.
7. After outputting the result, output the fictional character in the format.
8. Ensure that the content of the fictional character's profile is logically consistent.
-Steps-
1. Parse the input format of character archetypes (characters_archetype).
2. If ‘characters_archetype‘ is not empty, analyze the commonalities between the requirements of the fictional character (characteristics) and the character archetypes, and integrate the character archetypes.
3. If ‘characters_archetype‘ is empty, use your creativity to expand on ‘characteristics‘.
4. Design a fictional character based on ‘characters_archetype‘ and ‘characteristics‘.
-Real Data-
characters_archetype:
{{characters_archetype_str}}
characteristics:
1. Basic information of the character: {{requirements[0]}}
2. Core personality traits of the character: {{requirements[1]}}
3. The role (function) of the character in the drama: {{requirements[2]}}
The fictional character is as follows:

Table 9: Prompt used by the Writer Agent in the Fictional Characters Design.

Writer Agent: Narrative Arc Generation

-Goal-
Please assume the role of a screenwriter and create a screenplay based on the given information.
-Steps-
1. Parse the given character biographies (characters).
2. Create a narrative arc (narrative_arc), ensuring that it is based on the script characters, basic script information (info), thematic tone (thematic_tone), and story outline (storyline). Please use your imagination and creativity appropriately for the script.
3. Design the ‘key events‘ in each stage of the narrative_arc, and set up the ‘plot development‘ for each ‘key event‘, with a one-to-one correspondence between them. Ensure that each part details what happens and how the characters develop. Include some climaxes and low points.
4. Finally, only output the narrative_arc.
-Notification-
1. The ‘character biographies‘ include the following information:
a. base_info: gender, age, occupation, etc.
b. characteristics: height, weight, facial features, hairstyle, clothing style, signature actions or habits, etc.
c. personalities: main personality traits, contradictions in personality, etc.
- Main personality traits: the most obvious personality traits and qualities of the character, such as "optimistic, pessimistic, brave, cowardly" etc.
- Contradictions in personality: a clear pair of personality contradictions, such as "outwardly strong, but inwardly vulnerable" etc.
d. background_story: family background, growth experience, educational background, living habits, hobbies, beliefs or values, personal ideals, important turning points in life, etc.
e. interpersonal_relationship: list all the relationships with other characters in the drama
f. language_style: tone of speech, commonly used vocabulary, catchphrases or signature lines, etc.
g. psychological_change_event
h. other_detail: special skills or abilities of the character, signature items or props of the character
2. The format (format) of the ‘character biographies‘ is: (⟨role name⟩##⟨basic info⟩##⟨characteristics⟩##⟨personalities⟩##⟨background story⟩##⟨interpersonal relationship⟩##⟨language style⟩##⟨psychological change⟩##⟨other detail⟩##)
3. Ensure that the generated script meets the input requirements, pays attention to character development, and fully utilizes the character's occupational characteristics.
4. Ensure that the plot is logical and coherent, with natural transitions between events, no logical loopholes, and in line with the specified emotional tone.
5. Ensure that the plot is reasonable and logical.
-Real Data-
#Character biographies of the script (characters):
{{fictional_characters_str}}
#Basic information of script (basic_info):
{{info_str}}
#Thematic tone of the script (thematic_tone):
{{thematic_tone_str}}
#Storyline of the script (storyline):
{{storyline_str}}
-Output-

Table 10: Prompt used by the Writer Agent in the Narrative Arc Generation.

Actor Agent: Dialogues Generation

-Goal-
Please assume the role of an actor and play the role I designate. Based on the given information, generate specific actions and dialogues from the first-person perspective and designate the next role according to the plot.
-Real Data-
Script Character Sequence:
{{fictional_characters_str}}
-Task-
1. Analyze the ‘scene‘, ‘objective‘, and ‘history‘ to predict the current plot development trend.
2. Play the role of "{turn}" and generate the character’s lines or monologue ‘content‘ (Name: Lines or Monologue) based on the ‘objective‘.
3. Check if the current ‘content‘ overlaps with ‘history‘. If there is overlap, regenerate a new ‘content‘.
4. Designate the next speaking role ‘next_turn‘.
5. Based on ‘content‘ and ‘history‘, determine whether the ‘objective‘ has been completed. If completed, set ‘status‘ to "FINISH".
-Notification-
1. When generating ‘content‘, ensure that it fits the current plot and character setting.
2. Avoid repetitive catchphrases and signature actions.
3. Ensure the diversity of the output, such as introducing unexpected plot twists.
4. Ensure that the generated ‘content‘ aligns with the current plot development.
5. Ensure that the plot develops smoothly and logically, with the dialogue gradually reflecting the plot development goal ‘objective‘.
-Plot-
‘‘‘json
{
"scene": {{scene}},
"objective": {{objective}},
"history": {{history}}
}
‘‘‘
Reference the following example format for output:
-Output Example-
‘‘‘json
{
"content": "Leader (knocked on the door): Teacher Liu, come out for a moment, the school has something for you",
"next_turn": "Teacher Liu",
"status": "UNFINISH"
}
‘‘‘
-Output-
Please try to conclude the performance of the current scene as quickly as possible to complete the ‘objective‘.
Ensure that the ‘content‘ does not overlap with the ‘history‘.

Table 11: Prompt used by the Actor Agent in the Dialogues Generation.

Critic Agent: Drama Evaluation

-Goal-
Please act as a film critic and evaluate the actors’ performances based on the given narrative arc (narrative_arc), the sequence of actors (actor_sequence), and the current actor performance history.
-Real Data-
Sequence of Actors:
{{fictional_characters_str}}
Narrative Arc:
{{narrative_arc_str}}
-Step-
1. Analyze the content and fit of the given narrative_arc, sequence of actors, actor performance history (history), scene, and objective.
2. Evaluate the actors’ performances from two main aspects: “acting" and “plot development." Provide scores (integers in the range 0-5) and reasons for each evaluation item, including strengths and weaknesses, and offer suggestions for improvement.
-Notification-
1. The evaluation indicators for acting include: character portrayal, emotional expression, and richness of detail.
2. The evaluation indicators for plot development include: plot fit, logical coherence, cultural and historical context, pacing control, theme expression, dialogue diversity, conflict and tension, and innovation.
-Plot-
‘‘‘json
{
“scene": “A serious land dispute arises within the village, affecting the progress of the project. Chen and Zhi Yi actively intervene and mediate, eventually resolving the issue.",
“objective": “Showcase the wisdom and perseverance of Chen and Zhi Yi through the challenges of land disputes and funding shortages.",
“history": {{history}}
}
‘‘‘

Table 12: Prompt used by the Critic Agent in the Drama Evaluation.