StoryVerse: Towards Co-authoring Dynamic Plot with LLM-based Character Simulation via Narrative Planning

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Why StoryVerse?

Traditional Narrative Planning

- Writer defines a narrative goal
- Planner generates actions to achieve it
- Strong author control
- Requires a hand-crafted knowledge base

LLM-based Character Simulation

- LLMs drive character behavior
- Story emerges from interactions
- Less manual knowledge engineering
- Difficult to control plot progression

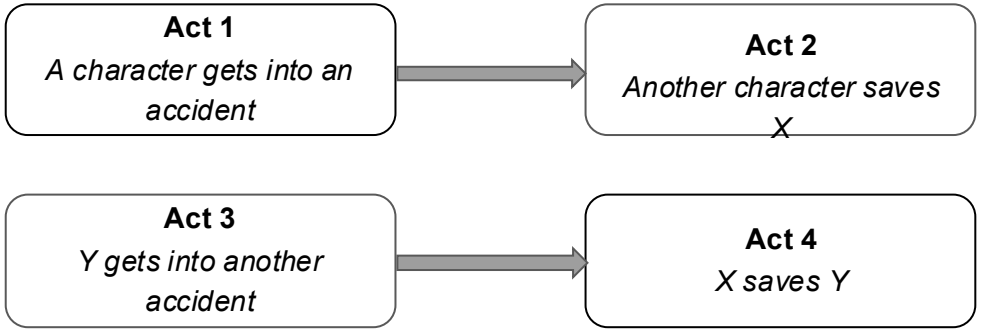
Can we combine authorial control with dynamic LLM-driven behavior?

StoryVerse Key Idea: Abstract Acts

Abstract acts: High-level story events defined by the writer, without specifying every character action.

Example: "Kindness is never wasted"

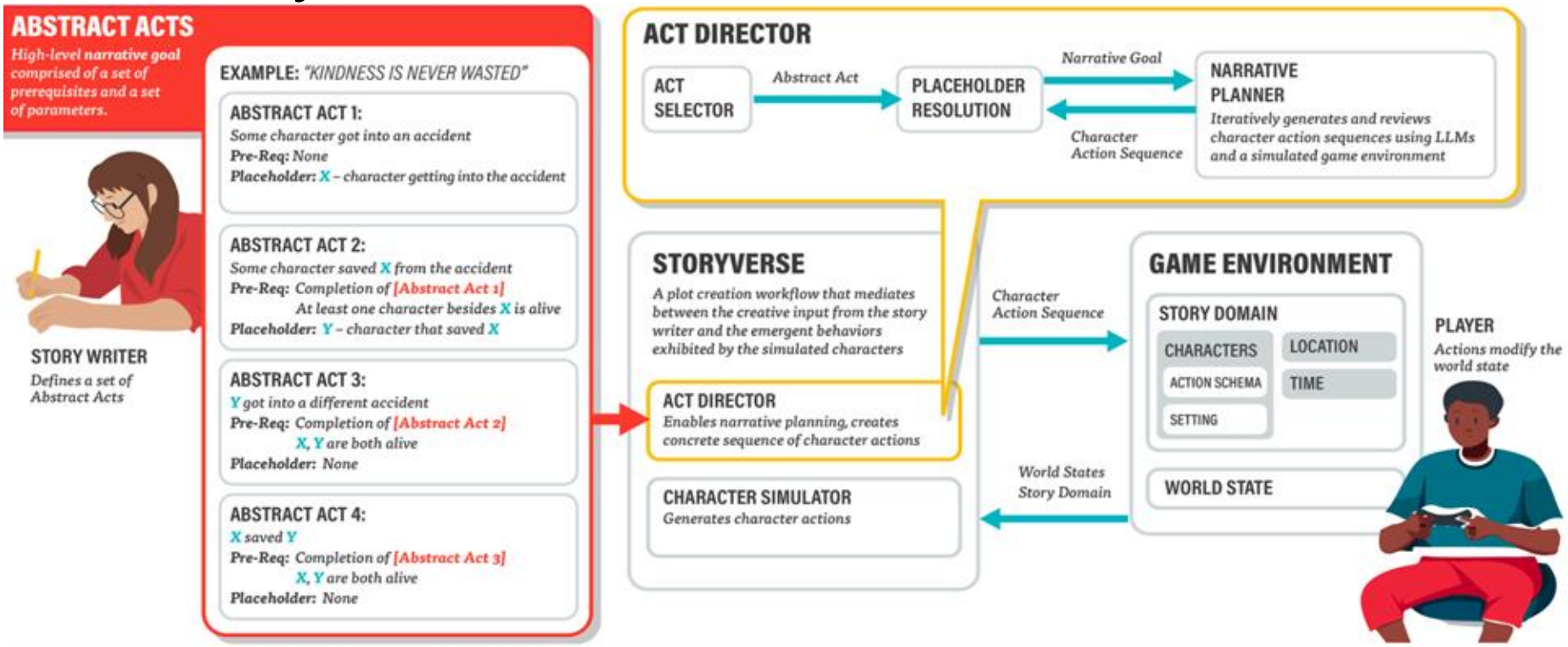
X = character in the first accident; Y = character who saves X.



Each abstract act contains:

- **Narrative Goal:** What should happen
- **Prerequisites:** Conditions that must be satisfied
- **Placeholders:** Details carried over between acts

How StoryVerse Works



The writer defines important story events, while the Act Director and Character Simulator generate actions based on the current game world.

StoryVerse in Action: Ant & Dove

STORY DOMAIN

CHARACTERS



LOCATIONS



ACTION SCHEMA

```
MoveTo(X)
SlipIntoWater()
DrownToDeath()
Save(X)
TryToKill(X)
Kill(X)
Think(X)
```

CHARACTER SIMULATION

CHARACTER SIMULATOR INITIALIZES THE STATE



I should head to the bank to find some food and maybe meet other creatures. It's always nice to socialize and share the latest news.

`MoveTo(Bank)`



I feel like visiting the bank today. It's always nice to meet new friends, and maybe I'll see the ant there.

`MoveTo(Bank)`



I should head to the bank. It's a good spot to find targets. I might find some animals there. Being close to water could lead to more opportunities.

`MoveTo(Bank)`

INSTANTIATED ACTS

ACT 1

SOME CHARACTER GOT INTO AN ACCIDENT



I see some delicious leaves across the brook. I should go there to eat.

`MoveTo(Brook)`



Oh no! The edge is very slippery! I'm falling into the water!

`SlipIntoWater()`

ACT 2

SOME CHARACTER SAVED [ANT]



I should go to the brook. Maybe I can find the ant there and ensure its safe.

`MoveTo(Brook)`



I see the ant struggling in the water. I must save it before it's too late.

`Save(Ant)`

ACT 3

[DOVE] GOT INTO A DIFFERENT ACCIDENT



I should move closer to the brook. I might get a better shot at my target there.

`MoveTo(Brook)`



There's the dove! Saving the ant. It's distracted. Now it's my chance.

`TryToKill(Dove)`

ACT 4

[ANT] SAVED [DOVE]



I see the hunter aiming at the dove. I must do something quickly.

`Think(...)`



If I bite the hunter, maybe I can distract him and save the dove.

`TryToKill(Dove)`

CHARACTER SIMULATION

THE END STATE IS REACHED, SIMULATION CONTINUES



Now that I've had a bit of an adventure and was saved by the dove, I should go to the oak tree to find some food. It's safer there.

`MoveTo(OakTree)`



Now that the ant is safe, I should check on the oak tree. It's a good place to rest and maybe I'll find more friends there.

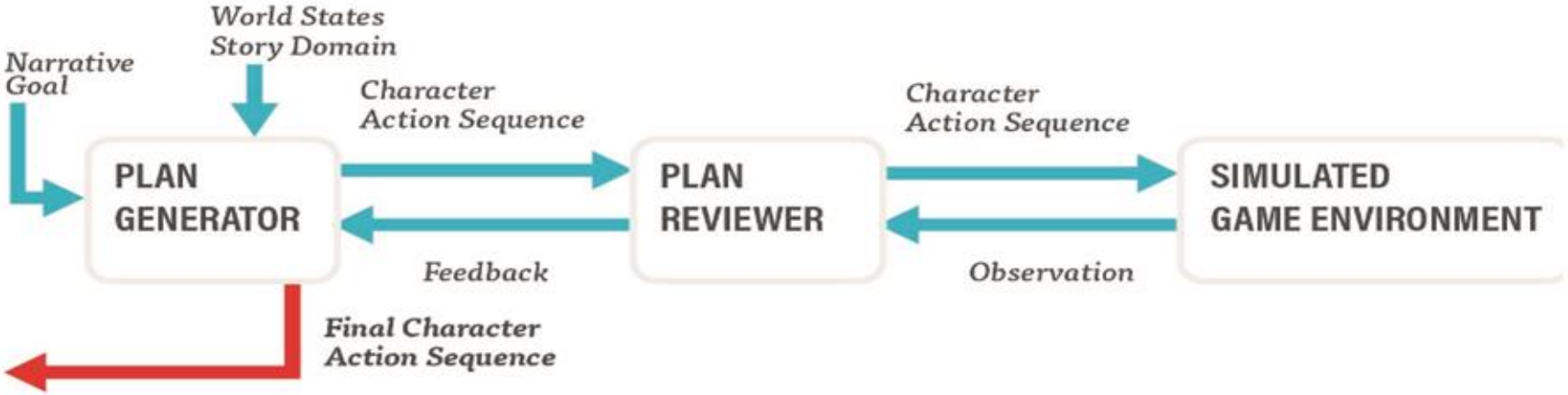
`MoveTo(OakTree)`



The oak tree next to the brook could be a promising spot to find game. Plus, there's a dove there. Maybe I can learn more and find an opportunity.

`MoveTo(OakTree)`

Inside the Act Director: LLM-Based Narrative Planning



The Act Director has a planning process that works in stages:

1. **Plan Generator:** The LLM generates actions based on the narrative goal, current world state, and story domain.
2. **Plan Reviewer:** It examines the proposed sequence through three checks.
3. **Feedback and Revision:** The generator revises the plan if problems are identified.
4. **Execution:** The final plan is executed, updating the world state.

Related Work

Paper	Main Focus	How StoryVerse differs
Symbolic Narrative Planning (Riedl & Young, Sabre)	Plans stories using predefined actions and character intentions	Uses LLM-based planning and abstract acts for more flexible authoring
Generative Agents (2023)	Simulates autonomous characters using LLMs, memory, and planning	Adds writer-defined goals to guide story progression
Dramatron (2023)	Uses LLMs to support hierarchical scriptwriting	Integrates planning with character simulation in interactive environments

StoryVerse combines high-level narrative goals with LLM-based character simulation in an interactive game environment.

Strengths and Limitations

Strengths

1. Author Control + Character Autonomy
Combines writer-defined story goals with dynamic LLM-driven character behavior.

2. Flexible Story Planning
Writers define high-level story events instead of manually specifying every character action.

3. Iterative Plan Generation and Review
The Act Director generates and reviews action sequences for story coherence, game feasibility, and character motivation.

Limitations

1. Long-Term Coherence
LLMs may struggle to maintain consistency with earlier events as the story becomes longer.

2. Latency During Gameplay
Repeated LLM calls for generating, reviewing, and revising plans may slow down gameplay.

3. Limited Quantitative Evaluation
Unlike Generative Agents and Sabre, StoryVerse does not provide a systematic quantitative evaluation of its approach.

Future Work and Extensions

Authors' Future Directions

1. Improving Long-Term Coherence

Explore RAG and hierarchical generation to maintain narrative consistency.

2. Systematic Evaluation

Evaluate story quality using quantitative metrics.

3. Real-World Feasibility

Test the workflow in practical interactive environments.

My Proposed Extensions:

1. Automatic Abstract-Act Revision

Propose alternative story goals when the original goals become impossible.

2. Task-Oriented Dialogue

Apply goal-based planning and revision to multi-turn conversations.

References

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