

Track A Report – Global Narrative Consistency Reasoning

1. Problem Overview

Large language models perform well on local text understanding but often fail to maintain global consistency across long narratives. In long-form stories, earlier events impose constraints on what can logically occur later. This task evaluates whether a hypothetical backstory for a character is causally and logically compatible with the full narrative of a novel.

The goal is a **binary classification task**:

- **1**: Backstory is consistent
- **0**: Backstory is inconsistent

The focus is on evidence aggregation, constraint tracking, and causal reasoning over long contexts, rather than text generation.

2. Overall Approach

Our system follows a structured reasoning pipeline:

1. **Long Narrative Ingestion**: Full novels are ingested without truncation.
2. **Chunking**: Each novel is split into overlapping chunks to preserve context.
3. **Retrieval**: For a given backstory, relevant chunks are retrieved using semantic similarity.
4. **Consistency Judgment**: Retrieved evidence is evaluated using rule-based reasoning to determine global compatibility.
5. **Aggregation**: Final prediction is produced as a binary label.

This design prioritizes robustness and interpretability over end-to-end generation.

3. Handling Long Context

To handle novels exceeding 100k words:

- Text is chunked into fixed-size overlapping segments.
- Semantic embeddings are computed for each chunk.
- Only the most relevant chunks are used for reasoning, avoiding context truncation while preserving global coherence.

This ensures decisions are informed by evidence distributed across the narrative rather than a single passage.

4. Causal Reasoning vs Surface Plausibility

Instead of relying on surface-level plausibility, the system:

- Aggregates signals from multiple narrative segments.
- Penalizes contradictions between stated backstory traits and observed narrative actions.
- Uses simple but explicit reasoning rules to avoid overfitting to stylistic similarity.

This reduces confusion between correlation and true causal compatibility.

5. Use of Pathway

Pathway’s Python framework is used as a core component for:

- Structured ingestion of long narrative data.
- Managing chunked representations of novels.
- Providing a reproducible and transparent data processing pipeline.

This satisfies Track A’s requirement for meaningful use of Pathway in the system.

6. Limitations

- The reasoning component is heuristic and may miss subtle psychological or implicit causal links.
- Extremely nuanced contradictions that require deep literary interpretation may not be detected.
- The approach favors precision and robustness over expressive explanations.

7. Conclusion

The proposed system demonstrates a practical and reproducible approach to global narrative consistency checking over long texts. By combining long-context handling, retrieval-based evidence aggregation, and explicit reasoning rules, the system addresses key failure modes of standard language models in extended narratives.