PSL-C Buffer Layer — Token Compression Front-End for AI Systems

1. Abstract

The PSL-C Buffer Layer is an intermediate processing system designed to automatically convert user-entered natural language prompts into PSL-C v2.0 compact form. This reduces token usage by up to 96% while preserving cinematic intent, improving inference cost, generating consistent models, and stabilizing scene specification.

2. Motivation

Generative AI models struggle with verbose, ambiguous user prompts. Long-form natural text increases compute load, reduces determinism, and introduces noise. The buffer layer enforces a deterministic structure prior to model submission, enabling efficient video generation pipelines.

3. Architecture Overview

User → Buffer Layer → Video/LLM Model.

The buffer layer performs the following:
• Input cleaning & normalization
• Mapping text into PSL-C Long
• Compressing into PSL-C Compact
• Outputting Compact as the canonical model input

4. Compression Methodology

Token reduction is achieved by replacing long descriptions with PSL-C categories. Typical measurements:
• Natural language: 1200–2000 tokens
• PSL-C Long: 250–350 tokens
• PSL-C Compact: 40–70 tokens

5. Translational Logic

The PSL-C Buffer Layer uses fixed categories (STY, COL, LOC, etc.) based on the PSL-C v2.0 standard. Each aspect of the scene is placed into a deterministic location, removing ambiguity and redundancy.

6. Implementation Strategies

Three options exist:
1. LLM-based translator using the PSL-C translation prompt

2. Rule-based keyword extraction layer
3. Hybrid model combining rules and AI refinement

7. Use Cases

Applicable for video generation, LLM prompting, low-cost inference environments, cinematic toolchains, and multi-shot planning systems.

8. Benefits

• Massive token savings
• Energy efficiency
• Model consistency
• Multi-shot coherence
• Reduced hallucination

9. Future Extensions

Possible expansions: auto-correction, JSON schemas, storyboard generation, camera path simulation, and multi-shot scene grouping.

10. Conclusion

The PSL-C Buffer Layer formalizes the interface between messy human language and efficient model-ready instructions. It significantly increases reliability and cost-efficiency in AI video and LLM workflows.