PSL-C v2.0 — Scientific Paper Edition

Abstract — PSL-C (Prompt Structured Language — Cinematic) is a deterministic, hierarchical instructional DSL designed to optimize AI video generation. This paper outlines its theoretical foundations, structural efficiency, transformer-aligned ordering, and token-reduction impact.

1. Introduction

The rapid evolution of text-to-video models has highlighted a need for deterministic, structured prompting systems. PSL-C v2.0 introduces a hierarchical ordering optimized to reduce ambiguity and increase model fidelity by aligning semantic categories with transformer attention behavior.

2. Hierarchical Semantic Ordering

PSL-C uses a global-to-local semantic cascade: STYLE $\rightarrow$ COLOR $\rightarrow$ LOCATION $\rightarrow$ VIBE $\rightarrow$ MOTION $\rightarrow$ ANIMAL $\rightarrow$ ANIMAL BEHAVIOR $\rightarrow$ INTERACTION $\rightarrow$ CHARACTER BEHAVIOR $\rightarrow$ OBJECTS $\rightarrow$ CAMERA $\rightarrow$ LIGHTING $\rightarrow$ AUDIO $\rightarrow$ TIMING $\rightarrow$ WEATHER $\rightarrow$ PHYSICS $\rightarrow$ MATERIALS $\rightarrow$ ENVIRONMENT INTERACTION $\rightarrow$ LANGUAGE $\rightarrow$ DIALOGUE $\rightarrow$ CLIP LENGTH. This ordering reflects the interpretive priorities of modern video models.

3. Transformer Alignment

AI models process tokens through layered attention. PSL-C minimizes entropy by placing global context before local actions, and interactive elements before camera and environmental responses. This allows more efficient inference and reduces cross-category interference.

4. Token Efficiency Analysis

Natural-language cinematic prompts typically require 1000–2000 tokens. PSL-C reduces this to 40–70 tokens in compact form—a 95%+ reduction. This compression enables lower compute overhead, faster rendering, and reduced energy consumption.

5. Object Category Insertion (OBJ)

The OBJ category, added in v2.0, covers handheld items, props, tools, and interactive objects. Placing OBJ immediately after CHARACTER BEHAVIOR ensures correct interpretive binding and enables camera and physics sections to reference objects naturally.

6. Compact DSL Notation

The compact form uses 3–5 character mnemonics (STY, COL, LOC, MOT, OBJ, CAM, etc.). This reduces linguistic redundancy and provides a near-bytecode-like structure suited for machine parsing.

7. Environmental and Physics Modularity

PSL-C separates WEATHER, PHYSICS, MATERIALS, and ENVIRONMENT INTERACTION to prevent semantic pollution across categories, ensuring environmental conditions remain deterministic.

8. Applications in AI Film Production

PSL-C supports multi-shot sequences, character continuity, and consistent environmental styling. It enables scalable film pipelines where each shot can be templated, parameterized, and rendered using compact cinematic directives.

9. Conclusion

PSL-C v2.0 provides a foundation for standardized cinematic prompting. Its transformer-aligned structure and compact notation enable reproducible, efficient generative video workflows.