PSL-C v2.0 — Token Saving Hypothesis

This document states and explains the Token Saving Hypothesis for PSL-C v2.0: that structured, compact PSL-C prompts can reduce token usage for cinematic scenes by 80–96% relative to unconstrained natural-language descriptions, while preserving or improving generative fidelity.

1. Hypothesis Statement

PSL-C v2.0, through its hierarchical category ordering and compact notation, is hypothesized to reduce the token footprint of cinematic prompts by at least 80%, and up to 96%, compared to equivalent natural-language descriptions written without structural constraints, while maintaining or improving scene coherence and controllability.

2. Rationale

Natural-language cinematic prompts contain high redundancy, rephrased details, and ambiguous ordering. PSL-C eliminates this by encoding each semantic lane (STYLE, COLOR, LOCATION, etc.) once, in a fixed position, using compact shorthand values where appropriate.

3. Example Comparison

A typical hand-written cinematic description may require 1200–2000 tokens. In PSL-C long form, the same scene description can frequently be expressed in 250–350 tokens. In PSL-C compact form, the same scene compresses to 40–70 tokens. This corresponds to approximate reductions of 70–80% for long form and 90–96% for compact mode.

4. Effects on Inference

Lower token counts reduce attention span, cross-token interference, and resampling loops within transformer-based video models. This may reduce inference time, GPU energy consumption, and the likelihood of hallucinated or conflicting details.

5. Experimental Validation Path

To validate the Token Saving Hypothesis, one can: (1) construct matched pairs of scenes in natural-language and PSL-C compact form; (2) measure token counts; (3) run both through the same model; (4) measure inference time, GPU usage, and qualitative output stability. Aggregated results would demonstrate whether PSL-C reliably reduces computational and energy cost.

6. Implications

If validated, PSL-C could serve as a power-efficient front-end standard for AI video prompting, enabling large-scale video generation workflows at significantly lower computational cost.

7. Conclusion

The Token Saving Hypothesis posits that PSL-C's structured design translates directly into token, compute, and energy savings at scale, without sacrificing creative control.