Structured Knowledge Accumulation: Real-Time Discovery of the Universal Language Manifold

Bouarfa Mahi

Quantiota

Email: info@quantiota.org

November 26, 2025

Abstract

Human languages differ in vocabulary, syntax, and surface structure, yet they all share an underlying dynamical principle: meaning emerges through the progressive reduction of uncertainty. This paper proposes that the universal structure behind all languages can be revealed through *Structured Knowledge Accumulation* (SKA), a real-time, entropy-based learning framework. While large language models learn static correlations across tokens, SKA follows the physical process that creates meaning by enforcing the *law of entropic least action*, a variational principle governing the flow of information in time. To use a universal and modality-independent input, we take spoken words—the raw acoustic stream that comes out of our mouths—as the fundamental signal driving the real-time learning process. By analyzing this continuous sound flow, SKA reconstructs a latent *language manifold*—a geometry of knowledge states whose evolution is independent of the spoken or written language. This framework reveals English, French, Arabic, Mandarin, and all other languages to be different coordinate projections of the same entropy-evolving informational structure.. This framework unifies linguistics, cognition, and real-time learning under a single physical law, offering a new foundation for understanding meaning, translation, and intelligence beyond classical symbolic or neural approaches.