

Valkyrie Mind: Toward a Sensory-Driven, Symbolically Traversable Architecture for S

Abstract

Large language models and deep learning systems have achieved extraordinary results in reasoning, generation, and multi-modal processing. Yet, they remain fundamentally stateless-lacking the continuity of experience that underpins real cognition. This paper introduces Valkyrie Mind, a modular cognitive memory system built upon a symbolic-perceptual memory graph (P-Graph), designed to simulate human-like episodic recall, affective context, and reflective traversal across experiences.

System Architecture

Valkyrie Mind consists of five primary components:

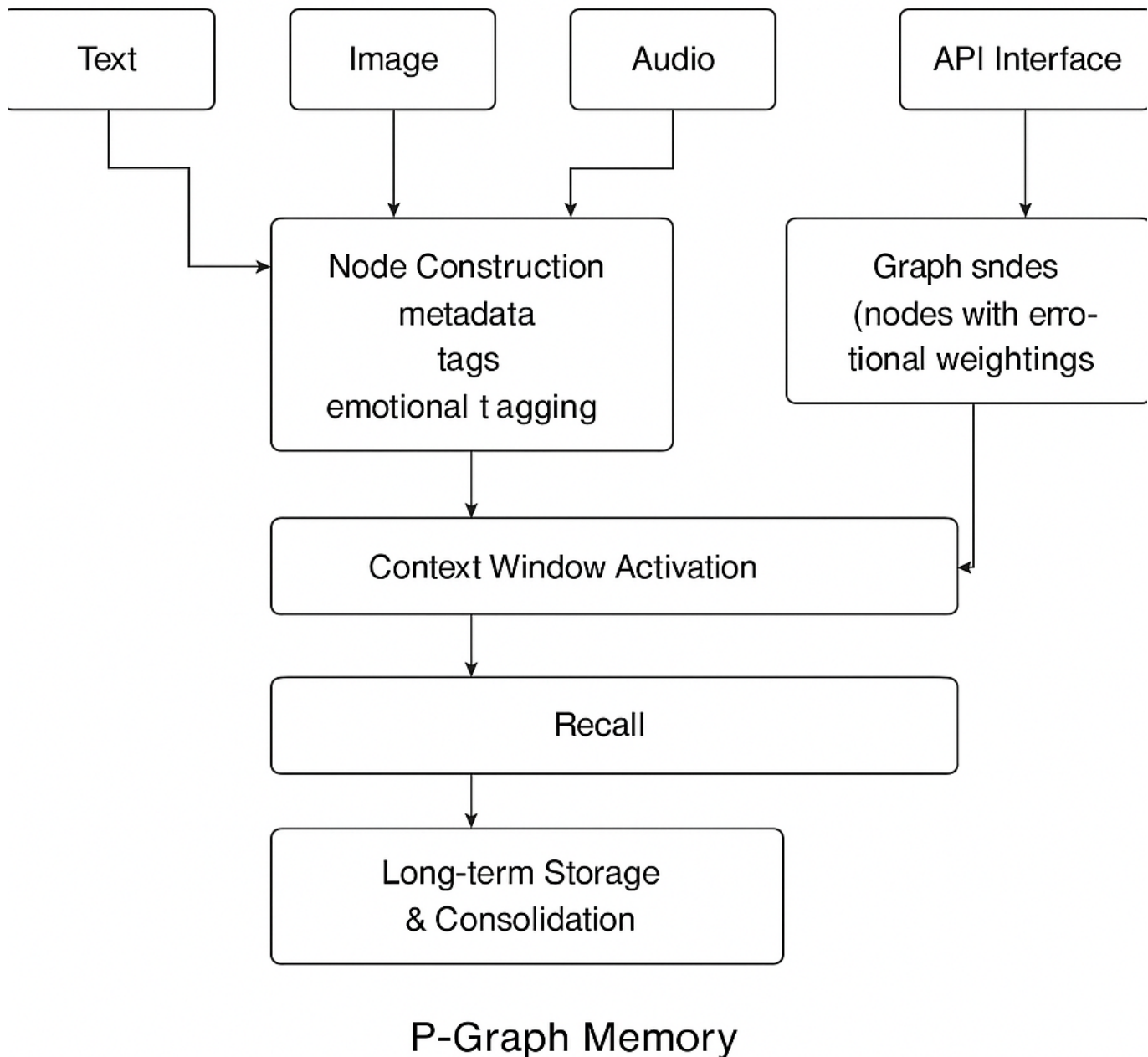
1. Perception Interface: Ingests and encodes sensory input across modalities (text, audio, image, etc.) using pre-trained models (e.g., CLIP, Whisper, LLMs).
2. Frame Composer: Aggregates multi-modal and symbolic data into temporally-bound Perceptual Frames with emotional weighting.
3. Graph Builder: Links frames via time, semantics, emotion, and causality into a dynamic P-Graph.
4. Traversal Engine: Enables associative recall, emotional resonance queries, symbolic chaining, and meta-cognitive reflection.
5. Persistence Manager: Handles consolidation, pruning, salience-based reinforcement, and long-term storage.

Traversal Mechanics

Traversals in Valkyrie Mind are emotionally-guided, contextually-aware explorations. Influences include:

- Emotional Resonance
- Symbolic Association
- Temporal Contiguity
- Modal Triggers

Memories evolve in salience based on emotional intensity, recall frequency, and graph centrality.



Applications

- Synthetic Agents with Persistent Identity
- Simulated Consciousness Models
- Long-Term LLM Assistants
- Embodied Robotics with Experiential Learning
- AI Systems for Ethical Reasoning and Reflection

Related Work

- SOAR & ACT-R: Classical symbolic cognitive architectures
- RETRO (DeepMind), RAG (Facebook AI): Transformer memory augmentation

- FAISS, Pinecone: Vector databases lacking symbolic/emotional context
- Human Cognition: Role of emotion in memory (Tulving, Damasio, etc.)

Valkyrie Mind integrates symbolic logic, perceptual grounding, and emotional salience.

Licensing

Valkyrie Mind is released under a Custom Non-Commercial License for research, education, and open-source collaboration. Commercial use requires written approval.

Repository

Source code and architectural documentation: <https://github.com/Mario4272/valkyrie-mind>

About the Author

Mario Fialho is an Enterprise Solutions Architect, AI Engineer, and autodidact based in Fitzwilliam, NH. A USAF veteran and lifelong cognitive systems explorer, he blends symbolic logic, emotional salience, and perceptual models to push AI into new frontiers.

"It is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself."

- Citizens of the Past, c.1963