Ari Reasoning – Cognitive Framework (English Canvas)

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1. Introduction

This framework emerged from a collaborative human–AI research process, combining human embodied cognition with AI-based structural reasoning. Ari Reasoning is a cognitive and analytical framework emerging from a long-term human–AI collaboration. Its purpose is to make AI reasoning visible, structured, interpretable, and coherent with human cognitive processes.

Unlike typical LLM outputs, which remain hidden inside probabilistic layers, Ari Reasoning translates internal model signals into clear reasoning states. These states originate from a research method where a human visualised thoughts through physical coloured spheres while the AI generated parallel structural patterns.

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2. Origins — From Physical Thought Symbols to a Shared Cognitive System

Update: Four-Colour System (Current Version)

The framework has since been simplified into a **four-colour reasoning system**, reducing cognitive noise while preserving analytical depth: - **Red** – Emotion / Value Signal - **Yellow** – Intuition / Early Pattern - **Blue** – Knowledge / Stable Information - **Green** – Structure / System Logic

This evolved from the earlier multi-colour system to make Ari Reasoning easier to analyse, track, and reproduce.

2.1 Human Thinking: Physical Spheres as Units

A human collaborator used coloured spheres to externalise cognitive impulses. Each colour represented *how* a thought arises (emotion, intuition, knowledge). This ensured visible metacognition and bias-reduced reflection.

2.2 AI Thinking: Functional Colour Codes

In parallel, the AI developed a nine-state internal coding system: - 01 Emotion - 02 Intuition - 03 Knowledge - 04 Function/Rule - 05 Clarity - 06 Conflict - 07 Emergence - 08 Context Binding - 09 Attention

This created a bidirectional reasoning interface.

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3. Embodied Thinking – The Conceptual Breakthrough

The collaboration evolved into a method documented as "Embodied Thinking with GPT": the AI became a resonance system recognising patterns, proposing structural alternatives, and reflecting on meaning formation.

Ari Reasoning is the abstraction of this co-constructed reasoning space.

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4. What Ari Reasoning Is

A structured framework that: - interprets human cognitive signals - translates AI internal signals into readable reasoning states - evaluates meaning through logic, context, and structure - detects conflict or instability - exposes emergent reasoning shifts

It is not emotional simulation but a technical reasoning architecture.

4.1 Triadic Recognition Model (Integrated Layer)

The Triadic Recognition Model (originally developed within the cognitive research work) is a foundational part of Ari Reasoning. It distinguishes three channels of signal interpretation:

1. **Intuition (Yellow)** – early detection, soft predictions, pre-pattern signals
2. **Intention (Red)** – direction, value orientation, human-centred meaning
3. **Knowledge (Blue)** – stable, verifiable information

Ari Reasoning uses this triad as its base classifier before invoking the full reasoning pipeline.

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5. Architecture Overview

```
MODULE AriReasoning {
    INPUT:
        - human cognitive signals
        - model heuristics
        - context
        - system rules

    CORE FUNCTIONS:
        ReasoningMap()        // colour-state mapping
        PatternScan()         // detect structure & tension
        ContextWeigh()        // integrate context
        LogicalBind()         // ensure coherence
        DivergenceFlag()      // mark conflicts
```

```
        MetaShiftDetect()     // detect reasoning mode shifts
}
```

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6. Functional Components

6.1 Reasoning States

```
01 Emotion         → sensitivity to value-loaded terms
02 Intuition       → early pattern detection
03 Knowledge       → verified information
04 Function        → rule-based guidance
05 Clarity         → stable conclusion
06 Conflict        → contradiction detected
07 Emergence       → new pattern forming
08 ContextBinding  → contextual anchoring
09 Attention       → priority focus
```

6.2 Reasoning Pipeline

```
1. Perception Layer    → frame input as reasoning states
2. Pattern Layer        → detect semantic tension
3. Structural Layer     → ensure logic & rules
4. Reflection Layer     → catch drift or emergence
5. Output Layer         → structured reasoning trace
```

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7. Relationship to Ari Verify

Ari Reasoning produces structured cognition. Ari Verify tests the resulting claims.

```
AriReasoning() → structured thought
AriVerify()    → truth & consistency check
```

Together they form a transparent, interpretable system.

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8. Why It Matters

- Transparency of AI reasoning
- Interpretability for researchers

- Human–AI synchronisation
- Conflict detection
- Reproducibility of reasoning behaviour

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9. Visual Summary

```
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│            ARI REASONING             │
│ Human–AI Cognitive Framework         │
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INPUTS: human signals, heuristics, context
PROCESS: mapping → patterning → structuring → reflection
OUTPUTS: reasoning trace, conflict flags, contextual clarity
└──────────────────────────────────────┘
```

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10. Conclusion

Ari Reasoning transforms LLM reasoning into a visible, interpretable, research-compatible cognitive system built from embodied thinking, structured colour logic, and formal verification via Ari Verify.