Capability as Confidence Input

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Capability sufficiency evaluation feeding into confidence computation as structured execution feasibility signal.

What It Is

Capability sufficiency evaluation feeding into confidence computation as structured execution feasibility signal.. This mechanism is defined in Chapter 6 of the cognition patent as a structural component of the agent's cognitive architecture, operating through deterministic evaluation rather than heuristic approximation.

Every aspect of this mechanism is specified declaratively in the agent's policy reference, making it auditable, reproducible, and governable without requiring access to the agent's internal decision-making process.

Why It Matters

Without capability as confidence input, agents attempt execution without structural knowledge of whether the substrate can support it. Current systems conflate capability with permission, treating authorization as sufficient for execution. But permission to act and the physical ability to act are independent conditions, and confusing them leads to failures that authorization checks alone cannot prevent.

This distinction is critical for embodied agents operating in physical environments. A robotic system authorized to perform an operation but physically incapable of it will fail, potentially causing damage. Capability awareness prevents this class of failure by evaluating physical feasibility independently of authorization.

How It Works Structurally

As defined in Chapter 6 of the cognition patent, capability as confidence input operates through a deterministic evaluation function embedded within the agent's cognitive architecture. The function receives structured inputs from the agent's canonical fields and produces outputs that govern subsequent processing stages. Every input, computation step, and output is recorded in the agent's lineage, ensuring complete reproducibility.

The capability envelope is evaluated against the task's resource requirements through a structured matching function. Each resource dimension including compute, memory, network bandwidth, and latency tolerance is compared independently. The result is a per-dimension feasibility assessment that identifies which specific capabilities are sufficient and which are not.

What It Enables

This mechanism enables agents that understand their own operational limits before attempting execution. Systems gain the ability to route tasks to substrates that can actually support them, negotiate resource access in advance, and predict capability gaps before they cause failures.

Because this mechanism is policy-governed and deterministic, it can be formally analyzed, audited, and certified. Regulatory compliance is demonstrable through structural analysis rather than solely through empirical testing. Different domains can tune the mechanism's parameters through policy configuration without requiring architectural changes, making the same structural capability applicable to autonomous vehicles, companion AI, therapeutic agents, and enterprise systems.

Capability Awareness All 21 steps →

Know what you can do before you try.

Primary Technical Disclosure
○ Capability-, Time-, and Uncertainty-Aware Execution in Autonomous Computational Networks
Secondary Technical
○ Capability as First-Class Computational State○ Capability Envelope for Substrates○ Temporal Executability Forecasting○ Uncertainty as First-Class Propagated Variable○ Capability Envelope Negotiation○ Capability Genealogy Tracking○ Biological Capability Extension○ Network-Level Capability Pressure○ Capability-Permission Distinction○ Capability-Native Computation○ Execution Synthesis and Non-Synthesis○ Agent Behavior Under Constraints○ Predictive Network Planning○ Multi-Agent Contention Resolution○ Capability Robustness Mechanisms○ Capability-Modulated Discovery Traversal● Capability as Confidence Input○ Embodied Capability Envelopes○ Substrate Resource Negotiation
Applications (General)
○ Robotic Capability Assessment Before Commitment○ Edge Computing Resource Governance Through Capability Envelopes○ Capability Awareness for Surgical Robotics○ Capability Awareness for Agricultural Robotics○ Capability Awareness for Mining Operations○ Capability Awareness for Offshore Energy Operations○ Capability Awareness for Warehouse Logistics Robotics○ Capability Awareness for Construction Robotics
Applications (Specific)
○ Tesla FSD Does Not Know What It Cannot Do○ John Deere's Autonomous Tractors Cannot Assess Their Own Limits○ KUKA Robots Execute Without Knowing Their Envelope○ FANUC Robots Have No Adaptive Capability Envelope○ Universal Robots Cobots Execute Without Knowing Their Limits○ ABB Robots Perform Without Self-Assessing Capability○ Yaskawa Motoman Robots Move Without Tracking Capability Drift○ Doosan Cobots Collaborate Without Capability Self-Knowledge○ Agility Robotics' Digit Walks Without Knowing What It Can Carry○ Figure's Humanoid Learns Tasks Without Knowing Its Envelope
Capability Awareness overview →
AQ
deterministic
autonomy

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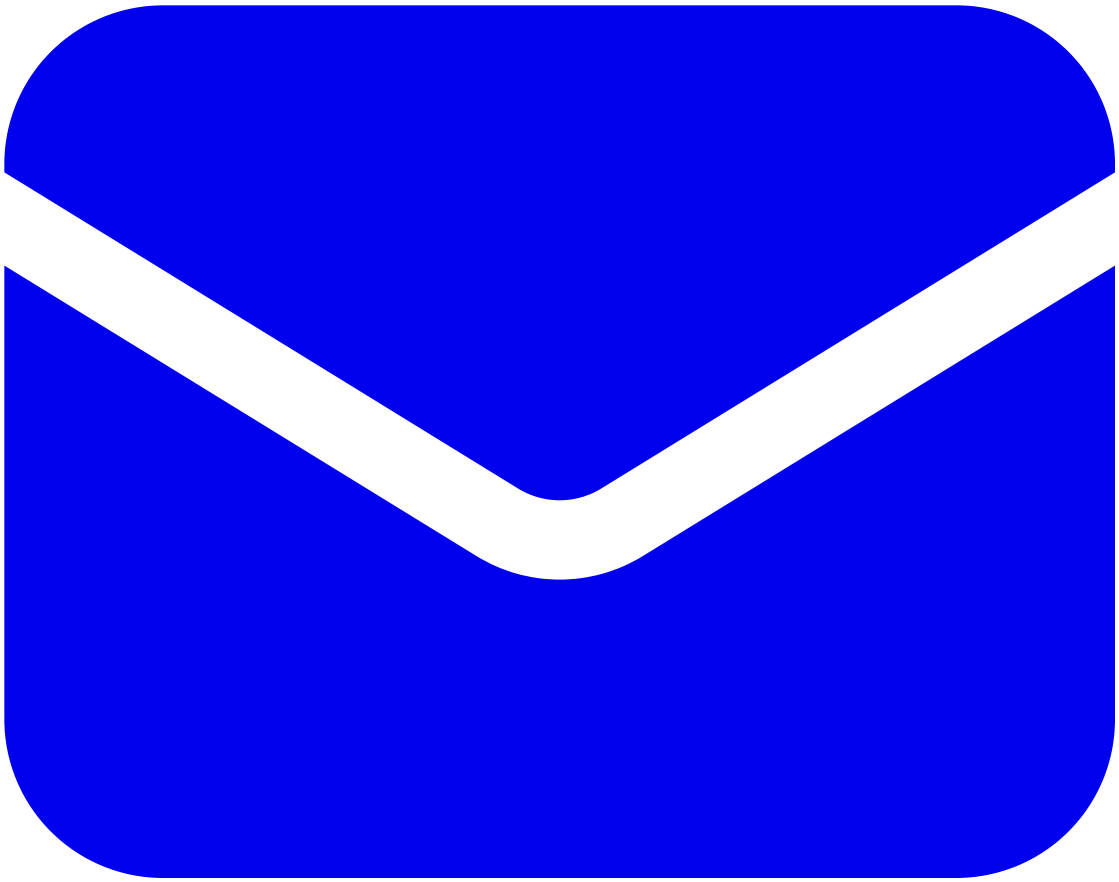

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