

Symbols and Notation

Core Active Inference Notation

Symbol	Description	Domain
$(F(\cdot))$	Expected Free Energy for policy (\cdot)	
$(G(\cdot))$	Pragmatic value of policy (\cdot)	
$(H[Q(\cdot)])$	Epistemic affordance (information gain)	
$(q(s))$	Posterior beliefs over hidden states	
$(p(s))$	Prior beliefs over hidden states	
(A)	Observation likelihood matrix $(P(o s))$	$(\mathbb{R}^{\{m \times n\}})$
(B)	State transition matrix $(P(s' s, a))$	$(\mathbb{R}^{\{n \times n \times k\}})$
(C)	Preference matrix (log priors over observations)	\hat{m}
(D)	Prior beliefs over initial	\hat{n}

Meta-Cognitive Extensions

Symbol	Description	Domain
(c)	Confidence score	[0,1]
()	Meta-cognitive weighting factor	\hat{d}
()	Framework parameters	
(w(m))	Meta-data weighting function	

Free Energy Principle

Symbol	Description	Domain
(F)	Variational free energy	
(S)	Surprise (-log evidence)	
(θ)	System parameters	\hat{p}
($p(o,s)$)	Joint distribution over observations and states	Probability space

Quadrant Framework

Symbol	Description	Domain
(Q1)	Data processing (cognitive) quadrant	Framework element
(Q2)	Meta-data organization (cognitive) quadrant	Framework element
(Q3)	Reflective processing (meta-cognitive) quadrant	Framework element
(Q4)	Higher-order reasoning (meta-cognitive) quadrant	Framework element

Statistical Notation

Symbol	Description	Domain
$(E[\cdot])$	Expectation operator	Functional
$(KL[p q])$	Kullback-Leibler divergence	
(\cdot)	Softmax function	Mapping to probabilities
(\cdot)	Gradient operator	Functional

Implementation Variables

Symbol	Description	Domain
(t)	Time step	
()	Temporal horizon	
()	Learning rate	
()	Adaptation rate	
()	Feedback strength	