Symbols and Notation

Core Active Inference Notation

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

Meta-Cognitive Extensions

Symbol	Description	Domain
(c)	Confidence score	([0,1])
( )	Meta-cognitive weighting factor	(R^+)
( )	Framework parameters	(R^d)
(w(m))	Meta-data weighting function	(R^+)

Free Energy Principle

Symbol	Description	Domain
(F)	Variational free energy	(R)
(S)	Surprise (-log evidence)	(R)
( )	System parameters	(R^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[ ])	Expectation operator	Functional
(KL[p|q])	Kullback-Leibler divergence	($R\hat{}+$)
(( ))	Softmax function	Mapping to probabilities
( )	Gradient operator	Functional

Implementation Variables

Symbol	Description	Domain
(t)	Time step	(N)
( )	Temporal horizon	(N)
( )	Learning rate	(R^+)
( )	Adaptation rate	(R^+)
( )	Feedback strength	(R^+)