Symbols and Notation

Core Active Inference Notation

Symbol	Description	Domain
(F( ))	Expected Free Energy for policy ( )	
(G( ))	Pragmatic value of policy ( )	
(H[Q( )])	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))	(R^{m ×n})
(B)	State transition matrix (P(s' s, a))	(R^{n ×n ×k})
(C)	Preference matrix (log priors over observations)	^m
(D)	Prior beliefs over initial	^n

Meta-Cognitive Extensions

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

Free Energy Principle

Symbol	Description	Domain
(F)	Variational free energy	
(S)	Surprise (-log evidence)	
( )	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[ ])	Expectation operator	Functional
(KL[p|q])	Kullback-Leibler divergence	
(( ))	Softmax function	Mapping to probabilities
( )	Gradient operator	Functional

Implementation Variables

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