

Index

- Accuracy, 28
- Allostasis, 215–216
- Ambiguity, 33, 137
- Attention, 157, 217

- Basal ganglia, 92–93
- Bayesian brain, 200
- Bayesian surprise, 20
- Bayes' rule, 16–17
- Birdsong, 164
- Bounded rationality, 213

- Complexity, 28, 220
- Cortical microcircuit, 87–88

- Dirichlet distribution, 142
- Dopamine, 92

- Emotion, 213–214
- Energy, 28, 55
- Entropy, 28
- Euler-Lagrange equations, 55, 237
- Expectation, 21
- Expected free energy, 33, 52, 73, 144, 251–252

- Factor graph, 67–68
- Free energy (or variational free energy), 27–28

- Generalized coordinates of motion, 69–70, 78–79, 235
- Generalized synchrony, 164
- Generative adversarial networks, 222
- Generative model, 8, 16–17, 22–23, 63
- Generative process, 22–23
- Goal-directed behaviour, 93, 101

- Habits, 93, 209
- Hamiltonian, 47, 54–55
- Hierarchy, 148
- Hybrid models, 166

- Ideomotor theory, 202
- Information gain, 33, 135
- Interoceptive inference, 215–216

- Jensen's inequality, 64–65

- Kullback-Leibler divergence, 20, 66

- Laplace approximation, 81, 233–235
- Learning, 142, 161, 247
- Lorenz systems, 163
- Lotka-Volterra systems, 159

- Markov blanket, 43–45, 55
- Meta-Bayesianism, 176
- Microcircuit, 87–88
- Motivation, 36, 101, 187, 213–214

- Navigation, 146
- Neurotransmitters, 97–98
- Newtonian dynamics, 54, 155
- Nonequilibrium steady state, 48, 240
- Novelty, 144, 252

- Occam's razor, 28
- Optimal control theory, 204
- Optimality, 22, 208

- Parametric empirical Bayes (PEB), 178–179
- Parkinson's disease, 94
- Partially observed Markov decision process, 69–70, 243–247
- Perceptual control theory, 203
- Planning, 31–33
- Pragmatic value, 33
- Precision, 138, 157
- Predictive coding, 78–83, 89, 201
- Process theory, 85–86, 197

- Random dynamical system, 48, 54, 238–239
- Reading, 148–149
- Reflexes, 155
- Reinforcement learning, 53, 203, 206, 208–209
- Risk, 33

- Saccades, 139, 167–168
- Salience, 144
- Self-evidencing, 41, 47, 52, 239
- Sensory attenuation, 157
- Social dynamics, 164–165, 221
- Surprise, 19, 39
- Synaptic efficacy, 95

- Taylor series, 69, 232–233
- Thalamus, 94–95

- Value function, 53
- Variational autoencoders, 222
- Variational inference, 51
- Variational Laplace, 177
- Variational message passing, 75–76, 237–238, 254

- Working memory, 112, 196

