

Subject Index

- $2\frac{1}{2}$ -D sketch, 73
- Δ -neighborhood, 29
- 2/3 Rule, 230, 231, 251, 262, 263, 286, 307, 308, 310

- adaptation level, 441, 459
- adaptive critical element, 414
- adaptive filter, 85, 317, 363
- adaptive filtering, 226, 257
- adaptive linearization, 553, 561
- adaptive resonance, 213
- adaptive resonance theory, 220, 235, 252, 354, 356, 441, 442, 444, 498
- adaptive sharpening, 317, 333, 338, 340
- adaptive tuning, 91
- affective balance theory, 517, 519, 532
- affective context, 534
- agonist muscle, 553
- allelotropia, 65
- alphabet learning, 233, 272
- amnesia, 221, 370
- amount-of-contrast, 19, 59, 200
- analgesia, 519
- anomalous brightness differentiation, 127, 129, 175, 177
- antagonist muscle, 553
- antagonistic rebound, 432, 441, 525
- anticipation, 323
- anticipatory CR, 420
- anticipatory conditioned response, 405
- Aplysia, 405, 424, 427, 431
- arm movements, 553
- arousal, 453, 456, 524, 530
- associative averaging, 459
- associative decay rule, 251, 276, 280, 286
- associative learning, 336, 362, 424, 441, 443, 446, 449, 460
- associative map, 553
- associative mapping, 237
- associative network, 304
- associative rule, 408
- associative saturation, 441
- attention, 253
- attention gate, 377, 387
- attention gating, 391
- Attention Gating Model (AGM), 375
- attention switching, 369
- attention weight, 383, 394
- attentional blocking, 408
- attentional focussing, 405
- attentional gain control, 230, 262, 273
- attentional mechanism, 220
- attentional priming, 262
- attentional system, 221
- attentional vigilance, 223, 225, 254, 256
- attentional-orienting system, 222, 253
- automatic activation, 286
- automatic compensation for present position, 581
- avoidance behavior, 519

- back propagation, 213, 232, 235
- behavioral contrast, 520
- bell-shaped velocity profile, 609
- binocular boundary, 96, 99
- binocular double images, 27
- binocular filter, 66
- binocular fusion, 95, 96
- binocular matching, 79
- binocular rivalry, 1, 55, 58, 95, 96, 101, 102, 104
- binocular space, 64
- binocular switching, 65
- binocular syncytium, 3, 55, 57, 79
- bipole cell, 60, 205
- blobs, 55, 75
- blocking paradigm, 406
- blocking, 416, 420, 428, 441, 483, 520
- blue cones, 43
- border distinctness, 1, 27, 43, 55
- bottom-up activation, 227, 259
- bottom-up code learning, 234
- bottom-up pathway, 307
- boundary completion, 1, 20, 21, 24, 29, 55, 196
- boundary contour, 19, 30, 132
- boundary contour processing, 200
- Boundary Contour System, 1, 3, 4, 6, 10, 28, 55, 57, 60, 127, 129
- boundary frame, 65
- boundary segmentation, 1, 55, 94, 127
- boundary web, 39
- boundary-feature trade-off, 17, 56
- bowed serial position effect, 370
- brightness assimilation, 154
- brightness constancy, 147
- brightness contrast, 149, 151
- brightness perception, 1, 55, 81, 127
- bull's eye effect, 156

- CC Loop, 21, 39, 45, 61, 68, 206
- COCE, 166
- Ca⁺⁺ current, 353, 405, 431
- conditioned emotional response, 519
- conditioned excitation, 489
- conditioned excitor, 441, 500

- conditioned inhibition, 441, 483, 489, 490
 conditioned inhibitor, 441, 501
 conditioned motivational feedback, 405
 conditioned reinforcement, 441, 448, 498
 conditioned reinforcer learning, 405, 413, 445
 conditioned reinforcer, 442, 443, 448, 458, 530, 540
 conditioned response, 406
 conditioned stimulus, 448
 conservation of synaptic sites, 359
 content-addressable code, 320
 context deflation, 506
 context inflation, 506
 context-sensitivity, 318
 contrast constancy, 151
 contrast enhancement, 226, 257, 339, 362, 411
 contrast sensitivity, 35
 convex hull, 246
 convexity detecting units, 47
 cooperative cell, 28
 cooperative feedback, 205, 210
 cooperative-competitive feedback, 21, 23, 246, 317
 corners, 196
 corridor illusion, 71
 cortical dynamics, 1, 55
 Craik-O'Brien-Cornsweet effect, 127, 156, 169
 credit assignment, 317
 critical feature, 224, 255
 critical feature pattern, 223, 251, 254, 294
 critical period termination, 221
- electrotonic interactions, 56
 electrotonic signalling, 37
 emergent boundary, 27
 emergent invariant, 553
 emergent perceptual grouping, 28
 emergent property, 214, 320
 Emmert's Law, 74
 emotion node, 414, 492
 equilibrium point, 564
 equipotentiality, 494
 error correction, 567
 evidence, 320, 323
 evolutionary invariant, 424
 excitatory conditioning, 472, 475
 exemplar, 225
 expectation, 498
 extinction, 441, 469, 472, 474, 477, 500
 eye-head system, 553
- facilitator neuron, 424
 factorization of pattern and energy, 558
- fast freeze, 586
 fast learning, 287
 faster-than-linear signal function, 246, 337, 591, 592
 feature contour, 6, 30, 35
 Feature Contour System, 1, 3, 4, 6, 10, 55, 57, 127, 129
 feature detector, 257
 feature discovery, 216
 Fechner's Law, 128
 Fechner's Paradox, 74
 feedback, 456, 467
 feedback competitive interaction, 392
 feedback gain function, 385
 feedforward gain function, 385
 figural aftereffects, 1, 55
 filling-in, 1, 8, 35, 38, 55, 72, 79, 100, 101, 127, 133
 filling-in barrier, 55, 57, 75, 79
 filling-in domain, 36
 filling-in generator, 55, 57, 75, 77, 79
 filling-in resonant exchange, 56
 first competitive stage, 64, 95, 203, 209
 Fitts' Law, 553, 558, 568, 602, 609
 forgetting, 616
 form perception, 1, 55
 form-and-color-in-depth, 80
 framing effect, 517, 546
 free recall, 370, 392
 function versus mechanism, 214
 fusion, 63, 66
- gain control, 251, 309
 Gambler's Fallacy, 517, 540
 gang effect, 221
 gap junction, 37
 gated dipole, 432, 441, 443, 446, 497, 517, 520, 522, 524
 gated dipole field, 25, 65, 80, 109, 229
 gating signal, 581
 Gaussian kernel, 187
 Generalized Attention Gate Model (GAGM), 391
 global choice, 324
 GO amplitude, 591
 GO onset function, 591
 GO signal, 553, 558, 568, 584, 585, 586, 589, 607
- habit learning, 405
 habituation, 103, 441, 451, 472, 474, 475, 476, 478
 hand-arm system, 553
 hardware, 320
 head-muscle interface, 616
 Hebb postulate, 408

- hedonic sign, 539
 Hermann grid, 127, 178
 Hermisenda, 405, 431
 hippocampus, 442
 history-dependent threshold, 243
 HMI, 616
 horizontal cells, 56
 Hough transform, 323
 hunger drive, 414, 492
 hyperacuity, 1, 27, 41, 55
 hypercolumns, 55
 hyperphagic eating, 520
 hypothalamic self-stimulation, 519
 hypothalamus, 414
 hypothesis, 320
 hypothesis formation, 323
- illusory circle, 21
 illusory figures, 1, 55
 illusory percept, 12
 illusory square, 11, 22
 impossible staircase, 169
 incentive motivation, 441, 493, 530
 incentive motivational learning, 405, 413, 445
 inflow signal, 553, 559, 560, 606, 607
 inhibitory conditioning, 474, 476
 inhibitory input, 358
 inner product, 246
 integrator, 573
 Interactive Activation Model, 213, 216, 219
 intermodal competition, 251
 intermodality learning, 580
 internal drive input, 413, 445
 internal feedback pathway, 350
 internal lexicon, 220
 interocular transfer, 114
 interstimulus interval, 405, 406, 441
 intragastric drinking, 520
 invertebrate conditioning, 430
 invertebrate learning, 405, 424
 inverted U, 374, 418, 441
 invisible boundaries, 32
 isometric contraction, 553, 565
 isotonic arm movement, 553
 isotonic movement, 565
 item information, 380
 item level, 324
 item node, 360
- Julesz 5% solution, 72
 Julesz stereogram, 73
- Kanizsa square, 11
 Kaufman stereogram, 58, 61
 Kofka-Benussi ring, 127, 169, 176
 Kulikowski stereogram, 62, 63
- Land Mondrian, 127
 latent inhibition, 416, 441, 520
 lateral geniculate nucleus, 34
 lateral inhibition, 1, 40, 55
 Leaky Learning Model, 244
 learned category, 225
 learned expectation, 226, 258
 learned helplessness, 441, 520
 learning, 217, 251, 290
 learning rule, 241
 letter level, 324
 letter node, 219
 levels of processing, 213
 LGN cells, 130
 limited capacity, 495
 limited capacity of STM, 381
 limited capacity short term memory, 405, 416, 441
 line ends, 13, 196
 list level, 324
 list node, 360, 361
 long term memory, 271, 370
 long-term opponent-color aftereffect, 109
 LTM code, 379
 LTM gate, 110, 111
 LTM invariance principle, 369, 377, 379, 381, 392, 394
 LTM read-in, 352, 462
 LTM read-out, 352, 462
 LTM stability principle, 377
 LTM trace, 271, 274, 276, 280, 284, 344
- masking field, 85, 86, 317, 318, 319, 321, 363, 379
 masking field equations, 358
 mass action interaction, 357, 358
 massively parallel architecture, 251, 317
 Mass-Spring Model, 553
 match interface, 573
 matching, 220, 251, 262, 263, 441
 McCollough effect, 55, 105, 114
 membrane equation, 187, 271, 357
 memory decay, 441
 memory search, 223
 metacontrast, 1, 55
 metaphor, 215
 Metzger's Ganzfeld, 128

- Minimum-Jerk Model, 553, 570
- mismatch, 498
- mixed template, 296
- model capacity, 219
- modulator, 581
- modulatory gating signal, 317
- Mondrian percept, 175
- monocular self-match, 70
- monocular syncytium, 3, 36, 55, 57, 79, 109
- motion segmentation, 1, 45, 55
- motivation, 496
- motivational feedback, 417
- motor control, 238
- motor priming, 584
- movement synchrony, 613
- multiple grouping, 317, 319, 324
- multiple memory systems, 252
- multiple spatial scales, 63
- muscle group, 553

- negative aftereffects, 68
- negative afterimage, 65
- negative drive input, 530
- negative feedback, 273
- neon color flanks, 9
- neon color spreading, 9, 42, 43
- NETtalk Model, 232
- neural modulator, 352
- nictitating membrane response, 406, 442
- noise, 251
- noise-saturation dilemma, 416, 418
- non-Hebbian associative law, 91, 109, 246, 405
- non-Hebbian associative rule, 409, 410
- non-Hebbian learning law, 336
- non-extinction, 501
- nonlinear muscle plant, 553
- normalization, 456, 463
- normalization of weights, 241
- normalization rule, 381
- novelty, 221, 507

- Object Recognition System, 5, 6, 29, 43
- OC Filter, 18, 19, 64, 206
- ocular dominance column, 84, 90
- off-cell, 28, 60, 187
- off-channel, 454
- off-rebound, 524
- OFF syncytium, 98
- on-cell, 28, 60, 187
- on-center off-surround anatomy, 187
- on-center off-surround network, 77, 443

- on-channel, 454
- on-response, 524
- ON syncytium, 98
- opponent competition, 110, 111
- opponent extinction, 441, 497
- opponent process, 443, 448, 454, 517, 522, 524, 526, 553, 587
- opponent processing, 98, 441, 449, 463
- orientation, 19, 200
- orientation field, 15, 198
- orientational disparity, 55, 84
- oriented cooperation, 206
- oriented masks, 14, 206
- oriented receptive field, 12, 109
- orienting arousal, 443
- orienting system, 221
- orthogonality, 251
- outflow movement command, 553, 573
- outflow signal, 559, 560
- overshadowing, 416, 420, 441
- overshoot, 452

- parallel pattern learning, 234
- parallel search, 251
- Partial Contrast Model, 244
- partial reinforcement, 478
- partial reinforcement acquisition effect, 441, 520
- partial reward, 540
- passive gating function, 615
- passive movement, 606
- passive movement update signal, 607
- Passive Update of Position Model (PUP), 553, 615
- path equivalence, 412
- pattern matching, 230
- pattern recognition, 251
- pauser cell, 615
- Pavlovian conditioning, 405, 441, 492
- peak acceleration, 605
- peak velocity, 600
- perceptual grouping, 204
- persistence problem, 405, 414, 415, 492
- phase 1 burst, 345, 350
- phase 2 activation, 345
- planning, 553
- plasticity, 218, 252
- polyvalent cell, 530
- Portfolio Theory, 518
- positional disparity, 55, 84
- positional uncertainty, 196
- positive drive input, 530
- positive feedback, 23, 273

- positive feedback signal, 357
 postsynaptic membrane resistance, 408
 postsynaptic-to-presynaptic learning signal, 432
 PPC, 553, 564, 589, 607
 PPC updating process, 566, 606
 practice makes perfect, 412
 preattentive vision, 5
 precedence score, 378
 precedence strength, 375
 precentral motor cortex, 553
 preconditioning, 441
 prediction, 320, 323
 preference reversal, 517, 519, 537, 538, 549
 present position command, 553, 573
 prestriate cortex, 29
 presynaptic conditioning, 431
 presynaptic gate, 467
 presynaptic modulatory signal, 432
 pretest deflation, 441
 priming, 317
 priming signal, 578
 processing level, 215
 Prospect Theory, 517, 518, 519, 532
 protein synthesis, 408
 prototype, 221, 251, 294
 proximity-luminance covariance, 1, 55
 pseudoword, 220
 psychophysics of risk, 528
- ramp signal function, 411
 random dots, 45
 READ circuit, 441, 442, 449, 454
 rebound eating, 520
 rebound, 498
 recall, 238
 receptive field, 59
 recognition, 238
 recognition category, 251
 recognition code, 217, 246, 251, 252
 recognition time, 251
 Reeves-Sperling paradigm, 371
 regular alternative, 517
 reinforcer, 441
 reset, 498
 reset by mismatch, 292
 reset rule, 287
 reset wave, 222
 response learning, 413
 Retinex Theory, 127, 149
 rich-get-richer effect, 221
 risk attraction, 537, 549
 risk aversion, 517, 537, 549
 risk taking, 517
 risky alternative, 517, 543
 rivalry, 63, 66
- sampling interval, 420
 sampling order, 548
 sampling signal, 352, 353
 saturation point, 357
 schedule-induced polydipsia, 520
 search, 228, 229, 260, 261, 275, 287
 search order, 287, 290, 298
 second competitive stage, 16, 23, 24, 62, 202, 210
 secondary conditioning, 420, 448, 519
 secondary conditioning alternative, 427, 430
 secondary reinforcement, 405, 416
 segmentation rule, 333
 segmentation, 4, 10, 61
 self-adjusting memory search, 224, 254, 256
 self-organization, 251, 252
 self-punitive behavior, 520
 self-scaling computational unit, 223, 304
 self-scaling property, 224, 251, 255
 self-similar axon generation, 361
 self-similar competitive growth, 361
 self-similar cooperative scale, 29
 self-similar growth, 359
 self-similarity, 92
 self-stabilization, 220, 251
 self-stabilized learning, 213, 218, 295
 sensory expectancy, 441
 sensory representation, 416
 sensory-cognitive circuit, 442
 sensory-motor planning, 559
 serial plan, 553
 serial program, 320
 shift invariance in item time, 396
 short term memory, 85, 226, 257, 271, 287, 319, 369, 370, 495
 shunting cooperative-competitive network, 323
 shunting equation, 457
 shunting on-center off-surround network, 320, 357, 434
 sigmoid signal function, 246, 337, 362, 411, 591, 592
 signal pattern, 271
 simple cell, 33, 34, 130
 sine wave grating, 40
 singular approximation, 338
 slave process, 441, 489
 sparse patterns, 247
 spatial frequency, 86

- spatial frequency channel, 1, 40, 55, 90, 95
- spatial gradient, 71
- spatial impenetrability, 25, 27, 204, 208
- spatial pattern, 91, 336
- speech recognition, 317
- speed-accuracy trade-off, 553, 602
- Spring-to-Endpoint Model, 562
- St. Petersburg Theory, 518
- stability, 252
- stability-plasticity dilemma, 218, 221, 252
- stabilized images, 8
- stable category learning, 290, 292
- stable code learning, 230, 246, 247
- staggered onset times, 596, 609
- steepest descent algorithm, 232
- stereopsis, 1, 55, 61, 94
- STM activity, 307
- STM bow, 370, 392
- STM normalization rule, 369
- STM onset, 390
- STM onset equation, 385
- STM primacy gradient, 327, 329, 370, 392
- STM recency gradient, 327, 370, 392
- STM reset, 229, 261, 275, 382, 390, 394
- STM reset equation, 385
- striate cortex, 29
- striate-prestriate connections, 75
- stripes, 55, 75
- structurally stabilized learning, 347
- subjective value, 536
- subproportionality, 529
- subset recoding, 292
- subset recoding property, 293
- subset template, 296
- superconditioning, 441, 519
- superset template, 296
- suppression of double images, 64
- surface curvature, 73
- surface perception, 1, 39, 55
- synaptic conservation rule, 359
- synaptic efficacy, 408
- synaptic modification, 412
- synaptic strength, 410
- synchronization problem, 405, 414, 492
- synchronous movement, 556
- synchrony, 586
- syncytial coupling, 35
- synergetic muscles, 553
- synergy, 555
- target position command (TPC), 553, 573
- target switching, 553, 568
- teacher, 320
- teacher-directed learning, 213
- template learning inequality, 285, 287
- template learning rule, 251, 280, 286
- template matching, 258
- temporal contrast, 432
- temporal order information, 369, 370, 380, 390
- Temporal Order Model (TOM), 371, 391
- temporally stable learning, 246
- temporally unstable learning, 217, 242
- textural grouping, 1, 25, 26, 55, 207
- textural segmentation, 204
- threshold-linear signal function, 337
- tissue contrast, 1, 38, 55
- top-down expectancy learning, 234
- top-down expectation, 443
- top-down learned feedback, 220
- top-down pathway, 307
- top-down priming, 222, 251
- top-down template, 258
- top-down template learning, 237
- top-down template matching, 226
- TPC, 553, 558, 589
- trajectory formation, 553, 564, 583
- transient STM surge, 339
- transient memory span, 392
- transient surge, 347
- transmitter gate, 110, 111, 454, 521, 522
- transmitter gating, 451
- transmitter habituation, 109
- transparency, 1, 55, 81
- turtle retina, 56
- type font, 269
- unblocking, 416, 441, 520
- uncertainty principle, 13
- uncertainty resolution, 4
- uncommitted nodes, 302
- unconditioned stimulus, 406
- undershoot, 452
- unitization, 304, 318
- Utility Theory, 518
- V2, 1, 55
- V4, 1, 55
- Valenstein effect, 520
- variable illumination, 175
- variable speed control, 586
- vector cell, 553, 572
- vector integration, 583

- Vector Integration to Endpoint Model (VITE), 553, 572
- velocity amplification, 553, 568
- velocity amplification during target switching, 595
- velocity profile asymmetry, 553, 570, 592
- velocity profile invariance, 553, 570
- vicious-circle behavior, 441
- vigilance, 251, 268
- visibility, 32
- visual object recognition, 317
- visual recognition, 238
- voting, 323

- Weber Law rule, 251, 274, 276, 286
- Weber's ratio, 128
- weighing the evidence, 304
- weight transport, 237
- winner-take-all, 241, 497
- Woodworth's Law, 553, 602
- word length effect, 220
- word level, 219, 324
- word node, 219
- word recognition, 213
- word superiority effect, 220

- yin-yang square, 133, 134