Index

A
abstract intelligence 1-2, 6-7, 10, 12-14, 16, 18-23, 25-28, 30, 81, 83-85, 90-93, 97, 251
Abstract Systems 101
Adaptive Computing 142, 149-150, 153
Adaptive Geometric Methods 147
adaptive image processing 147-148, 155
Adaptive Information Systems 149
Adaptive Knowledge Representation and Reasoning Conference (AKRR) 152
Adaptive Loop Subdivision (ALS) 146
Adaptive Machines 47
Adaptive Memory Subdivision (AMS) 150-151
Adaptive Networks 149-150
adaptive robots 152
Algorithmic Method 69-70
Although the software domain 254
architectural complexity 238, 277-279, 394
architectural modeling 302-303, 327-328
Artificial Intelligence (AI) 1, 3, 5-6, 14-16, 19, 26-29, 45, 55, 79, 86, 90, 139-140, 152-155, 191, 209, 229, 288, 291, 300, 391, 448-449, 464-466, 492
artificial intelligence in software engineering (AISE) 291
assembly perspective 127
automated composition 122, 139
Automatically guided vehicles (AGVs) 505
Autonomic Computing (AC) 59
Autonomous Agent System (AAS) 93

B
Basic Control Structures (BCS) 246, 264-265, 273, 284, 393-394
Behavioral Modeling 11, 264, 302
Behaviour and Information System Design 403
Biological Cognitive System 491
biometrics 142, 147, 150, 156
brain science 1, 14, 16, 19, 28, 64, 87

C
calibrated weights 264
call origination 313
call record 307
call termination 318
capability maturity model (CMM) 256, 258
Centre National d’Etudes Spatials (CNES) 481
clusters of clusters 42
cognition time 265
cognitive computer 10
cognitive computing 4, 83-88, 90-95, 212, 434
cognitive functional size (CFS) 393-394
cognitive granule 103
Cognitive Information Model (CIM) 17
Cognitive Logical Structures 179
cognitive machines 58
cognitive models 14, 27, 68, 153, 194, 232, 243, 418, 511
cognitive science 5, 172
Cognitive Search Engines 93
Cognitive Skill 244
cognitive weights 272
Complex Cells 498
complex edge connects 198
complexity theory 266
Component Analysis Method 70
component exemplar perspective 126
Component Logical Models (CLMs) 303
compositional operations 105
Computational Intelligence (CoI) 1-2, 5-14, 16, 19-
20, 23, 27-33, 46, 67-69, 72, 79-81, 83-85, 88,
90-93, 95, 97, 119-121, 141, 147-148, 154-156,
167-168, 192, 195, 210, 230, 250-251, 263,
286, 288, 291, 299-301, 325-326, 351, 371,
391, 402, 418, 433, 450, 465, 479, 490, 512
computational intelligence in software engineering
(CISE) 291
computational method 69-70
Computational Semantics 193
Computer-Supported Collaborative Learning
(CSCL) 11, 421-422
Computer Supported Cooperative Work (CSCW) 11,
421-422, 431
computing granule 99
computing methodologies 83-85
concept algebra 4, 8-9, 13-14, 21-22, 30, 69, 80, 88,
93, 97, 99, 121, 170, 192, 240, 250, 479
concept learning 171
ConceptNet 196
congintive informatics 142
Consequence Subsystem 412
Consequentialist Assumption 404-406, 411
cybernetics 1, 6, 13, 28, 30-31, 46, 81, 84, 97, 120-
121, 167-168, 209, 230, 250-251, 285, 353,
402, 449-450, 465, 479, 511

D

Data Acquisition 355
data arrays 493-495, 497, 507
data granule 99
data mining 165
design frameworks 327
Decision Models 466
Defect Elimination 372, 378-381, 389
denotational mathematics 1-2, 4-10, 13-14, 30, 68-
69, 72, 79-80, 83-90, 95, 97-100, 119-121, 195,
232-233, 237, 240, 242-243, 250-251, 286,
302-303, 325, 327-328, 350-351, 450, 479
design Paradigms 47, 302
design patterns 362
design reuse 327
digital numbers (DNs) 482
digital receiver 306
digital receiving 313
DKAABSU 460-462
DKAABSU Algorithm 460-462
dynamic behaviors 4, 8, 88, 240, 243, 248, 302-303,
321-322, 324, 327-328, 330, 345-346, 348-350
Dynamic Modeling 434, 444-446
dynamic system development method (DSDM) 256
E
eID Dualism 215
eID-SCE 220
eID-SCE strategy 220
Employee Motivation 403-406, 408, 411, 413-415
engineering applications 1-2, 4, 6, 14, 16, 45, 85, 98
engineering design process (EDP) 48, 59, 62
engineering psychology 243
enhanced Petri net (EPN) 435
Enhanced Petri Net Model 434-435, 441, 443-445
evidence-based software engineering (EBSE) 290
evolutionary optimization 41
exceptional termination 317, 319-321
experiential learning 62
Experimental Algorithm 491
Experimental Falsification 354, 367
Extended Coverage 48, 62
External Product Innovation 253-254
eXtreme Programming (XP) 54, 256-258
F
feasibility analysis 380
feature analysis method 71
Filtering Operations 493
flow composition 124
formal design models 302, 324, 327, 348
functional capabilities 123
functional complexity 265
functional fluent 136
Function Approximation 466, 472
fuzzy logic 35, 159, 365
fuzzy querying 159
G
Generic Abstract Intelligence Mode (GAIM) 10, 14,
16, 28
Geographical Information System (GIS) 482
Geophysical Data Records (GDRs) 482
granular computing 100
granular systems 101
granulation 100
### Index

- granule 99
- granulometric 100
- Gratified Motivational Force (GMF) 407

**H**

- Hidden Markov Model (HMM) 195-196, 201
- Hierarchical Abstraction Model (HAM) 240
- hierarchical data structure 142
- Hierarchical Model 142-143, 153, 469, 471-472, 475
- HITEC (Hierarchical Text Categorization System) 499

**I**

- image categorization 491, 501, 503
- Implication Operation 199
- inaugural issue 1-2, 10-12
- indian logic 35, 378
- Industrial Environments 505
- inexplicit embodiment 240
- Inference Algorithm 203
- informatics laws 233
- Informatics Properties 233
- Information Entropy 454-455, 459-460
- Information-Matter-Energy-Intelligence (IME-I) 18
- Information Processing Structures 492-493
- Information Retrieval 166, 168, 193
- Inhibition Metamodel 496
- Initial Localization Service 506-507, 509
- intelligence science 1-2, 5, 8, 11, 14-15, 17, 27-28, 142-143
- Intelligent Behavioral Properties 234
- intelligent grouping 420, 423
- intelligent machines 60
- intelligent measurement theory 15
- intelligent metrics 14, 16, 23, 25-26, 28
- intelligent quotient 14, 16, 23, 25
- Interactive Problem Solving 466
- internal product 252
- IS Design 414

**J**

- justifiable granularity 38-39

**K**

- knowledge acquisition 195, 197, 209, 423, 449, 451-452, 458, 460, 463-464
- knowledge base (KB) 435

- knowledge engineering 7-8, 46, 88, 138, 167, 449
- Knowledge Representation 11, 13, 30, 70, 80, 96, 142, 152-153, 155-156, 192-194, 197, 208-209, 250, 295, 377, 389, 479
- knowledge utilization 466

**L**

- Landsat 480, 482-483
- Lateral Inhibition 496
- Lateral Operations 493-494, 510
- Layered Reference Model of the Brain (LRMB) 6, 13, 15-16, 31, 68, 81, 84-85, 97, 104, 121
- level of details (LOD) 143
- lift dispatching list 335
- Lift Dispatching System (LDS) 327-329, 349
- lift status record 335, 344
- line scanner 305
- line scanning 313
- linguistic quantifiers 160
- linguistic summarization 158
- Location Plausibility Service 506-507

**M**

- Machinable intelligence (MI) 19, 27
- Machine learning (ML) 288
- mathematical metaphor 236
- mathematical models 22, 69, 72, 81, 100-102, 236-237, 265, 272-274, 276, 284, 321
- MDE semantics 212
- MEASUR 408
- Mechatronics 60-61, 63
- metamodels 10, 35, 43-44, 227, 496
- metastructure 33
- Methodological and Innovative Design 61
- MLSE 288
- model-based software engineering (MBSE) 290
- Model Driven Engineering (MDE) 211
- Model Fitting 485-486
- Modeling Tool 439
- Model Transformations (MT) 211
- Motivational Gratification (MG) 404, 407
- motivational gratification model (MGM) 403-404
- Multichannel Adaptive Information Systems project (MAIS) 149
- Multilayer perceptrons (MLPs) 470
- multiple intelligences theory 15
Index

| N | Named Entity Extraction 196 |
| National Aeronautics and Space Administration (NASA) 481 |
| Natural Intelligence (NI) 6, 19, 27, 85 |
| Natural Intelligent Information Processing System (NI-Sys) 405 |
| natural language (NL) 212, 214 |
| natural language processing (NLP) 193, 200, 375, 464 |
| neural informatics 5-6, 10, 13, 20, 30, 80, 83-87, 91, 96, 153, 156, 192, 209, 250 |
| Neural Networks Model 468 |
| Neural-Symbolic Hybrid Systems (NSHS) 434 |
| Node Map Representation 501 |
| Non-Linear Activation 474 |
| Numeric Representation 470 |

| O | Object-Attribute-Relation (OAR) 6, 85, 87, 153, 244 |
| operational complexity 266, 273, 276-279, 283-284, 392-394 |
| organizational theories 4-5 |
| Output Subsystem 410-411, 413 |

| P | Pareto modules 292 |
| pattern recognition 69-70 |
| pattern solution 133 |
| peer-to-peer (P2P) 421 |
| Petri net 439 |
| Phenomena Analysis 213 |
| power spectrum 180, 182 |
| Preliminary Knowledge 453 |
| primal sketch 70 |
| principle of cognitive economy 169-170 |
| principle of maximal relevance 179, 183, 186, 190 |
| Principle of Simplicity 170, 184, 234, 244, 266 |
| problem analysis 212 |
| problem identification phase 49 |
| process deployment 302-303, 321-322, 324, 327-328, 345, 348-349 |
| process dispatch 323 |
| program comprehension 290, 352-370 |
| Projective Operations 493-494, 510 |
| protoform 159 |

| Q | question answering 372 |

| R | rapid application development (RAD) 256 |
| real-time intelligent theory 15 |
| Real-Time Systems 51, 64, 149, 239, 324-325, 327-328, 350 |
| requirements engineering 55, 228, 291, 295, 372-375, 387, 389-391, 417 |
| Retinal Image 359-360 |
| Robot Guiding 505 |
| ROLEs transformations 216 |
| Rough Set Theory 451-454, 456, 458, 460, 463-464 |
| route 307 |
| Rule-Based Systems (RBS) 435 |
| Rule Modeling 434, 442-444 |
| Rule Normalization 434, 442 |
| Rule Verification 434, 442-443 |

| S | SAWMILL 128 |
| Scale of a Measure 392 |
| seamless code generation 324, 349 |
| search-based software engineering (SBSE) 290 |
| semantic description 128 |
| semantic propagation 126, 132, 134-137 |
| Semiotic Approach 404-405, 414-415, 417 |
| SenseNet 193, 195, 197-205, 207-208 |
| Sensor Data Records (SDRs) 480, 482 |
| Short EDP Cycle 60 |
| Short-Term Memory (STM) 69, 87 |
| signaling trunk 306 |
| Simple Cells 495 |
| simple edge 198 |
| situational applications (SAs) 123 |
| Social Networks 423 |
| Social Relationship 420-421, 426-427 |
| soft computing 95, 121, 166-168, 291, 390-391 |
| software complexity 238, 246, 265-266, 272, 285, 392-393, 399, 401-402 |
Software requirements specification (SRS) 373
SOtella 427-428, 430
SRS Draft Generation 386
stakeholder value 287
sub-domain 382
Subflow Output 132
system algebra 98, 100, 102, 119
system clock 306, 334
system clock process 311
system dispatching 321, 335
system granule 99
system initialization process 311, 338-339
System Uncertainty Measures 452-454, 456, 458-459, 463
Theoretical Falsification 366
Theoretical Foundations 245
theoretical unconscious 216
TOPEX 480-484, 488-490
TOPEX Altimeter 481-482, 490
Topex Data 481-482, 488
traceability table generation 375, 386
U
uncertainty ratio 455, 460-461, 463
Ungratified Motivational Force (UGMF) 408
Unified Data Models (UDMs) 302, 327
Unified Process Models (UPMs) 302-303, 327-328
Uniform Model 494
V
Value-Based Design 298
Value-Based Quality Management 295, 298
Value-Based Risk Management 287-288, 297
Value-based software engineering (VBSE) 288
Vision–Comprehension Theory 353, 356-357
vision science 353
Visual Feature Array (VFA) 492
Visual Semantic Algebra (VSA) 68-69, 72, 79, 97, 195, 209
W
waterfall model 53
water ratio 480-481, 483, 485-486, 488
Weak Extensive Structure 397-398
Weak Meaningful Statement 397
Weak Measurement Theory 392-395, 400
weak scale 397
Web-Based Collaborative Learning (WBCL) 422
Working Memory 360