
Index

- ”cascade“ problem, 359
- A-reducible case, 59
- activator-inhibitor model, 160
- adaptive condition, 214
- adaptive objective function, 203
- adaptive response, 356
- adaptive system, 115
- agent - assistant expert system agents, 316
- Agent-Based medical diagnosis systems, 316
- agent-based modelling, 101
- agent-oriented approach, 284
- aggregate of automata, 116
- aggregate of automate, 126
- aggregation, 15
- Alloy specification language, 262
- alpha ant beta hierarchy, 103
- ant colony algorithm, 282
- ant colony optimization, 197
- appraisal-coping, 357
- appraisal-coping model, 361
- artificial life, 10
- assistant expert system agents, 316
- asymptotic behaviour, 247
- automata-based agent behavior, 199
- automaton with multiplicities, 198
- automaton with multiplicities - linear representation, 199
- avalanche, 116
- B-Instantaneous differential case, 61
- behavioral distance, 201
- behaviour simulation, 266
- bifurcation, 166
- biogenetic law, 212, 213
- blackboard architectures, 261
- Blackboard-based Medical Diagnosis System, 321
- blind node, 222
- bluetooth, 261
- Boolean networks, 116
- brownian move, 162
- C-integro-differential case, 63
- capacity utilization, 295
- catastrophe, 179, 215
- catastrophe classification, 182
- catastrophe cycle, 192
- catastrophe systems, 181
- cellular automata, 10
- centralized predetermined system, 342
- chaotic behavior, 7
- chaotic systems, 35, 244
- cities, 166
- classification tree, 310
- cluster, 118
- clustering, 42
- clustering fitness, 203
- cognitive map, 357
- cognitive system, 316
- collective panic, 179, 184
- community, 196
- community swarm optimization, 197, 203
- complex aggregate, 227
- complex event type, 108

- complex events, 102
- complex machine-human interactions, 341
- complex system engineering, 101
- complex systems, 25
- complexity - algorithmic complexity, 118
- complexity - reducing complexity, 40
- complexity criteria, 179
- complexity measure, 29
- complexity of catastrophe, 183
- complexity quantification, 28
- complexity threshold, 144
- compositional hierarchy, 104
- computer simulation, 12
- cone of influence, 117, 138
- connectivity matrix, 245
- constraint satisfaction problem, 342
- container terminals, 292
- contract net based medical diagnosis system (CMDS), 319
- cooperative assistance, 316
- cost of a blind, 222, 227, 230
- coupled systems, 244
- criterion of timetable quality, 346
- Croston's method, 304
- crowd, 182

- damage, 116, 130
- damage equilibrium, 116
- damage fadeout frequency, 133
- decision support system, 281, 292, 341
- deep area, 221
- deep fade-out, 230
- degree of chaos, 131
- degrees of simplicity, 7
- demand forecasting, 304
- demand occurrence, 308
- demarcation model, 271
- Derrida plot, 124
- detection fitness, 203
- diagnostic, 316
- dial-a-ride problem, 282
- diffusion mechanism, 159
- disaster, 179
- discrete event, 291
- dissipative system, 9
- distributed constraint satisfaction problem, 342

- domino effect, 166, 183
- domino effects, 180
- Duhem, 5
- dynamic dial-a-ride problem, 283
- dynamic systems, 180
- dynamic vehicle routing problem, 282
- dynamical systems, 244

- electrodermal activity, 360
- emergence, 55, 179
- emergence - nominal emergence, 16
- emergence - strong emergence, 17
- emergence of chaos, 115
- emergence of hierarchies, 292
- emergence of phenomenon, 183
- emergence theories, 102
- emergent behaviours, 101
- emergent laws, 111
- emergent properties, 292, 316, 341
- emotion modelling, 355
- emotion modelling - appraisal theories, 356
- emotion modelling - componential models, 356
- emotion modelling - hierarchical models, 356
- emotional response triad, 356
- epidemiological model, 184
- equations coupling, 159
- equilibrium, 116
- error in prediction, 304
- expert system, 318

- far from equilibrium, 9
- feedback loop, 117
- fitness, 215
- formalism, 7
- freight transport, 291
- functional order, 138
- functional sequence, 117

- Gamma distribution, 305, 308
- general system theory, 184
- genetic automata, 201
- Glaucoma Expert System, 319
- growth mechanism, 158

- Hamiltonian formalism, 7
- hazard, 167, 180
- heterogeneity, 14

- heterogeneous model, 16
- Hindmarsh-Rose model, 243
- historical order, 233
- homeostatic stability, 212
- homeostatic stability, 120

- ideal vector, 213
- initial condition, 161
- Intelligent Cooperative Mobile Agent Architecture (ICMA), 320
- Intelligent Cooperative Mobile Agents with Evolutionary Problem Solving Capability (ICMAE), 320
- intermodal, 291
- intermodal planning, 291
- intermodal terminal, 292
- intermodal transport network, 292
- inventory control, 304
- inventory systems, 304

- JADE multi-agent platform, 349
- Jensen, 9

- Kauffman, 9
- Kauffman network, 126
- Kauffman networks, 116
- knowledge space, 262

- L-system, 15
- learning, 317
- Linda communication model, 261
- Lyapounov method, 65

- macro-properties, 103
- Markiv process, 305
- Medical Assistant Multiagent System, 316, 321
- medical computational system, 317
- medical diagnosis, 315
- medical diagnosis problem, 317
- Medical expert system agents, 319
- medical information systems, 317
- medical knowledge, 317
- medical ontology, 326
- medical problem solving, 316
- memory - episodic memory, 359
- memory - long-term memory, 359
- memory - semantic memory, 359
- memory - working memory, 359
- micro-macro property relationship, 104

- Minsky, 11
- mobile devices, 261
- model, 11
- model of panic, 184
- modelling and abstraction, 33
- modelling complexity, 32
- MOSAIC project, 167
- multi-agent system, 342
- multi-agent systems, 196
- multi-component system, 103
- multi-functionality, 111
- multi-level behaviours, 107
- multi-objective optimization, 282
- multi-scale systems, 181
- multiagent systems, 316
- multiscale, 14

- negative feedback, 119
- neighbourhood search, 306
- network depth, 141
- network representation, 35
- neurons, 243
- non-linearity, 183
- numerical computation, 247

- OnloNet, 319
- ontogeny, 214
- ontology, 349
- organization, 183

- panic, 170
- panic propagation, 184
- parabolic diagram, 176
- parallelism, 35
- particle swarm optimization, 197
- past neighboring memory, 63
- percolation theory, 118
- phase portrait, 247
- phase transition, 118
- phenotype, 214
- pluriformalization, 14
- Poincaré, 7
- policy measures simulation, 293
- proactive resilience, 169
- problem solving activity, 359
- properties of the formalism, 7

- random network, 213
- real fadeout, 221
- Repast, 287

- resilience, 168, 191
- resilience - ecological resilience, 169
- resource description framework, 262
- reversal potential, 246
- risk, 166, 180

- scale-free network, 127, 213, 226
- scale-free networks, 118
- scenario, 331
- science of complexity, 3
- segregation model, 161
- self-organising criticality, 119
- self-organization, 179, 183, 286, 316, 341
- self-organization theory, 170
- self-organized criticality, 9, 167
- self-organized systems, 170
- semantic web, 261
- shallow area, 221
- simple models of complex systems, 7
- simple models of simple systems, 5
- simple systems, 180
- simplicity, 12
- simulating panic, 171
- simulation, 264
- single-scale network, 226
- skin conductance activity, 360
- smage spreading, 215
- small change tendency, 218
- SmartSpace system, 262
- social behaviour, 181
- Solomonov-Kolmogorov-Chaitin complexity, 118
- space-based communication, 262
- spatial behavioral automata, 198
- stochastic methods, 57
- structural tendencies, 212, 213
- subsymbol, 15
- swarm intelligence, 196, 318
- synapse, 246
- synapse - chemical synapse, 246
- synapse - electrical synapse, 246
- synaptic coupling strength, 246
- synchronization, 244
- synchronization - generalized synchronization, 244
- synchronization - identical synchronization, 244
- synchronization - lag synchronization, 245
- synchronization - phase synchronization, 245
- synchronization threshold, 249
- synergetics, 9
- synergy, 341
- system, 181
- system - complex system, 52
- system - complicated system, 52
- system - dissipative system, 56
- system - simple system, 52
- system - unsolvable systems, 46
- system dynamics, 184
- system dynamics modelling software, 184
- system state analysis, 51
- systems - evolving systems, 45

- tabu search, 306
- tabu search - enhanced continuous method, 306
- tasks scheduling, 341
- technological risk, 167, 182
- temporal scales, 180
- terminal additions, 212
- terminal modifications, 212
- theoretical ecology, 8
- theory of reaction-diffusion, 158
- Thomas Schelling, 161
- top-down causation, 111
- total growth of the system, 224
- transition matrix, 305
- transparent node, 224
- transportation system, 281
- Tuple-spaces based computation, 261
- turnaround time, 295
- type hierarchy beta-aggregation, 104
- types of complexity, 27

- ubiquitous healthcare, 319
- ubiquitous UML, 262
- ubiquity of mobile, 261
- ultrastability, 212
- uncertainty, 34, 304
- uncertainty in availability, 304
- uncertainty in demand, 304
- unified formalism, 8
- unpredictable dynamics, 183

unpredictable behaviour, 181
urban area, 166
urban traffic, 281
Use Case Maps, 318
validation, 264

vehicle routing problem, 282
vulnerability, 166, 180, 181

weak emergence, 17
wireless communication, 261