

Index

A

A* algorithm 5
 Adaptation and diversification 217
 Adaptive immune response 211
 Adaptive memory 11
 Agglomerative clustering 24
 Agglomerative methods 241
 AINET learning algorithm 233
 Analytical search 4
 Ant colony optimization 2,16,192
 Antibodies 212
 Antigens 212
 Apriori algorithm 88
 Artificial immune system
 209,210,232,238
 Artificial neural networks 58
 Association rule 269
 AUTOCLASS 26

B

B cells 212
 Backpropagation 59
 Bagging 123
 Bagging trees 137
 Bayesian learning 117,118
 Bit-based simulated crossover 102
 Blind search 4
 Branch and bound search 100
 Breadth-first 100
 Building blocks 102

Building-block hypothesis 177
 BYPASS 120

C

C5/C4.5 86
 Candidate distribution 272
 Cellular encoding 61
 Change and deviation detection
 162
 Classification 162,191,270
 Classifier systems 57
 Clonal selection 217
 Clonal suppression 236
 Clustering 63,162,192, 231, 242
 CN2 87
 Code bloat 167
 Code growth 167,168
 Code growth restriction 168
 Compact genetic algorithm 102
 Complete search 100
 Complexity of an algorithm 239
 Constructive network 237
 Control parallelism 265
 Count distribution 272
 Crossover 52

D

Data distribution 272
 Data mining 48
 Data parallelism 265
 Data pre-processing 49

Decision tree 62, 73,159, 176
 Decision tree induction 86, 168
 Dendrogram 241
 Dependency modelling 162
 Depth-first 100
 Deterministic algorithm 150
 Deterministic heuristic algorithms 100
 Distance-based clustering 22
 Distributed breeder genetic algorithm 13
 Distributed-memory 263

E

Edge detection 53
 Estimation of distribution algorithm 97, 99,102
 Evaluation function 72
 Evolutionary strategies 51
 Evolutionary algorithms 48,49, 51,117,118
 Evolutionary computing 176
 Evolutionary programming 51
 Expectation maximization 26

F

Feature extraction 53
 Feature subset selection 56
 Filter 101
 First-order logic 58
 Fitness error factor 148
 Fitness function 159
 Fitness measure 72,81
 Fuzzy c-means 245
 Fuzzy clustering 245
 Fuzzy k-means 245

G

Genetic algorithm 2, 12, 51 73,83,97,98,129, 143,144,145, 158,176, 178
 Genetic programming 51 157, 174,175,176

Gini index 80
 Global optimality 3
 Grammar-based encoding 61

H

Heuristic 5
 Heuristic algorithms 100
 Heuristic function 198
 Heuristic search 2
 Hierarchical techniques 241
 Hill climbing 7, 22
 Hybrid distribution 273

I

Image segmentation 53
 Immune memory 213
 Immune network 213
 Immune recognition 233
 Immune systems 2,14
 Immunological computation 209,210
 Information gain 80
 Intelligent data distribution 273
 Inter-model and intra-model parallelism 265, 266
 Inter-model parallelism 266
 Internal images 233

J

J measure 80
 Jmultiplexer 131

K

K-means 22
 K-nearest-neighbor algorithm 56
 Knowledge discovery in databases 162
 Knowledge extraction tools 175
 Knowledgeseeker 87

L

Laplace accuracy 79

Learning classifier system 118
 Linear speed up 267
 Linkage learning 99, 102
 Load imbalance 267
 Local optimality 3
 Loss function 33

M

Massively parallel processors 263
 Match set 119
 Messy genetic algorithm 99
 Metadynamics 215,233
 Metropolis algorithm 7
 Michigan approach 57
 Minimal spanning tree 242
 Minimax path 243
 Minimum message length 27
 Multi-point crossover 150
 Multinomial-dirichlet Bayesian model 121
 Mutation 14,150
 Mutual cooperation 192

N

Navigation 122
 Nearest-neighbor heuristics 24, 27
 Neighborhood 3
 Neighborhood length 6
 Neighborhood size 6
 Network structure 217
 Neural networks 176
 Node mutation 178
 Normalised cross correlation 147
 Nugget discovery 72,73
 Nuggets 72

O

Oblique decision trees 177
 Ockham's razor 177
 Optimization criteria 28
 Overfitting 107

P

Parallel classification 278
 Parallel clustering 282
 Parallel data mining 261
 Parallel databases 261
 Parallel genetic algorithm 13
 Parallel programming 261
 Parallel technology 262
 Parallelism 262
 Parameters 85
 Parsimony pressure 169
 Partial classification 72
 Partial ordering 77
 Partition-based clustering methods 26
 Pattern recognition 49
 Performance 119
 Performance criteria 184
 Pittsburgh approach 57
 Population based incremental learning 102
 Prediction 73
 Primary response 211
 Principal component analysis 50
 Probabilistic algorithm 150
 Problem representation 3
 Program induction by evolution 158
 Proximity digraph 34, 36
 Prune mutation 178

R

Random sampling 37
 Recombination operators 161
 Regression 162
 Response time 267
 RIPPER 87
 Rule discovery 176
 Rule pruning 200
 Rule-based systems 57

S

Satellite data 135
Satisfactory solutions 3
Schema theorem 12
Secondary immune response 211
Segmentation 53
Selection methods 52
Self-organisation 216
Shared-disk 262
Shared-memory 262
Shared-nothing 262
Shared-something 262
Simulated annealing 2, 8, 73,83,
226
Spatial data 35
Stability properties 214
Stability-controllability trade-off
215
Standard crossover 170
Start up cost 268

Statistical parametric method 25
Sting method 25
Stopping criteria 106
Summarization 162
Swarm intelligence 16,193

T

T2 87
Tabu search 2,10, 33, 73,83
Throughput 267

U

Unexploded ordnance 143,144
Univariate marginal distribution
algorithm 102
Utility 122

W

Workload partitioning 267
Wrapper 56, 101