

INDEX

- A* algorithm, 194
- AbYSS, 68
- AES (advanced encryption standard), 140
- Algorithm GPPE, 7
- Algorithmic skeleton, 196
- ALife (artificial life), 347
- Alphabet with arity, 218
- ANOVA test, 72
- Ant colony optimization, 267, 408
- ARMA, 249
- ARMAX model, 124
- Artificial neural networks, 15
- Artificial vision, 309
- Asynchronous parallel cGAs, 58
- Auctions, 233
- Ausubel auction, 234
- AV (artificial vision), 310

- B&B-based, 373
- Bankruptcy prediction, 6
- Beam search, 110, 280, 367
- Benchmarks, 92
 - for DOPs, 92
- Best and worst stripe exchange (BW_SE), 389
- Best-fit decreasing height (BFDH), 386
- Best inherited level recombination (BILX), 389
- Bid, 234
- Bioinformatic tasks, 268
- Bottom-up deterministic tree finite automaton, 219
- Branch and bound, 193, 366
- Bucket elimination, 111

- Call-by-need, 210
- Cellular automata (CA), 325
 - laser model, 329
- Cellular genetic algorithms, 50, 68
- Cellular phone networks, 287
- CHC, 294–296, 299–302, 304, 305
- Chromosome appearance probability matrix algorithm, 31
- Computational grid, 423
- Constrained optimization penalty term, 105
 - bucket elimination, 110
 - decoder, 104, 105
 - definition, 103
 - penalty term, 103
 - repairing, 104
 - search in feasible space, 104
 - soft constraint, 103
 - symmetries, 111
- Constraint programming, 107, 108, 109, 114
- Convergence, 66
- Cross-generational elitist selection, heterogeneous recombination, and cataclysmic mutation, 294, 305
- Cryptography, 139

- Decisions, 216
- Design cycle, FPGA design cycle, 164
- Deterministic tree automaton, 219
- Diversity, 66
- Divide and conquer, 179, 209
- DNA fragment assembly problem, 270
- DOPs, 84
 - adaptation cost, 88, 95

- DOPs (*Continued*)
 aspect of change, 85, 86
 benchmarks, 92
 classification, 85
 continuous, 86
 control influence, 87
 cyclic, 87
 definition, 84
 discrete, 85
 effect of the algorithm, 85
 frequency of change, 85
 metaheuristics, 88
 patterns and cycles, 87
 presence of patterns, 85
 severity of change, 85, 86
 solution quality, 88, 93
 stages, 85
 system influence, 87
- DTD (data type document), 449
- Dynamic bit-matching, 93
- Dynamic job shop scheduling, 93
- Dynamic optimization problems, 83
- Dynamic programming, 209
- Dynamic programming equations, 217
- Dynamic programming states, 215
- Dynamic travelling salesman problem, 85
- EA, 295
- EELA, 159
- Efficient auction, 240
- Error correcting code, 200
- Estimation of distribution algorithms, 33
- Evolutionary algorithms, 63, 249, 267, 295, 409
- Evolutionary computation, 31
- Experimental evaluation, 423
 benchmarking, 423
 dynamic setting, 424
 static setting, 423
- Feature extraction, construction and selection, 3, 4
- FF (forgetting factor), 124, 128, 456, 462
- First-fit decreasing height (FFDH), 386
- Fitness, 32
- FPGA, 309
- FPGA channel architecture, 163
- FPGA devices, 139
- FPGA hierarchical architecture, 162
- FPGA island architecture, 163
- GA, 294, 296, 299–301, 305
- Gene expression profiling, 269
- Gene finding and identification, 269
- Genetic algorithms, 32, 294, 295, 305, 424, 428
 encodings, 428
 initial population, 428
 operators, 428
- Genetic programming, 3, 6
- GLite middleware, 169
- Golomb rulers, 105
- GPPE, 3
- GRASP, 107, 108
- Grid computing, 159
- Grid simulator, 424
 event-based simulation, 429
 HyperSim-G, 429
- GridWay metascheduler, 169
- Homogeneous tree language, 219
- Hypervolume, 70
- IA (infection algorithm), 348
- IDEA (international data encryption algorithm), 140
- Independent job scheduling, 424
 completion time, 427
 expected time to compute, 418, 424
 flowtime, 427
 makespan, 427
 optimization criteria, 427
 resource utilization, 427
- Inverted generational distance, 69
- IPO underpricing prediction, 6
- Kolmogorov–Smirnov test, 71
- Kruskal–Wallis test, 72
- Large-scale neighborhood search, 407
- Laser, 325
 cellular automata-based model, 329
 rate equations, 326
- Last level rearrange (LLR), 389
- Lazy learning, 15
- Levene test, 72

- Machine learning, 3
- Majority merge, 279
- Malaga, 303–305
- Marginal value, 239
- Master-slave, 180
- MBF_Adj, 390
- Memetic algorithms, 102, 104, 110, 112, 369
- Memoization, 210
- Memoized, 210
- Metaheuristics, 63, 266
 - for DOPs, 88
 - information reuse, 89
 - reinitialization, 89
- Metrics, 93
 - accuracy, 94
 - adaptation cost, 95
 - ϵ -reactivity, 95
 - MHs for DOPs, 93
 - solution quality, 93
 - stability, 95
- MFF_Adj, 390
- Michigan approach, 255
- Microarray, 269
- Micropopulations, 31
- MOCeII, 68
- Modified next-fit (MNF), 387
- Moving parabola, 93
- Moving peaks, 93
- Moving peaks problem, 86
- Multidimensional knapsack problem, 367
- Multiobjective optimization, 63
- Multiobjective optimization problem, 63

- Neural networks, 132
- Next-fit decreasing height (NFDH), 386
- NSGA-II, 67

- OMOPSO, 68
 - hierarchic mode, 427
 - simultaneous mode, 427
- Parallel cellular genetic algorithms, 49
- Parallel implementation of CA laser model, 337
- Pareto dominance, 65
- Pareto front, 63, 65
- Pareto optimality, 65

- Pareto optimal set, 63, 65
- Particle swarm optimization, 68
- Penalty term, 103
- Performance of parallel CA laser model, 340
- Personal value, 239
- Phylogenetic analysis, 270
- Piece exchange (PE), 389
- Policies, 216
- Policy, 216
- Polyadic problems, 218
- Polynomial mutation, 67
- Population-based incremental learning, 33
- Prediction, 123, 462
- Principle of optimality, 217
- Problem, 103
 - consensus tree, 112
 - Golomb ruler, 105
 - maximum density still life problem, 108
 - multidimensional knapsack, 104, 105
 - phylogenetic inference, 112
 - p -median, 56
 - protein structure prediction, 104
 - vertex cover, 103
- Pure, 210
- PVM (parallel virtual machine), 337

- Quality indicators, 69

- Radial basis neural networks, 16
- Radio coverage problem, 292, 293
- Radio network design, 305
- Ranked alphabet, 218
- Rastrigin function, 41
- RC6 symmetric cryptographic algorithm, 143
- RND, 288, 289, 293–295, 297, 299–301, 305
- ROS (remote optimization service), 443
- Rules for the initial seeding, 390

- SA, 294, 295, 299, 300, 305
- Scalability of parallel CA laser model, 343
- Scatter search, 68, 108, 268
- Shortest common supersequence problem, 277
- Search algorithms, 193
- SI (system identification), 123, 462
- Simulated annealing, 267, 294, 305

- Simulated binary crossover, 67
- Sincere bidding, 239
- Skeleton, 180
- SOAP, 448
- Software tools, 179
- Solution merging, 407
- SPEA2, 68
- Spread, 70
- Stages, 85
- Statistical analysis, 71
- Stereo matching, 347
- Stripe exchange (SE), 389
- Structure prediction, 269
- Substitutes in consumptions, 239
- Synergies, 241
- System identification, 127, 455

- Tabu search, 107, 108, 110, 267
- Telecommunications, 287
- Terms, 219
- Three-stage level packing patterns, 385

- Time series, 249
- Time-varying knapsack, 93
- Tree automaton with costs, 220
- Tree language, 218
- Tree search algorithms, 193
- TS (time series), 123, 462
- Two-dimensional cutting stock, 201
- Two-dimensional strip packing problem (2SPP), 385

- Unrestricted two-dimensional cutting stock problem (U2DCSP), 221

- Variable neighborhood search, 265

- Weighted majority merge, 279
- WEKA, 258
- Welch test, 72
- Wrapper design pattern, 446, 450

- XML, 443