Index

3-Coloring Problem (3-COL) 189
2D Strip Packing Problem (2D-SPP) 172

A
Abstract Intelligence (aI) 270
Adaptive Search 1, 17, 173-174, 183, 261
Ant Colony Optimization (ACO) 160, 219
Attitude 278
Automatic Pipeline, Variable Inventory and Order Based Production Control System (APVIOB-PCS) 334

B
Batwing Function 11, 20
Behavior Models 267
Binary Decision Diagrams (BDDs) 349
Book Embedding 326, 331
Bottom Left (BL) 57
Branch-and-Bound Algorithm (B&B) 173

C
chordal graph 327, 330-331
Cognitive Computing 267-268, 285
Cognitive Informatics 267-268, 280, 284-285
Cognitive Processes 267, 279, 282, 285
Collective Behaviors 273
Collective Intelligence 270
Computational Effort 95
Computational Intelligence 270
Consistent Tabu Search (CTS) 172, 175
Crowding Distance (CD) 110, 113-114, 116
Cutting-Stock Problem 57

D
Data Reduction 233
Decision Diagrams 349, 352-353, 365-367
Design and Implementation Methodology 90-91
Design and Implementation Methodology for Metaheuristic Algorithms (DIMMA) 91
Design of Experiments (DoE) 98
Differential Evolution (DE) 132
Digital to Analog Converter (DAC) 156
Discrete Optimization 168, 286
DNA computing 349-350
Dynamic Optimization Problems (DOPs) 131

E
Emotion 276
Estimated Pipeline Variable Inventory and Order Based Production Control System (EPVIOB-PCS) 334
Evolutionary Algorithm (EA) 234
Evolutionary Instance Selection (EIS) 235
Evolutionary Model CHC 242
Evolutionary Prototype Generation (EPG) 236, 249
Evolutionary Prototype Selection (EIS-PS) 238, 249, 254
Evolutionary Under-Sampling (EUS) 247
Evolution Strategies (ES) 74, 85
Examination Timetabling 39
Exponential Smoothing (ES) 335
Extremal Optimization (EO) 133

F
fault-tolerant processor arrays 326
Final Value Theorem (FVI) 333

G
Ganley and Heath 326-327, 331
Generational Genetic Algorithm (GGA) 234, 240
Genetic Algorithm (GA) 61
Graceful Graphs 217, 219, 232
Graceful Labeling Problem 217
graph coloring problem (GCP) 306
Graph Labeling 218, 230-232, 326
Great Deluge (GD) 35
Greedy Randomized Adaptive Search Procedure (GRASP) 174
Guided Diversification 171
Guillotine Cutting 56

H
Harmony Memory Considering Rate (HMCR) 73
Harmony Memory (HM) 73
Harmony Memory Size (HMS) 73
Harmony Search (HS) 73, 85
Hybrid Genetic Algorithm (HGA) 248
Hyper-Heuristics 36
Hyperheuristic with Intensification / Diversification Walk Strategy (HH+IDW) 174

I
Imbalanced Data Sets Problem 234, 237
Instance Generation (IG) 236
Instance Selection (IS) 235
Intelligent Genetic Algorithm (IGA) 242
Inventory Drift 333-334, 338-340, 342, 344, 347

J
Jazz Improvisation 72

K
k-Coloring Problem (k-COL) 189, 191

L
Lead-Time Misidentification 333, 337-338, 341
Learning Automata (LA) 307, 309, 322
Learning Automata Random Walk (LARW) 311
Limited Assests Markowitz (LAM) model 123
Linear Programming Models 1, 17, 19
Lowest-Fit-Left-Right-Balanced (LFLRB) 57

M
Markowitz Model 122
Memetic Algorithm 239
Metaheuristic Computing 267
Metaheuristics 219
Minimum Mean Square Error (MMSE) 333-335
Mixed Integer Linear Problem (MILP) 60
Motivation 277
Movement Strategies 109-111, 113, 116-117, 120, 128
Moving Average (MA) 335
Moving Peaks Benchmark (MPB) 134
Multiagent Dynamic Optimization (MADO) 134, 136
Multimodal Environment 131, 134, 136
Multi-Objective Optimization 82, 97, 109-111, 113, 117, 154, 169
Multi-Objective Particle Swarm Optimization (MOPSO) 156, 161, 165, 167

N
Nelder-Mead simplex method 133
Non-dominated Sorting Genetic Algorithm (NSGA) 110
Non-Stationary 54, 131, 153
Novelty 86

O
Object Migration Automaton 309
optical computing 350, 365
Order-Up-To (OUT) models 333

P
Packing 38, 52, 62, 70-71, 171-181, 184-187, 323
pagenumber 326-327, 331-332
Parametric Tabu Search 1, 4, 10, 14, 17, 19-20, 32
Pareto-Archived Evolutionary Strategy (PAES) 110
Pareto Optimality Concept 111
Particle Swarm Optimization (PSO) 111, 160
Phase Transition 190
Pheromone 221
Pitch Adjusting Rate (PAR) 73
Population-Based Incremental Learning (PBIL) 241
printed circuit boards (PCB) 326
Prototype Generation (PG) 234, 236
Prototype Selection (PS) 234-235
Proximity 11, 19
Pseudo-Boolean Optimization 287
Pure Random Instances 93
Index

Q

Quadratic Unconstrained Binary Optimization (QUBO) 289
Quality of Solutions 95
quantum circuits 349-350, 352, 355, 358-361
quantum gates 349, 351-353, 356, 360, 365-366
Quantum Logic 349-351, 354, 360, 367

R

Random Graphs 191
Random Walk Algorithm 306, 312
Random Walk (RW) 312, 322
Real-Time Process Algebra (RTPA) 268, 284
Reed-Muller spectra 350
Reinforcement Learning 37
Replenishment Policy 333, 336, 339
Resistance and Reaction Procedure 25-26, 28
Resistance Variable 23-25, 28
Reversible Logic 349-351, 354, 356, 358-360, 365-367
Robustness 96
Run-Length-Distribution (RLDs) 315

S

Satisfiability 14, 32, 106, 215, 296, 306-308, 322-325
satisfiability problem (SAT) 307
Scaling Up Problem 234, 237
Search Algorithm 15, 32, 72, 74, 76, 78, 80-84, 88-89, 97, 142, 146, 171-172, 175, 184-186, 190-191, 212-213, 261, 307, 323
Set-Up Cost 56, 58
Shared nodes 353-354, 356, 358, 360-363, 365
Sigma Delta Modulators 154, 168
Signal to Noise Ratio (SNR) 167
Social Conformity 273
Social Psychology 270-271, 274, 278, 284-285
Standard Instances 93
Steady-State Genetic Algorithm 240
Steady State Memetic Algorithm (SSMA) 243
Stochastic Local search algorithms (SLS) 308
Strip Packing 70, 171-172, 184-187
Success Rate (SR) Measure 193
Switched Current Technique (SI) 157

T

Tabu Search 3-Coloring Algorithm (TC) 191
Tabu Search (TS) 100, 174
Toffoli gates 351, 353, 358, 360
Training Set Selection (TSS) 234-235
Travelling Salesman Problem (TSP) 100
treewidth 326-327, 330-332

V

Valid Inequalities 1, 7, 17
Variance Amplification 333, 337-338, 340-344, 348

W

Work-In-Progress (WIP) 336

Z

Zero-One Mixed Integer Programming 1, 18
Z-Transform 333, 335