Index

A

Absolute Average Sensitivity (AAS) 190, 245, 250, 258
active learning 372
adsorption processes 183
Dubinin-Radushkevich (D-R) isotherm model 184
Freundlich isotherm model 184
isotherm models 183
Tempkin isotherm model 184
algorithmic flow 275
alignment scores 47
Analysis of Variance (ANOVA) 160, 253
Ant Colony Optimization (ACO) 273
Artificial Intelligence (AI) 195-196, 296
Artificial Neural Networks (ANN) 18, 22, 76, 179, 196, 243, 296, 331
authorship analysis 134
Average Link Consensus Heuristic (ALCH) 139

B

backpropagation 301, 331
gradient decent 247
BackPropagation (BP) algorithm 176, 179, 190, 194, 240, 245, 249-250, 258, 261, 376
backpropagation multilayer perceptron 301
Back Propagation Network (BPN) 36, 197-198, 202, 208, 249, 260
Back Propagation Neural Network (BPNN) 249
Bayesian theory 266
beam classifier 358, 362
beam search method 358
benchmark functions 280
Ackley 281, 288
Rastrigin F1 281, 289
Rosenbrock 280, 290
Sphere/DeJong 280, 288, 290
biofilter performance 245, 258
biorthogonal wavelet 314
 Blind Source Separation (BSS) 30
BLOSUM matrices 50
boolean function 230
Breadth First Search (BFS) algorithm 157
breakthrough curve 187

cell deformity 317
cell segmentation 312
centroids of clusters 138
character segmentation 16
chloroplast genome 49
Classification and Regression Trees (CART) 361
classification rules 263
Classifier Ensemble-All Neural Classifiers (CE-ANC) 232
Classifier Ensemble- Neural Fusion Classifier (CE-NFC) 233
Classifier Ensemble-One Neural Classifier (CE-ONC) 232
classifier ensembles 231
Cluster-Based Graph Formulation (CBGF) 139
cluster centroid 356
clustering algorithms 338
collision avoidance 277
colour feature extraction 5
Concept Selection and Aggregation (COSA) 334
consensus clustering 134
Consensus Clustering Pivot Heuristic (CCPH) 139
Content-Based Image Retrieval (CBIR) 1, 119, 167
query image 1
Content-Based Soft Annotation (CBSA) 175
Cosine Correlation Analysis (CCA) algorithm 295
court outcomes 85
Critical Legal Studies (CLS) 87
D
Decision Trees (DT) 65, 359, 380
Denial-of-Service (DoS) 384
dichloromethane (DCM) 245
Difference of Gaussian (DoG) 102
dimensional reduction 37
Distance metric learning (DML) 123
DNA sequence 47
documents vectoring 345, 356
Dose-Volume Histogram (DVH) 66

E
Earth Mover’s Distance (EMD) 120
de edge detection 310
electrocardiography (ECG) 33
electroencephalography (EEG) 33, 241
electromyographic (EMG) 34
Electronic-Mail (Email) 13
Electronic Pen (E-Pen) 13
emergence index 169
c onstraints 172
c onstruction 173
d omain 171
features 170
similarities 172
variables 171
emergence phenomenon 168
Engineered Floodplain Filtration (EFF) system 179
e nsemble clustering 134
e quivalence query 375
Evolutionary Algorithms (EA) 357

F
False Negative Rate (FNR) 295
False Positive Rate (FPR) 295
feature extraction 198, 313
Fine-Needle Aspirate (FNA) 74
Finite Mixture models (FMM) 177
fitness functions 220, 222, 285
flock centering 277
Flood Plain Filtration (FPF) 181
Footprint of Uncertainty (FOU) 212
Fuzzy C-Means (FCM) algorithm 204
fuzzy colour histogram 3
Fuzzy Hamming Distance (FHD) 3
fuzzy logic 3, 168, 176
Fuzzy Logic System (FLS) 210, 277
fuzzy theory 196

G
gas-phase pollutant 243
gas-phase toluene removal 251
gas-phase toluene vapor 251
Gauss–Newton algorithm 247
Generalized Context Model (GCM) 377
Generalized Linear Discriminant Analysis (GLDA) 77
Genetic Algorithms (GA) 196, 200
Genetic Programming (GP) 361
Gini index 363
Global-Best (gbest) PSO model 278
Google and Yahoo officially released Google AdWords (GAwords) 152
Google Proximity Search (GPS) 152
Graphical User Interface (GUI) 273
Gray Level Co-occurrence Matrices (GLCM) 199
grey-level intensity 318

H
handwriting recognition 13, 19, 29
pre-processing 14
segmentation 16
Hessian components 248
Hessian matrix 248
high-level features 178
Human Computer Interface (HCI) 34
Human Papillomavirus (HPV) 293
Hybrid-Best (hbest) PSO model 278
Hybrid Bipartite Graph Formulation (HBGF) 139
Hybrid Multilayered Perceptron (HMLP) 295

I
image morphology 309
image processing 74
image retrieval 2, 169
image segmentation 168
Independent Component Analysis (ICA) 31, 45, 101, 104
information gain 363
information retrieval 332
Instance-Based Graph Formulation (IBGF) 140
Intelligent Blind Signal Processing (IBSP) 33
intelligent system 293, 296, 331
Interactive Dichotomizer 3 (ID3) algorithm 294
International Corpus of Learner English (ICLE) 134
Intrusion Detection Systems (IDS) 384
Index

J
Jaccard index 139
Judges on Wheels program 86
jurisprudence 87

K
k-committes algorithm 48
keyword suggestion 149, 152
proximity search 152
query-log analysis 152
snippet analysis 152
k-means algorithm 52
k-means clustering algorithm 340
K-Means Consensus Function (KMCF) 140
Kohonen neural network 207
Kohonen self-organizing map 203

L
Large Margin Nearest Neighbour (LMNN) 124
Latent Semantic Indexing (LSI) 150, 175
Least Mean Square (LMS) 378
Least Significant Different (LSD) 161
Levenberg – Marquardt algorithm (LMA) 247
lexical analysis 338
Linear Discriminant Analysis (LDA) 101
linguistic analysis 134
Linguistic Inquiry and Word Count (LIWC) software 136
Local-Best (lbest) PSO model 278
Local Binary Patterns (LBP) 102
Locality Preserving Projections (LPP) 104
local stare decisis 90
Lower Membership Function (LMF) 212
low-level features 168
lysimeter tests 185

M
Machine Learning (ML) 60, 296, 333, 372
Mackey-Glass chaotic time-series 221
Magnetic Resonance (MR) 195-196
magnetoencephalography (MEG) 33
Majority Rule Heuristic (MRH) 140
Markov Decision Process (MDP) 105
Massive-Training Artificial Neural Network (MTANN) 75, 83
Mean Absolute Error (MAE) 318-319
Mean Square Error (MSE) 285
medical image classification 195
membership query 375
MeSH ontology 334
meta-search 334
Minimum Mean Squared of Error (MMSE) 308
Minkowski metrics 48-50
Minkowski’s distance 119
Multi-Input Multi-Output (MIMO) 215
Multi-Input Single-Output (MISO) 215
Multi-Layer Perceptron (MLP) 180, 194, 245, 261, 296-297
multilayer perceptron network 292, 298, 300, 327-328
Multi-Layer Propagation (MLP) 376
Mutual Subspace Method (MSM) 116

N
Nature-Inspired (NI) Toolbox 273
Neighbourhood Component Analysis (NCA) 124
neural computing 180
Neural Network Ensembles (NNE) 5
neural network modeling 240
Neural Networks (NN) 4, 18, 230, 235
black box 246
non-linear separability 304
normal distribution 268
nucleus perimeter 317
nucleus radius 317

O
Optimal Local Basis (OLB) 104
Organs-At-Risk (OAR) 59

P
particle string encoding 217, 221, 284
particle string validation 219, 221
Particle Swarm Optimization (PSO) 210, 273, 381
Particle Swarm Optimization with Crowd Redistribution (PSOCR) 381
pattern classification 263
distance-based 265
statistical-based 266
pattern recognition 314
pattern space 264
Perceptual Control Theory (PCT) 377
Personal Digital Assistants (PDA) 13
personal stare decisis 90
Pharmaceuticals and Personal Care Products (PPCP) 182
photocatalytic oxidation 240-242, 261
<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>photocatalytic process</td>
<td>243</td>
</tr>
<tr>
<td>photocatalytic reactions</td>
<td>242</td>
</tr>
<tr>
<td>Principal Component Analysis (PCA)</td>
<td>32, 76, 100, 104</td>
</tr>
<tr>
<td>principal membership function</td>
<td>212</td>
</tr>
<tr>
<td>Probabilistic Latent Semantic Indexing (PLSI)</td>
<td>150</td>
</tr>
<tr>
<td>Probability of Query and Document (PQD)</td>
<td>153</td>
</tr>
<tr>
<td>projection graph</td>
<td>336</td>
</tr>
<tr>
<td>Pulse Code Modulation (PCM)</td>
<td>385</td>
</tr>
<tr>
<td>Principal Component Analysis (PCA)</td>
<td></td>
</tr>
<tr>
<td>Principal Membership Function</td>
<td></td>
</tr>
<tr>
<td>Probabilistic Latent Semantic Indexing (PLSI)</td>
<td></td>
</tr>
<tr>
<td>Probability of Query and Document (PQD)</td>
<td></td>
</tr>
<tr>
<td>Projection Graph</td>
<td></td>
</tr>
<tr>
<td>Pulse Code Modulation (PCM)</td>
<td></td>
</tr>
</tbody>
</table>

**Q**
- Query-Based Learning Decision Tree (QBLDT) 380
- Query-Based Learning (QBL) 371, 373
- Query-Based Sample Filter (QBS Filter) 385
- Query Based Self-Organizing Maps (QBSOM) 382

**R**
- Radial Basis Function (RBF) 294
- Radiation therapy 59
- Radiotherapy response 60
- Reinforcement Learning of Visual Classes (RLVC) 110
- Reinforcement Learning (RL) 99, 103
- Relative Absolute Error (RAE) 318-319
- Resilient Propagation (RPROP) 247
- Rhizosphere 182
- Root Mean Squared Error (RMSE) 318-319
- Root Mean Squares (RMS) 36

**S**
- Scale Invariant Feature Transform (SIFT) 102
- Search Engine Result Pages (SERP) 152
- Semantic gap 175
- Sensitivity analysis 189, 245, 258
- Sequential Minimal Optimization (SMO) 64
- Signal to Interference Ratio (SIR) 38-39
- SimpleKMeans 138
- Singular Value Decomposition (SVD) 100, 122, 151
- Source separation 31
- Space graph 336
- Stare decisis 90

**T**
- Tag cleaning 338
- Texture heterogeneity 317
- Traditional Stare decisis 90
- Training algorithms 202-203
- Transductive learning 113
- Transfer function 301
- Tri-nitro toluene (TNT) 241
- Tumor localization 75
- Tumor motion 71
- Type reductions 216

**U**
- Universe of Discourse (UOD) 211
- Upper Membership Function (UMF) 212
- User Behavior Function (UBF) 154

**V**
- Vector Space Model (VSM) 153
- Velocity matching 277
- Visual recognition 99
- Volatile Organic Compounds (VOC) 240-241

**W**
- Wastewater treatment processes 181
- Wavelet approximation coefficients 317
- Word root extraction 338

**Y**
- Yahoo Search Marketing (YSM) 152