

Index

- absorption (of nodes), 36, 136
- accuracy, 25, 83
- Akaike information criterion, 61, 290
- Analytica, 309
- artificial intelligence, 377–379

- BayesiaLab, 111
- Bayesian classifier
 - naïve, 47, 264, 270, 334
 - selective naïve, 151
 - tree-augmented naïve, 288
- Bayesian information criterion, 61
- Bayesian information reward, 46
- Bayesian network
 - definition, 12
 - dynamic, 32, 226
 - naïve, *see* Bayesian classifier
 - object-oriented, 319–320
- binary decision diagram, 232
- black box, 12, 315, 379

- canonical model, 25, 210
- conditional independence, 9
- confusion matrix, 138
- cross-validation
 - k*-fold, 64, 70, 106, 156, 164
 - leave-one-out, 267, 280

- decision tree, 302
- deviance information criterion, 61
- diagnosis, 16
- Discoverer, 69, 98

- discretization, 20, 37, 52, 63, 98, 232, 276
- dynamic Bayesian network, *see* Bayesian network
- dynamic fault tree, *see* fault tree

- elicitation
 - of probabilities, 24–26, 55, 75–76, 118–119, 252, 306
 - of structure, 20–24, 116–118, 355–357
- Elvira, 18
- entropy, 195, 351, 370
- expectation maximization, *see* learning algorithms
- expert, 2, 378

- fault tree, 226, 245, 307
 - dynamic, 226
- Fourier transform, 285
- fuzzy logic, 189, 315, 362

- Genie, 18
- geographic information system, 97, 109, 156, 245
- Gibbs sampling, 26
- GIS, *see* geographic information system

- Heisenberg’s uncertainty principle, 381
- Hugin, 78, 111, 320, 335, 354, 369
- hyper-Dirichlet distribution, 60

- independence
 - conditional, 9
 - unconditional, 9
- India (software), 306
- inference, 3, 26, 113, 174, 382–383
 - probabilistic, 4
- intelligent tutoring system, 173
- Jenks algorithm, 98
- joint probability distribution, 6
- K2, *see* learning algorithms
- knowledge engineering, 19, 34, 355
- learning algorithms
 - expectation maximization, 26, 80
 - K2, 55, 63, 98, 155
 - NPC, 199
- linear programming, 302
- logistic regression, 47, 338
- Markov
 - blanket, 63, 193
 - model, 32, 233
- Matusita distance, 269
- missing data, 26, 266, 342
- model, 1–5
 - deterministic, 6
 - general definition, 3
 - probabilistic, 5
 - rule-based, 6
 - use of a, 3
- moralization, 70
- naive Bayesian network, *see* Bayesian classifier
- necessary path condition, *see* learning algorithms
- Netica, 34, 130, 252, 308
- neural network, 47, 110, 189, 290–293, 315, 380
- NPC, *see* learning algorithms
- parameter learning, 97–99
- Petri nets, 226
- principal component analysis, 268–269, 286, 316
- probabilistic relational model (PRM), 174
- probability, 6
- prognosis, 17, 54
- R, 277
- Radyban, 226
- receiver operating characteristic, 46, 83
- regression, 72, 110, 132
- ROC, *see* receiver operating characteristic
- Rockit, 83
- rule-based model, 31, 375
- Simpson’s paradox, 57
- Smile, 18
- stakeholder, 2
- structure learning, 75, 97–99, 200, 288
- support vector machines, 295
- value of information, 27
- variable, 5
 - child, 11
 - parent, 11
- wavelet analysis, 285
- Weka, 47, 288
- WinBugs, 68
- yEd, 71