

# Index

- active learning, 124, 126, 141, 172
- annotation
  - inside, 180
  - relevant, 180
- audio analysis, 251
- audio features, 251
  
- bagging, 41
- Bayesian methods, 3, 160, 168, 191, 230
- belief networks, 168, 170, 229, 233
- bias/variance analysis, 25, 40
- big  $p$  small  $n$  problems, 91
- bisecting  $k$ -means, 57
- boosting, 45, 146
  
- category utility, 107
- CBIR, 26, 115–136, 189–204, 206
- classification, 4, 17, 22, 23, 26, 28, 29, 41, 117, 122, 123, 163, 165, 231, 262, 264
- cluster validation, 73
- clustering, 51, 117, 198
- color, 116, 117, 160, 214, 215, 231, 241
- compression-based similarity, 34
- curse of dimensionality, 92
  
- data mining, 120, 160
- decision theory, 3, 15
- Dunn's index, 77
  
- earth mover distance, 33
- ensemble techniques, 40
- expectation maximization, 54, 108, 168
  
- face detection, 160
- feature selection, 99
- feature transformation, 93
- Fourier transform, 259
  
- generated model, 178
- graph partitioning, 60
  
- hierarchical clustering, 54
  
- image analysis, 115, 160, 206, 240
- image indexing, 199
- image labeling, 206
- image retrieval, 115, 121, 189
- instance selection, 36
  
- $k$ -means clustering, 52
- kernel clustering, 58
- kernel functions, 28
- kernel methods, 28, 119
- keyframes, 214
- Kolmogorov complexity, 34
  
- latent semantic analysis, 95, 208, 231
- linear discriminant analysis, 97
  
- machine learning, 4, 7, 17
- Markov chain Monte Carlo (MCMC), 12, 171
- Markov models, 9, 208, 230
- mel frequency cepstral coefficients, 255
- Minkowski distance, 32
- mobile devices, 280
- motion detection, 141, 143
- MPEG-7, 252
- music genre classification, 250
- music information retrieval, 250
  
- naive Bayes, 17
- nearest neighbour, 29, 262
- noise reduction, 36
  
- on-line AdaBoost, 146
- on-line boosting, 147
- on-line learning, 141

- playlist creation, 276
- principal component analysis, 94, 97, 141, 151
- probability, 5
  
- query-by-example, 189
  
- random forests, 44
- risk minimization, 22
  
- self-organising maps, 65, 267
- semantic gap, 116, 206
- semi-supervised learning, 163
- silhouette index, 78
- similarity, 178
- similarity metrics, 31, 117, 118
- simulated annealing, 103
- singular value decomposition, 95, 208
- spectral clustering, 60
- stability-based cluster validation, 84
- statistical learning, 9, 22
- supervised learning, 21, 97, 115, 146
  
- support vector machines, 26, 120, 208, 230, 262
  
- text analysis, 227
- texture, 116–118, 160, 178, 191, 195, 201, 206, 214, 240, 256
- TRECVID, 212
  
- uncertainty, 4
- utility, 16, 17, 23, 126, 128
  
- video analysis, 140, 206
- visual features, 116, 117, 210
- visual thesaurus, 198
  
- wavelet features, 256
- Wikipedia corpus, 240, 242, 244
- wrapper techniques, 99, 103
  
- XML document, 229, 230, 243, 245

# Cognitive Technologies

---

*H. Prendinger, M. Ishizuka (Eds.)*

**Life-Like Characters**

Tools, Affective Functions, and Applications  
IX, 477 pages. 2004

*H. Helbig*

**Knowledge Representation and the Semantics of Natural Language**

XVIII, 646 pages. 2006

*P.M. Nugues*

**An Introduction to Language Processing with Perl and Prolog**

An Outline of Theories, Implementation, and Application with Special Consideration  
of English, French, and German  
XX, 513 pages. 2006

*W. Wahlster (Ed.)*

**SmartKom: Foundations of Multimodal Dialogue Systems**

XVIII, 644 pages. 2006

*B. Goertzel, C. Pennachin (Eds.)*

**Artificial General Intelligence**

XVI, 509 pages. 2007

*O. Stock, M. Zancanaro (Eds.)*

**PEACH — Intelligent Interfaces for Museum Visits**

XVIII, 316 pages. 2007

*V. Torra, Y. Narukawa*

**Modeling Decisions: Information Fusion and Aggregation Operators**

XIV, 284 pages. 2007

*P. Manoonpong*

**Neural Preprocessing and Control of Reactive Walking Machines**

Towards Versatile Artificial Perception–Action Systems  
XVI, 185 pages. 2007

*S. Patnaik*

**Robot Cognition and Navigation**

An Experiment with Mobile Robots  
XVI, 290 pages. 2007

*M. Cord, P. Cunningham (Eds.)*

**Machine Learning Techniques for Multimedia**

Case Studies on Organization and Retrieval  
XVI, 290 pages. 2008