

Index

A

- abrupt detection 277
- adaptive metadata generation 135, 141
- agglomerative clustering 176
- algebraic optimizer 307
- alignment approach 46
- analytic hierarchical process (AHP) 14
- annotated image 316
- annotated scenario 298
- annotation 13, 91, 94, 190, 312, 336
- annotation learning 190
- audio-based retrieval 275
- audio-visual feature fusion 85
- audio dissimilarity 70, 81
- automated image annotation 125
- automatic adaptive metadata generation 137
- automatic annotation 90, 113
- automatic speech recognition (ASR) 348
- average-edge histogram 279
- average brightness 279
- average color histogram 1, 278, 279
- average shot duration 279

B

- Bayesian principles 15, 344
- benchmark dataset 130
- bi-dimensional space 236
- Boolean vector 61
- browsing model 180
- bulletin board system (BBS) 15

C

- candidate transformation 52
- catalog 314
- categorization 198
- CIEBLAB 25
- CIELUV 25
- class algorithm 219
- class dependency 219
- class event 217
- class feature 219
- class object 217, 218
- class photograph 217
- class political geographic object 217
- class visual descriptor 219

cluster-based retrieval of images by unsupervised learning (CLUE) 14
 clustering 56, 119
 co-occurrence model 120
 color feature database 258
 color feature extraction 257
 color image retrieval 257
 computational complexity 60, 205
 conditional dependence 70, 74
 content-based image retrieval (CBIR) 3, 23, 46, 91, 113, 230, 252, 254, 312
 content-based retrieval system 338
 content-based soft annotation (CBSA) 126
 content-based visual information retrieval (CBVIR) 1
 content variation 287
 context-based method 116, 117
 continuous-space relevance model (CRM) 93
 correlation 119
 correlation sequence using edge histogram 277
 correlation sequence using gray-level histogram 276
 correspondence latent Dirichlet allocation model 341
 cross-media relevance model 340
 cross-validation test 84

D

D-statistic 167
 database 138, 283
 database chromosome 283
 database indexing problem 232-233
 database video 275, 284
 data compression 232
 data fusion 72
 data identicle tuples 304
 data mining 232
 decision making 241
 default indexing process 149
 different segmentation approaches 86
 discriminant classifiers 172
 discussion embedded video (DEV) 15
 distance computation 142, 147

distance kernel 337
 distance metric 165
 diversity of media content comprehension 205
 divisive clustering 176
 dynamic trees 179

E

earth movers 337
 edge information 278
 EM algorithm 91
 emotion-based retrieval 274
 emotional content 275
 emotion information 275
 ExIFO model 297
 expansive indexing module 144, 149
 experiment 82
 experimental semi-automatic face annotation 202
 exploratory search 175

F

face annotation methodology 187
 face detection in video 187
 fade-ins 276
 fade-outs 276
 fast indexing 200
 fast labeling 199
 fast visual analysis 199
 feature-based visual information retrieval 4
 feature extraction 50, 78, 254, 278, 295
 feature selection strategy 90-96, 99, 107, 109
 final algorithm 78
 final confidence factor 260
 finite mixture 338
 FNF 294
 FNF2 data model 301
 FNF2 fuzzy relation schema 302
 FNF2 fuzzy tuple 302
 FNF2 model 299
 fusion of multiple queries 259, 263, 267
 fusion of queries using neuro-fuzzy AND 261

- fusion of queries using binary AND 260
- fusion of queries using fuzzy AND 260
- fuzzy AND 264
- fuzzy attribute 302
- fuzzy complementation 303
- fuzzy image database (FIB) 307
- fuzzy interpretation for queries 258
- fuzzy intersection 303
- fuzzy logic 252, 254
- fuzzy pairs 306
- fuzzy union 303

G

- Gaussian-mixture model (GMM) 346
- Gaussian kernel 337
- generalized euclidean distance 167
- generative model 91
- genetic algorithm (GA) 275
- genre 336
- global feature-based method 115, 125
- gradual detection 277
- graphical user interface 307

H

- heritage 241
- heuristic method 347
- hidden Markov model 342
- hierarchical aspect model 122, 341
- hierarchical grouping of images 318
- hierarchical model 341
- high-level visual information retrieval 1
- histogram 23, 25, 42
- HMM 346
- homogeneity of clusters 330
- HSV 25
- human-based method 116, 118
- human-computer interaction 13, 160
- hybrid method 131
- hypothesis phase 52

I

- IBM MPEG-7 189
- identification 198
- image 2, 3, 136, 311
- image-based method 115, 118
- image and video annotation 12

- image annotation 113, 131, 315
- image categorization 90, 94
- image collection 65
- image database 234, 292
- image engineering 2
- image indexing 237
- image processing 187
- image quality 192, 193
- image representation 295
- image retrieval (IR) 6, 23, 113, 160, 253, 274, 296
- image retrieval based on color feature 263
- improvement by expansive indexing 155
- improvement by maximum thresholding 153
- improvement by screen module 153
- indexing 136, 198, 312, 313, 317
- index multidimensional data 314
- individual objects in video 193
- inexact matching 46
- information retrieval 232
- information source 70
- integrated correlation 277
- integrated patch (IP) 90, 91
- interaction model 160
- interactive genetic algorithm (IGA) 274, 275, 280, 287

J

- judge 240

K

- k-nearest neighbors (k-NN) 230-235
- key-frame 335
- knowledge-based model 336, 344
- knowledge-driven 210

L

- labeling 198
- labels 240
- latent dirichlet allocation (LDA) 93
- latent semantic analysis 340
- learning of queries 259
- lighting condition 195
- line segment 50
- logical unit 336

M

machine learning 230-232
 machine translation model 121
 machine translation research 339
 Mahalanobis distance 167
 manual and automatic image annotation 208
 manual annotation of the training set 316
 manual classification 193
 mathematic model 14
 maximum thresholding process 148
 meaningful regions 8
 measure conversion process 147
 MediaNet 344, 345
 media ontology 344
 medical information systems 65
 metadata 136
 metadata generation module 144
 metric 23
 military intelligence 65
 million-hour archives 188
 minimum thresholding process 147
 Minkowski metric 165
 MLP as a classifier 267
 MLP as a texture feature classifier 262
 motivation 213
 MPEG-7 190, 212
 multi-dimensional scaling 170
 multi-level image and video 5
 multi-level image retrieval 7
 multi-level representation 7
 multi-level video abstraction 11
 multi-level video organization 10
 multi-level video retrieval 9
 multi-modal 70
 multi-scale random field (MSRF) 343
 multimedia 136
 multimedia-semantic analysis 336
 multimedia analysis 335
 multimedia database 136, 231-232
 multimodal analysis 348
 multimodal data fusion 72
 museum 65
 music retrieval 275

N

naive method 241
 natural language processing 131
 nearest-neighbor network 177
 negative example (NE) 14
 neighborhood graph construction 236
 neighborhood graph 235-237
 network model 336, 342
 neural network 252-256, 263, 267
 neuro-fuzzy 261
 neuro-fuzzy AND 264
 NNk network 177
 nonparametric density 337
 normalization process 148

O

object relational database 307
 observable feature 74
 occlusion 196
 ontology-based framework 208
 ontology-based method 116
 ontology-driven analysis 209
 ontology-driven framework 208
 ontology infrastructure 208, 216
 open video 200
 optimal parameter 321
 optimistic combination 304
 optimization with negative feedback 169
 optimistic and combinations 305
 orientation 195
 ostensive relevance feedback 179

P

painting retrieval 275
 parameter initialization 174
 pathfinder network 178
 pattern recognition 14
 performance evaluation 151
 point access method (PAM) 233
 positive example (PE) 14
 preprocessing texture images 261
 probabilistic approach 171

Q

quality of annotations 113
 query 265
 query adaptation 162
 query by example 300
 query by sketch 47
 query expansion 163
 query interpretation 259
 query point moving 162
 query processing engine 307
 query translator 307

R

random fields 342
 RDF(S) 216
 reconnaissance 198
 regional feature-based method 115, 119
 relative neighborhood graph 235
 relevance-based language model 123
 relevance feedback (RF) 9, 13, 160, 161
 research publication 5
 retrieval 136, 322
 retrieval application 334
 retrieval by keyword 234
 retrieval by visual content 234
 retrieval engine 312
 retrieval framework 214
 retrieval method 281
 retrieval purpose 274
 review of content-based image retrieval (CBIR) 254
 richer content 274
 rigid object recognition 46

S

salient patch 91, 94
 sample image 146
 sample index 141, 146
 Santa Barbara Alexandria Digital Library (ADL) 254
 scene-based retrieval 281
 scene boundary 70
 scene content 278
 scene retrieval 280, 287
 scene segmentation 47

screen module 142
 search 314
 segmentation 119
 segmentation principles 75
 semantic-based IR 23
 semantic-based retrieval 274
 semantic-based visual information retrieval (SBVIR) 1
 semantic-multimedia analysis 342
 semantic annotation of key-frame images 336
 semantic gap 2, 4, 113, 209, 312
 semantic image analysis 208, 211
 semantic image retrieval 6, 210
 semantic multimedia information analysis 334
 semantic representation 318
 semantic retrieval 14, 208
 semantic structure 336
 semantic video content description accuracy 204
 semantic video content description reliability 204
 semi-automated image annotation 127
 semi-automatic annotating 239
 semi-automatic face annotation 191, 200
 sequential segmentation algorithm 84, 85
 sequential segmentation approach 73
 shape-based image retrieval 46-47
 shape localization 46
 shape recognition 46
 shot content 279
 similarity on manifolds 171
 similarity search as classification 171
 single class model 337
 singular value decomposition (SVD) 340
 skeptical combination 304
 space access method (SAM) 233
 space area 238
 spatial descriptor 295
 statistical approach 347
 structuration model 234
 stylized sketch 47
 support vector machine (SVM) 127, 172
 system architecture 308
 system implementation 150

T

- telecommunication data 188
- tempory structure 335
- test image 62
- text-based image retrieval 312
- text-based method 114, 116, 118
- texture feature classifier 266
- texture feature extraction 265
- texture image retrieval 261
- texture information 274
- thesaurus 315
- time information 286
- training data 336
- translation model 339
- tree-based techniques 314
- tuple combination 304
- tuple comparison 303
- two-dimensional multi-resolution hidden Markov model (2D MHMM) 124, 341

U

- uncertainty 293
- uncertainty-based model for image databases 297
- user interface 189

V

- verification phase 57
- Vesuvio Vulcan 299
- video 2
- video coherence 78
- video dataset 202
- video document 335
- video format 274
- video information 275
- video organization 10
- video retrieval 274-280, 284, 287
- video scene 275, 278
- video scene retrieval 274, 280, 287
- video scene segmentation 71-72
- video segmentation 69, 190, 276
- video sequence 282
- video shot boundaries 274
- video summarization 11

- visual analysis 347
- visual content 278
- visual feature 312
- visual keyword 91, 95
- visual similarity 69
- visual video analysis 347

W

- weighting method 241
- word-region mapping 120
- WordNet 344, 345