

Index

1D wavelet, 176
3D ultrasound, 9

A

aberration of normal development and involution (ANDI), 49, 50
accuracy, 302
acini, 48, 49, 57
ACR BI-RADS[®], 342
ACRIN 6666 Trial, 132
additive, 249, 262, 264, 270
adjunct modalities, 306
age to begin screening, 124, 127, 132
American Cancer Society (ACS), 153
American College of Radiology Imaging Network (ACRIN), 131
amorphous microcalcifications, 55, 57
amorphous selenium (a-Se), 246, 251–252, 254
anastomosis, 427
angiogenesis, 374, 380
angular second moment, 404
architectural distortion, 199, 200
arithmetic coding, 182
artificial neural network (ANN), 200, 220
asymptomatic breast, 292
automated breast ultrasound, 133
automated ultrasound, 9
axillary mass, 108

B

back-propagation neural network (BPNN), 299, 406

bandwidth, 152, 156, 157, 160, 175
base-switching transformation (BST), 183
Bayesian decision theory, 220
benign lesion, 106
Biofield Diagnostic System (BDS), 287
Biofield Diagnostic System (BDS) index, 293
BI-RADS[®], 200
bit rate, 168
block-based coding, 179, 182, 183
blood vessels, 381
boundaries, 374, 377, 382, 384
box counting, 382
breast cancer screening, 122, 124, 134, 135
breast cancer staging, 356, 363
breast density, 86, 107, 113, 128, 132, 135
breast disease, 86, 107, 110
breast imaging, 85, 104, 114

C

cancer mortality, 122
cancer mortality rates, 123, 124
carcinoma, 90, 99, 100, 104, 109, 112, 113
CDMAM, 271, 272, 274
central enhancement, 346
chaotic, 374
circular average power spectrum, 202
classification, 305

- clinical breast exam (CBE), 122
 clinical trial, 294
 clustering, 376, 377, 392
 code word, 157
 coding redundancy, 165, 167, 180
 Cohen–Daubechies–Feauveau 5/3 (CDF 5/3), 179
 color image, 159, 170
 color segmentation, 374, 377, 392
 compression efficiency (CE), 161, 172, 179, 183
 compression measures, 161
 compression performance
 comparison, 185
 compression ratio (CR), 160, 161, 167, 168, 171, 183
 compression technique, 184, 185
 compression with reversible
 embedded wavelets (CREW), 175
 computed radiography (CR), 246–248, 263, 264,
 computed tomography (CT), 13
 computer-aided detection (CAD), 130
 computer-aided diagnosis (CAD), 154
 condition number, 211
 context, 167, 169, 173
 context modeling, 169
 context-based adaptive lossless image
 compression (CALIC), 167
 contraindications, 344
 contrast, 244, 247, 256, 257, 259, 266, 268, 272, 404
 contrast detail (CD), 244, 268, 270, 277
 contrast-enhanced breast MRI, 132
 contrast-enhanced digital
 mammography (CEDM), 6
 contrast-enhanced ultrasound (CEUS), 10
 Cooper’s ligaments, 43
 coordinate transformation, 208
 correct observation ratio (COR), 271, 273
 craniocaudal (CC) view, 154
 curvilinear structures (CLSs), 207
 cycoding redundancy, 163
 cyst, 49
- D**
- dark internal septation, 346
 data compression, 157, 158, 160
 data mining, 298
 deep inferior epigastric artery, 423
 deep superior epigastric artery, 423
 Delaunay triangulation (DLT), 182
 detection mammogram, 199
 detective quantum efficiency (DQE), 244, 248, 257, 258, 262, 266, 268
 diagnostic mammography, 86, 98
 diffuse optical imaging (DOI), 17
 diffuse optical spectroscopy (DOS), 17
 diffuse optical tomography (DOT), 17
 diffuse tumor growth, 55, 60, 62, 70, 71
 digital breast tomosynthesis (DBT), 6
 Digital Database for Screening Mammography (DDSM), 154, 202
 digital detectors, 244, 252
 digital images, 158
 Digital Imaging and Communications in Medicine (DICOM), 152, 172, 178, 183, 185, 186
 Digital Mammographic Imaging Screening Trial (DMIST), 129, 131
 digital mammography, 153, 154, 246, 253, 259, 263, 277
 direct conversion, 246, 250, 264
 direct-current level shifting, 179
 discrete cosine transform (DCT), 170
 discrete wavelet transform (DWT), 177, 179
 disease extent, 42
 Doppler ultrasound, 9
 duct, 48, 49, 53–55, 57
 ductal carcinoma *in situ* (DCIS), 103, 126, 133, 350, 357
 ductal enhancement, 347
 dynamic-contrast-enhanced MRI (DCE-MRI), 11

E

early breast cancer, 68
 eigenvalues, 211
 elastography, 329
 electrical impedance scanning (EIS),
 18
 electrical impedance tomography
 (EIT), 18
 electropotential differentials, 290
 Elias Omega and Even–Rodeh codes,
 166
 embedded block coding with
 optimized truncation (EBCOT),
 178, 179
 encoding and decoding, 157
 enhanced internal septations, 346
 entropy, 161, 162, 404
 entropy coding, 163, 179
 error resilience, 180, 181

F

false-negative cases, 200
 false-positive results, 126, 134
 fast and efficient lossless image
 compression system (FELICS), 169
 feature selection, 217, 221, 299
 fiber distributed data interface
 (FDDI), 156
 Fibonacci codes, 166
 fibroadenoma, 49, 344, 346, 354
 film-screen mammography (FSM),
 86, 114
 first-hottest regions, 384
 Fisher linear discriminant analysis
 (FLDA), 220
 fixed point, 210
 fixed-block-based (FBB), 184
 flat panel, 252, 254
 focus and foci, 346
 fractal analysis, 200, 216
 fractal dimension (FD), 201, 216, 381
 fractal geometry, 374
 free-response receiver operating
 characteristic (FROC), 219

full-field digital mammography
 (FFDM), 85, 114, 154
 full width at half maximum, 208
 fuzzy classifier, 406
 fuzzy *c*-means, 377, 378
 fuzzy inference system (FIS), 299

G

Gabor filters, 200, 207, 209
 gadolinium dose, 344
 gadolinium injection rate, 344
 Gaussian mixture model (GMM), 406
 genetic predisposition for breast
 cancer, 132
 Golomb codes, 166
 gradient-adjusted predictor (GAP),
 167
 grammar codes, 182
 gray-level co-occurrence matrix
 (GLCM), 214, 403

H

Haralick's texture, 200, 212
 Hausdorff, 201
 heterogeneous enhancement, 346
 high-risk screening, 355
 histopathology, 42
 homogeneous enhancement, 346
 Huffman code, 165

I

image compression, 159
 image database, 184
 image processing, 199
 image quality figure (IQF), 271, 273
 indirect conversion, 246, 251, 253
 inferior gluteal artery perforator
 (IGAP), 430
 information theory, 160, 161
 infrared camera, 374
 intermediate-risk breast cancer, 134
 interpixel redundancy, 163, 166
 intertumoral heterogeneity, 42, 73
 interval-cancer cases, 199
 intramammary lymph nodes, 352

intratumoral heterogeneity, 42, 73

J

JPEG 2000, 172, 176, 178

JPEG-LS, 167, 172, 174

K

k-means, 376, 378, 392

L

large-format histopathology, 42

leave-one-out (LOO), 223

lesion, 300

level of suspicion (LOS), 293

Levenstein and Elias Gamma codes,
166

linear discriminant analysis (LDA),
299, 406

linear enhancement, 347

lobar, 51

lobar growth pattern, 55, 57

logistic regression, 219

lossless compression, 170, 175

lossless compression for images
(LOCO-I), 169

lossless JPEG (LJPEG), 167, 170

lossy compression, 157

M

magnetic resonance elastography
(MRE), 12

magnetic resonance imaging (MRI),
10

magnetic resonance spectroscopy
imaging (MRSI), 12

malignant lesions, 86

mammogram, 99, 107, 112

Mammograph Electrical Impedance
Komputer (MEIK), 19

Mammographic Image Analysis
Society (MIAS), 184, 201

mammographic screening, 198

mammographic view, 86, 87, 114

mammography, 5, 7

mass enhancement, 349

mathematical morphology, 201

MATLAB[®], 304

mean glandular dose, 125

mean shift, 376, 378

median edge detection (MED), 167

median edge detection (MED)
prediction, 173

mediolateral (ML) view, 154

mediolateral oblique (MLO) view,
154

metastasize, 374

microcalcifications, 155

millisievert (mSv), 153

modulation transfer function (MTF),
244, 257, 259

molecular imaging, 21

morphological prognostic parameters,
42, 43, 66

mortality, 122

MRI-guided breast biopsy, 359

multifocality, 70

multimodality approach, 43, 77

multiplicative, 262, 264

multiresolution theory, 175

multivariate outliers, 298

N

neoadjuvant chemotherapy response
monitoring, 358

neoductgenesis, 59

neoplasm, 86

nipple changes, 98, 106

nipple discharge, 98, 107

nitroxide, 381

node, 211, 213, 221

noise power spectra (NPS), 244, 258,
261, 264

noise-equivalent quanta (NEQ), 244,
262

nonmass enhancement, 345

nonmaximal suppression, 209

normal breast tissue, 43, 44, 53

normalization, 299

O

optical mammography, 17

optical readout, 254, 264, 268
 orientation field, 207, 209, 212
 oriented texture, 200
 Otsu's thresholding, 207

P

palpable mass, 98, 100, 110
 parameters of breast MRI, 344
 parenchymal patterns, 46
 patient anxiety related to
 mammogram, 126
 pattern classification, 200, 217, 222
 pedicled TRAM (pTRAM), 422, 423
 perfect reconstruction (PR), 177
 perforator flap, 424, 425
 peripheral growth pattern, 55
 personal digital assistant (PDA), 178
 phase plane, 210
 phase portrait analysis, 200, 207, 210,
 213
 physical characterization, 257, 258,
 263
 pixel depth, 155
 pixel size, 155
 Poisson, 262
 portable network graphics (PNG), 182
 positioning techniques, 86, 90, 110,
 114
 positron emission mammography
 (PEM), 15
 positron emission tomography (PET),
 14
 positron emission tomography
 estrogen receptor (PET-ER)
 imaging, 22
 prior mammogram, 199
 probabilistic neural network (PNN),
 299, 406
 progressive image transmission, 188
 psammoma-body-like
 microcalcifications, 55
 pseudocolor, 375, 376
 psychophysical characterization, 268
p-values, 219, 222

Q

quadratic discriminant analysis
 (QDA), 406
 quantization, 179

R

radial basis function (RBF), 220
 radial frequency, 217
 radiation exposure, 125, 131
 radiographic techniques, 86, 114
 randomized controlled trials, 122,
 124, 131, 135
 receiver operating characteristic
 (ROC), 410
 receiver operating characteristic
 (ROC) curve, 201, 219
 rectus abdominis, 426, 427
 redundancy, 163
 region of interest (ROI), 181
 regional enhancement, 347
 relative standard deviation (RSD),
 262, 264
 Rice codes, 166
 risk factors, 300
 ROCKIT, 224
 Rose model, 269, 270, 275
 run-length matrix, 405

S

saddle, 211
 scintimammography, 16
 screen mammography, 154
 screen-detected cancer, 198
 screening mammography, 86
 screening recall rates, 125
 second opinion, 199
 segmental enhancement, 347
 segmental growth pattern, 55, 57
 segmentation-based lossless
 image-coding (SLIC), 182
 sensing electrode, 291
 sensitivity, 302
 sensitivity of mammography, 126,
 128, 133, 134
 sensor positioning map, 293

- set partitioning in hierarchical trees (SPIHT), 169
- sick lobe hypothesis, 52
- signal-to-noise ratio (SNR), 244, 257, 260, 270
- single-photon emission computed tomography (SPECT-CT), 14
- skin changes, 98, 106
- slicing with variable-block segmentation (SVBS), 183
- Society of Breast Imaging (SBI), 128
- sonoelastography, 9
- spatial resolution, 244, 248, 257, 259
- specificity, 302
- spiculations, 200, 202
- spiral, 211
- stellate distortion, 200
- stepwise regression, 220
- streamlines, 210
- subgross morphology, 41, 42
- subtle signs of cancer, 199
- superior gluteal artery perforator (SGAP), 430
- supplemental screening, 122, 134, 135
- support vector machine (SVM), 200, 221, 299, 406
- symptomatic breast, 292
- symptomatic patients, 86, 98
- T**
- temperature, 374, 384
- terminal ductal–lobular unit (TDLU), 48, 55, 59
- Ternary Comma codes, 166
- texture-flow field, 201
- thermal image, 378
- thermography, 20, 374, 381, 392
- tissue reconstruction techniques, 422, 424
- trajectory, 210
- transepithelial/transmembrane electrical potential (TEP), 288
- transform-based technique, 174, 181
- TransScan T-Scan 2000, 19
- trastuzumab, 443, 448, 460
- T-Scan 2000ED, 20
- t*-test, 219
- tumor size, 42, 66
- two-pass mixing modeling (TMW), 169
- two-sided geometric distribution (TSGD), 174
- U**
- ultrasound (US), 8
- ultrasound breast screening, 132, 134
- ultrasound ecocolor flow Doppler (US-ECD), 425
- unary codes, 166
- United States Preventive Services Task Force (USPSTF), 128
- univariate outliers, 298
- universal codes, 166
- universal modeling and coding, 168
- V**
- variable-block-size segmentation (VBSS), 183
- W**
- wavelet transform, 175
- WEKA, 303
- wrapper method, 299