Index

2D–3D Pose Estimation, 355
3D configuration error, 143
3D hand tracking, 133
3D optical flow, 544
3D video, 531
3D video processing, 531

absolute orientation, 457
Ackley function, 329
action hierarchy, 69
action primitives, 57, 69
actions, 57
activities, 57
adaptable body model, 536
adjoint transformation, 336
American sign language, 153
analysis-through-synthesis, 538
animation systems, 598
animation workflow, 604
annealing scheme, 329
annotation, motion, 501
Anschütz, Ottomar, 12
Aristotle, 2
articulated model, 109
articulated object, 362
axis-angle representation, 334

$BM^3E$ model, 200
background subtraction, 63
balance, 607
Baum–Welch re-estimation, 232
Bayesian inference, 274, 282
Bayesian propagation, 57, 58
beam search, 232
bidirectional model learning, 205
biped model, 109
blending weight, 546
Boltzmann–Gibbs measure, 320
Boltzmann-Gibbs transformation, 323
Borelli, Giovanni Alfonso, 5
BRDF, 551

challenges, 206
character sketch, 613
chronophotography, 22
cloned body-model, 218
cloned body-part, 218
cloth draping, 305
coevolution, 229
conditional mixture of experts, 201, 203
conditional models, 190, 191, 199, 200
constrained matching, 539
content-based, 478, 497, 498, 503
context model, 230
continuous movement recognition
(CMR), 213
cost function, 111
coupling two trackers, 143
crash test, 465
crash test dummy, 453
cumulative motion image, 61
da Vinci, Leonardo, 3
degrees of freedom, 112
detection, motion, 110
discrete tracking, 138
discriminative models, 190, 199, 200
distance transform, 274
Dobrushin contraction coefficient, 326
dynamic Bayesian network (DBN), 159, 162
dynamic reflectometry, 551
dynamic variance scheme, 328
dynamics, 22
dyneme, 225

Euclid, 3
expectation-maximization (EM), 272
exponential chart, 335
extent, 607

feature matrix, 500
feature sequence, 494
Feynman–Kac model, 323
fingerspelling segmentation in ASL, 155
forward kinematics, 349
forward–backward algorithm, 232
free-viewpoint video, 545
function, cost, 111

Gabor filters, 271
Gauss–Newton, 355
Gaussian process latent variable model (GPLVM), 159, 161
generative models, 191, 192

hidden Markov model (HMM), 60, 70, 226
Hill, Archibald Vivian, 13
humanoid robots, 57
hyperdynamic sampling, 194

image, motion, 110
imitation learning, 57
indexing, motion, 495
interacting particle system, 320
interacting simulated annealing, 324
inverse dynamics, 417
inverse kinematics, 349
inverted list, 496
iterated closest point (ICP), 275

Johannsson, Gunnar, 16
joint coordinate systems, 422
kinematic chain, 220, 361, 480
kinematic crosstalk, 423
kinematic jumps, 195

kinematic model, 219
kinematic trees, 4
kinematics, 22
kinesiology, 22
kinetics, 22

latent variable models, 195
leaning joint generative-conditional models, 203
level set, 270
Lie algebra, 268
locomotion, 22

manifold learning, 195
Marey, Etienne-Jules, 10
marginal auto-regressive (MAR), 159, 165
marginal nonlinear dynamic system (MNDS), 168
marker-less motion capture, 347, 541
marker-less, markerbased, 421
maximum likelihood (ML), 231
maximum likelihood learning, 198
mean shift, 111
mean shift algorithm, 111
mixing condition, 326
mocap, 214
model, 542
model, articulated, 109
model, biped, 109
model-based continuous tracking, 137
model-based tracking, 105, 127
Monte Carlo, 58
motion capture, 295, 421
motion capture data, 3D, 477, 479
motion content, 482
motion detection, 110
motion history images, 61
motion image, 110
motion segmentation, 110
motion style, 482
motion template, 500
motion vector, 221
motor primitives, 61
movement language, 598
movement representation, 600
movement synthesis, 418
multi-frame estimation, 458
multi-view acquisition, 536
multicamera system, 536
muscle tension, 610
musculoskeletal model, 424
Muybridge, Eadweard, 10
Newton’s method, 353
Newton, Isaac, 7
nonlinear dynamic system (NDS), 160, 167
nonlinear least squares, 276
normal map, 551
observation density, 222
open problems, 206
optic flow constraint, 280
optical flow, 278, 455
particle filter, 221, 320
Parzen estimator, 283
Parzen-Rosenblatt estimator, 338
performance literature, 605
Plücker line, 276, 301, 337
pose, 605
pose estimation, 350, 453
posture, 606
Powell optimization, 539
prior density, 222
probability density estimation, 271, 283
process density, 222
projective texturing, 546
property resolution, 619
prosthesis, 22
query-by-example, 495, 497, 498
region of interest, 106
relational feature, 479, 486
relightable 3D video, 551
relightable free-viewpoint video, 551
relighting, 551
retrieval, motion, 495, 501
rhythm, 612
rigid body motion, 351
Rodriguez formula, 301, 334
saddle point location algorithms, 194
scene flow, 544
scene reconstruction, 531
segmentation, motion, 110
segmentation, temporal, 493
selection kernel, 324
shape prior, 274
silhouette matching, 538
silhouettes, 63
similarity, motion, 478, 481
skill model, 229
skinning, 349
soft shadowing, 547
spatio-temporal XT-slices, 60
state density, 221
statics, 22
statistical framework, 57
stereo depth data, 369
stereo vision, 453
succession, 612
surveillance, 57, 59
surveillance scenario, 63
tempo, 612
temporal coherence, 539
temporal inference, 193
texture, 271
time mesh, 326
top-down and bottom-up processing, 203
tracking objects of high dofs, 133
tracking, model-based, 105, 127
trajectory, 481
twist, 268
twist representation, 335
variational method, 280
video-based rendering, 531
Viterbi alignment, 232
Weber brothers, 8
XOR, 538
XOR comparison, 538
ISBN 1-4020-0642-X

25. F. Mokhtarian and M. Bober: *Curvature Scale Space Representation: Theory, Applications, and MPEG-7 Standardization*. 2003
ISBN 1-4020-1233-0

ISBN 1-4020-1293-4

ISBN 1-4020-1503-8


ISBN 1-4020-3274-9

ISBN 1-4020-3442-3

ISBN 1-4020-3857-7

ISBN 1-4020-4178-0

33. K. Daniilidis and R. Klette (eds.): *Imaging Beyond the Pinhole Camera*. 2006
ISBN 1-4020-4893-9

ISBN 978-1-4020-5457-0


36. B. Rosenhahn, R. Klette and D. Metaxas (eds.): *Human Motion*. Understanding, Modelling, Capture, and Animation. 2008
ISBN 978-1-4020-6992-4