

---

# Index

- 3D, 9, 10, 57, 149, 221, 224, 227–229, 233–238, 241–244, 254, 258–260, 264, 301, 302, 305, 309, 310, 312, 318, 322, 326
- A priori, 28, 32, 34, 37, 56, 100, 103, 105, 106, 109, 166, 167, 178–180, 184, 186, 189, 192, 199, 210, 225, 248, 250, 254, 283, 284, 286, 287, 289, 294–296, 298
- Accident, 8, 77
- Action
  - Selection, 9, 13, 177, 199
- Actuator, 3, 6, 188
- Adaptive cruise control, 8, 77
- Algorithm
  - Baum-Welch, 274, 275
  - BOF (Bayesian Occupancy Filter), 8, 77–83, 85, 86, 88–91, 95–98
  - EM (Expectation-Maximization), 106, 107, 115, 274
  - Generalize Distributive law, 43
  - Global alignment, 106, 108–111, 113
  - Global Alignment with Uncertainty, 108
  - Global alignment with uncertainty, 110, 113
  - K-mismatch, 108
  - Least-square, 207
  - MCSEM (Monte Carlo Simultaneous Estimation and Maximisation), 9, 44, 205, 206, 214, 218, 219, 229
  - Metropolis, 213
  - Minimum energy, 109
  - Monte Carlo, 9, 44, 157, 186, 205, 206, 211–214, 218, 219, 222, 257, 260
  - Monte Carlo Markov Localization, 157
  - MRBT (Multi-Resolution Binary Tree), 44
  - Particle filter, 13, 60, 65, 155, 165, 186, 199, 298
  - POMDP (Partially Observable Markov Decision Process), 12, 100, 113–116, 120, 121, 124, 154, 155, 162, 182, 183, 186
  - SIFT (Scale-Invariant Feature Transform), 101
  - SLAM (Simultaneous Localization and Mapping), 8, 78, 99–102, 111, 115, 116, 122, 124
  - SRA (Successive Restriction Algorithm), 43
- Allocentric, 159, 302, 303, 310, 313
- Ambiguities, 12, 70, 129, 130, 132, 310, 316
- Animal, XI, XII, 8, 99, 121–124, 130, 153–155, 157–161, 177
- Ant, 157, 159
- API, 21, 41, 44, 256
- Articulatory, 11, 329–333, 335–342, 346, 347, 349, 351, 352
- Artificial Intelligence, 3, 12, 134, 214
- Atlas, 10, 236–260
- Attention, 9, 177, 185, 191–195, 198, 199
  - Focusing, 9, 177
- Auditory, 11, 12, 124, 132, 329, 331, 333–336, 346–349, 352
- Automotive Industry, 7, 8, 77

- Autonomous, XII, 4, 9, 51, 54, 74, 91, 94, 99, 100, 111, 119, 130–132, 177, 180, 199, 263, 264
  - Navigation, 51, 99, 100
  - Robotics, 4, 180, 199
- Avatar, 10, 263–265, 267–269, 272, 274–276
- Babbling, 11, 329–331, 338, 342, 343
- Baby, 11, 329–332, 335, 339–341, 345, 347, 352
- BACS (Bayesian Approach to Cognitive Systems), XII, 263
- Bayesian
  - CAD systems, 9, 205, 206, 209, 214, 219–222, 228, 229
  - Filter, 8, 13, 46, 64–66, 78, 80, 88, 90, 91, 155
  - Maps, 8, 153, 154, 163–171, 199
  - Net, 8, 12, 13, 46, 47, 129–142, 144–149, 155, 182, 207, 249
  - Occupancy filter, 8, 77–83, 85, 86, 88–91, 95–98
  - Program, 21, 23, 24, 27, 29–32, 35, 36, 44–47, 56, 58, 63, 64, 68, 82, 83, 85, 86, 88, 89, 105, 106, 135, 178–180, 183–186, 188, 189, 191, 192, 196, 210, 211, 241, 245–249, 255, 256, 259, 266, 268, 286, 322, 345
  - Programming, XII, 7, 13, 19, 35, 41, 46, 47, 86, 104, 105, 129, 130, 134, 135, 177, 183, 302, 305, 329
  - Subroutines, 35
- Behaviour
  - Animal, XI
  - Avoidance, 36, 94
  - Combination, 36, 163
  - Homing, 36, 38–41
  - Phototaxy, 36
  - Reactive, 26, 29, 102, 160, 265, 266, 268, 271, 272
- Belief, 113, 114, 144, 186
- BIBA (Bayesian Inspired Brain and Artefacts), XII, 116, 171, 196, 200, 263
- Brain, XI, 4, 99, 102, 122, 123, 194, 198, 282, 283, 293, 296, 298, 352
- CAD, 7, 9, 78, 205, 219, 222
- Calibration, 12, 58, 206, 224–226
- Camera, 8, 24, 51, 52, 91, 95–97, 100, 115–117, 119, 130, 132, 142, 143, 298
- Cartesian, 53, 56, 81, 89, 153, 156, 161, 170
  - Maps, 153, 170
- Cataglyphis, 157
- Causality, 4, 134
- Closest Point of Approach
  - Distance, 92, 93
  - Time, 92–94
- Closest point of approach, 92
- Closing the Loop, 115
- Closing the loop, 115, 121
- Cognition, 8
- Cognitive map, 99, 101, 121, 123, 157, 159
- Cognitive science, 12
- Collision, 8, 53, 71, 77, 78, 91–95, 229, 234
- Colour, 8, 29, 103–105, 129, 131, 132, 136–140, 142, 144–146, 198, 343
- Conditional independence, 23, 28, 34, 183, 184, 267
- Confidence, 53, 54, 65–72, 85, 134
- Configuration, 11, 24, 52, 53, 57, 59, 61, 63, 69, 123, 139, 168, 206, 215, 222, 224, 304, 310, 314, 318, 320, 329, 336, 337, 340, 342, 348, 349, 351
- Conflicts, 12, 334
- Conjunction, 19–23, 27, 38, 42–44, 61, 266, 334
- Cortex, 102, 123
- Cycab, 51, 52, 54, 55, 70, 83, 86, 91, 93–95
- Data
  - Association, 8, 59, 60, 62, 77–79, 95, 98
- DBN (Dynamic Bayesian Network), 13, 132, 155, 156, 182
- Decision, 3, 4, 12, 21, 28, 54, 100, 113, 154, 155, 162, 182, 183, 186, 197–199, 267, 274, 322
- Decomposition, 21, 23, 27, 28, 30, 32–38, 42–44, 46, 56, 64, 68, 82–84, 86–89, 97, 105, 106, 135, 137, 142, 145, 154–157, 162, 164–167, 170, 171, 178–180, 183, 184, 186, 189, 192, 197, 198, 211, 248, 267, 268, 271,

- 272, 286, 302–307, 324, 329, 345, 346
- Description, 19, 21–23, 30–33, 35–37, 39–42, 44, 56, 64, 68, 78, 79, 84, 86, 89, 93, 99, 106, 130, 131, 133, 135, 140, 141, 143, 156, 162–167, 179, 180, 184, 186, 189, 192, 196, 197, 211, 220, 222, 224, 227, 237–239, 241, 248, 268, 283, 286, 331, 338, 343, 345, 347, 351
- Disjunction, 19, 20
- Distribution
- Dirac, 33, 34, 56, 84, 86, 88, 89, 229, 248, 251, 252, 286, 287
  - Gaussian, 28, 56, 61, 63, 64, 81, 84, 95, 97, 106–108, 135, 138, 143, 149, 157, 168, 206, 207, 213, 215, 216, 220, 222, 228, 229, 241, 284–288, 297, 304, 307, 316, 324, 347
  - Gaussian mixture, 106–108, 138, 143
  - Joint probability, 21, 42, 82, 108, 134, 135, 137, 302, 323
  - Uniform, 28, 58, 63, 66, 67, 83, 84, 105, 138, 164, 167, 169, 187, 191, 192, 213, 226
- DNA, 109
- Dynamic Environment, 69, 77–79, 161, 162
- Dynamic Programming, 109
- Echographic, 10, 235–237, 241–248, 250–252, 254–260
- Egocentric, 53, 159, 280, 283, 284, 286
- Entropy, 11–13, 63, 114, 164
- Concentration theorem, 12
  - MaxEnt, 11–13
- EPFL (Ecole Polytechnique Fédérale de Lausanne), 25, 117, 119, 120
- EPFL (Ecole Polytechnique Fédérale de Lausanne), XII
- Estimation, 9, 44, 56, 63–66, 69, 70, 77, 78, 80–88, 90–92, 95, 97, 113, 124, 144, 147, 153, 156, 157, 161, 179–182, 184–187, 189, 192, 198, 205, 206, 211, 214, 216, 219, 226, 227, 241, 245, 250, 251, 254, 256, 304, 311, 322
- Experimental Data, 5, 6, 21, 23, 137, 138, 227, 313–316, 347, 349
- Eye, 10, 130, 141, 149, 177, 198, 279, 280, 282, 305, 306, 308–310, 322, 323, 334
- Filter, 8, 13, 46, 60, 64–66, 77–83, 85, 86, 88–91, 95–98, 101, 102, 130, 154, 155, 157, 165, 169, 180–183, 185–199, 285, 287, 289, 298
- Particle, 13, 60, 65, 155, 165, 186, 199, 298
- Fingerprint, 8, 99, 100, 102–106, 108–117, 119–124
- Formalism, XII, 7, 8, 13, 21, 41, 104, 109, 135, 154–156, 161–165, 170, 171, 205, 271, 294, 332
- Formant, 11, 329, 332, 334, 336–340, 342, 343, 346, 348, 349
- Fusion, 8, 12, 31–36, 44, 69, 78, 98, 132, 144, 163, 207, 267, 295, 319, 334
- Data, 35, 69, 207
  - sensor, 31–33, 35, 44, 78, 98, 132, 144, 179, 267
- Fuzzy Logic, 69
- Game, 10, 263–266, 268, 270–276, 352
- garbage model, 139
- Gateways, 101
- Gaussian
- Mixture, 106–108, 138, 143
- Gaze, 10, 143, 279, 281, 314, 319
- Geometric, 3, 9, 99, 101, 102, 104, 158, 205–208, 211, 213, 220–222, 224, 229, 237, 241–247, 338, 340, 343, 344, 346–348
- Uncertainties, 9, 205, 206, 221, 222, 224
- Gesture Recognition, 132, 149
- GPS (Global Positioning System), 51, 119
- Grid, 8, 13, 77–90, 92–98, 101, 102, 156, 157, 206, 309, 332, 341
- Haptic, 12
- Head direction cell, 158
- Heuristic, 43, 111, 114, 272–275
- Hidden variable, 3, 6, 131
- Hierarchies, XII, 8, 12, 23, 35, 154, 159, 160, 162, 163, 165, 171
- Hippocampus, 100, 121–124, 158
- Ignorance, 4

- Ill-posed problem, 12, 35, 36, 301
- Illusion, 12, 133, 144, 263, 281
- Imitation, 11, 329–332, 338, 342–345, 348–352
- Incomplete, 3, 5, 9, 129–131, 162, 233, 243
- Incompleteness, 3–6, 11, 13, 41, 130, 149
- Industrial, 4, 264, 276
- Industry, 7, 8, 77, 271, 276
- Infer, 3, 11, 86, 129, 130, 157, 159, 193, 205, 241, 243, 249, 267, 304, 323, 329, 340, 346
- Inference, XI, XII, 5, 6, 8, 10–13, 19–21, 24, 34, 41–43, 69, 83, 89, 97, 130, 132, 133, 157, 167, 186, 193, 211, 215, 219, 256–258, 260, 283, 286, 287, 298, 304, 307, 308, 323, 324, 347
  - Engine, 41–43, 219, 308
  - Probabilistic, 130
- Information
  - Context, 131
  - Intrinsic, 131
- Interaction, XII, 6, 10, 103, 131, 132, 149, 263, 264, 272, 279, 282, 283, 286, 289–292, 295, 298, 329, 330, 353
- Inverse, 9, 10, 12, 35, 36, 205, 206, 263, 265, 266, 268, 271, 276, 301
  - Programming, 10, 263, 265, 266, 268, 271, 276
- Jaw, 11, 329, 331, 332, 334, 335, 340, 342
- Kalman, 13, 80, 81, 101, 130, 154, 155, 157, 165, 169, 199, 207, 287, 298
  - Extended Kalman Filter, 101, 130, 298
  - Filter, 13, 80, 81, 101, 130, 154, 155, 157, 165, 169, 207, 287, 298
- Khepera, 19, 24–27, 29, 32, 38, 40, 41
- Kidnapping, 116, 121
- Kinematic Graph, 207, 245
- Kinematic graph, 207–209, 220, 222, 223, 225, 227–229, 245, 246
- Kinematics, 206, 222–224
- Koala, 154, 167
- Landmark, 11, 51, 55–61, 65, 71, 100, 104, 123, 158, 159, 194, 235, 342
- Language, 7, 19, 41, 44, 95, 132, 219, 265, 271, 329–331, 334, 342, 352, 353
- Larynx, 11, 329, 332
- Laser, 8, 51, 52, 54, 55, 85, 100, 103, 105, 112, 115–117, 119, 129, 130, 132, 134, 144, 149, 177
- Learn, 26, 29, 99, 121, 132, 139, 264, 265, 330, 336, 347, 352
- Learning, XII, 5, 6, 10, 11, 22, 23, 26, 30, 32, 33, 37, 44, 52, 94, 99, 102, 104, 106, 129, 131, 138, 149, 153, 154, 159, 164, 166, 168, 179, 180, 184, 186, 189, 192, 248, 254, 255, 259, 260, 263, 265, 273, 274, 329, 331, 336, 347, 348, 350–352
  - By imitation, 149
- Likelihood, 57, 59–61, 91, 106, 108, 144, 147, 269, 316
- Lip, 11, 329, 331, 332, 334, 335, 340, 342, 346, 349
- Localization, 8, 13, 44, 51, 53–55, 57–66, 70–74, 78, 99–102, 104, 106, 113–116, 119–121, 123, 124, 149, 154–157, 162, 164, 165, 167, 169–171, 180, 182, 233, 243
  - Global, 51, 99, 100, 120
- Localize, 51, 53, 99, 102, 104, 111, 113, 121, 156, 157, 244, 251
- Logic, XI, 3, 5–7, 11, 20, 46, 69, 130, 160, 161
- Logical proposition, 19, 20
- MAP (Maximum A Posteriori), 44, 210
- Marginalization, 21, 38, 42, 91, 304
- Markov, 12, 13, 46, 80, 100, 113, 130, 154–157, 162, 164, 165, 180–183, 186
  - Decision process (MDP), 113, 155, 162, 186
  - HMM (Hidden Markov Models - Input/output), 155, 180, 182
  - HMM (Hidden Markov Models), 13, 46, 130, 154, 155, 162, 180
  - Localization, 13, 154–157, 162, 164, 165, 180, 182
  - Partially Observable Decision Process (POMDP), 12, 100, 113–116, 120, 121, 124, 155, 162, 182, 183, 186
- Mean, 23, 27–29, 33, 42, 58, 84, 97, 103, 107, 111, 115, 117, 137, 157–159, 168, 178, 179, 188, 194, 222, 229, 285, 286, 288, 290, 293, 295, 309,

- 316, 319, 321, 325, 332, 340, 343, 347, 348, 352
- Mesh, 10, 209, 220, 236, 237, 241, 242, 258–260
- Methodology, XI, XII, 7–9, 41, 77, 122, 124, 163, 194–197, 199, 205–207, 229, 235–237
- Mixture, 13, 41, 106–108, 138, 143
- Mobile
- Robot, 8, 9, 51, 77–80, 100, 103, 104, 111, 129, 131, 132, 153–155, 163, 167, 177, 179, 195, 199, 206, 212
- Modalities, 132
- Modality, 12, 124, 130, 149, 301, 331
- Model
- Articulatory, 11, 329, 331–333
  - Comparison, 66
  - Graphical, 12, 43
  - Mixture, 13, 41
  - Observation, 61, 66–68, 89, 155, 157, 186, 187, 191
  - probabilistic, XI, XII, 13, 21, 67, 130, 154, 155, 157, 162, 163, 170, 171, 207
  - Symbolic, 130
  - Transition, 66, 155
  - Variable Linear Articulatory, 331, 332, 338, 339, 343, 347, 349, 351
- Modeller, 9, 26, 27, 205, 206, 219, 222, 283, 323
- Models, 130
- Neuromimetic, 130
  - Probabilistic, 130
  - Symbolic, 130
- Motion, XII, 10, 12, 87, 89, 113, 124, 198, 206, 227, 229, 256, 263, 279, 281–289, 296–298, 301–305, 307–314, 316–318, 321, 324, 327
- Parallax, 10, 301
- Motor, 3, 4, 7, 9, 11, 24–26, 29, 41, 51–53, 64, 65, 67, 69, 70, 72–74, 132, 155, 156, 163, 168, 169, 177–190, 192, 196–199, 274, 298, 317, 329–331, 335, 338, 339, 342, 346–349, 351, 352
- Movement, 10, 26, 39, 53, 65, 69, 80, 84, 99, 160, 169, 227, 234, 235, 244, 279–282, 301, 311, 317, 319, 322, 330–332, 335
- MRI, 9, 10, 234, 235, 258
- Navigation, 7, 8, 13, 51, 52, 54, 69, 70, 74, 99–102, 111, 113, 114, 121, 124, 129, 153–155, 157–161, 163, 168, 194, 199, 298
- Negation, 19, 20
- Nervous system, XI, 158, 198, 333
- Neurobiology, 99, 121, 124
- Noise, 4, 80, 81, 95, 101, 266, 284, 285, 288, 289, 297, 298, 324
- Noisy, 4, 6, 289, 334
- Normalization, 20, 21, 42, 107, 114, 247, 252, 287
- Object
- Composite, 145
- Object recognition, 8, 129–134, 142, 149
- Observation, 51, 53, 55–64, 66–68, 70, 77–80, 82–84, 88–90, 95, 101, 113, 117, 121, 122, 130, 134, 149, 155, 157, 160, 178–181, 183–187, 191–194, 267, 269, 270, 272, 274, 302–305, 307, 309, 323, 324, 331
- Obstacle, 25–30, 36, 38, 39, 53, 55, 69–71, 74, 78, 79, 85, 92–94, 195, 196
- Avoidance, 26, 36, 69–71, 74, 196
- Occlusion, 8, 77–80, 85, 94, 95, 97, 109, 110
- Occupancy, 8, 13, 77–85, 87–92, 94, 97, 101
- Odometry, 102, 160, 161, 298
- Optical flow, 10
- Outlier, 57, 58, 60
- OVAR, 10, 293, 294, 296–298
- Palate, 11, 329, 335
- Parallel Map theory (PMT), 158, 159
- Parametric forms, 21, 23, 28–30, 32–34, 37, 44, 56, 64, 68, 82, 84, 86, 89, 106, 135, 137, 138, 156, 165, 166, 179, 180, 184, 186, 189, 190, 192, 211, 248, 249, 267, 268, 286, 324, 345, 347
- Path integration, 159
- Pedestrians, 55, 95
- Perceive, 3, 51, 55, 77, 103, 104, 129, 157, 163, 196, 266, 282, 301, 308, 317, 330, 331, 352
- Perception, XI, XII, 9–12, 51, 52, 54, 55, 63, 70, 77, 104, 115, 130, 155, 156, 162, 164–166, 168, 177, 193, 198,

- 199, 221, 222, 233, 266, 279, 281, 282, 284, 297, 301–308, 311–313, 315, 318, 319, 322–325, 329–331, 334–336, 352
- Perception-space
  - Tracking, 51
- Perceptual aliasing, 63, 65, 99, 101, 102, 124, 170
- Phenomenon, 3, 21, 30, 79, 168, 169, 181, 187, 227, 267, 279, 301
- Phylogenetic, 159
- Place cell, 121–123, 158
- Pose, 10, 101, 113, 124, 156, 205–210, 213, 221, 222, 224, 225
- Prediction, XI, 11, 67, 68, 77, 78, 80–86, 88, 90, 91, 97, 159, 161, 164, 167, 171, 180–186, 189, 192, 194, 195, 297, 315, 325, 329, 335, 336, 352
- Preliminary knowledge, 5, 6, 20, 30, 105, 137
  - Dependencies, 137
- Preprocessing, 132, 133
- Probabilistic
  - Computation, XI, 21, 298
  - If-then-else, 39, 41
  - Inference, XI, 5, 12, 43, 130
  - Logic, XI
  - Model, XI, XII, 13, 21, 67, 130, 154, 155, 157, 162, 163, 170, 171, 207
  - Reasoning, XI, 11, 20, 74, 78, 79
- Probability as logic, 11
- ProBAYES, XV, XVI, 45, 77, 177, 205, 233
- ProBT®, 21, 28, 41, 43–46, 256, 257, 308, 347
- Programmer, 3–5, 7, 21, 22, 26, 30, 36, 131, 162, 163, 166, 205, 270, 271
- Psychophysic, 308
- Question, XII, 9, 19, 21, 23, 24, 27, 29, 30, 32–39, 42–44, 56, 58, 64, 68, 83–86, 88, 89, 104, 106, 116, 135, 139, 153, 155–157, 163–167, 169–171, 177–186, 189, 191–195, 197, 198, 211, 247–249, 267, 268, 286, 304, 307, 329, 345, 348, 349
- Radiographic, 10, 235–237, 240–244, 246–248, 250, 254–260, 332
- Rat, 99, 121, 124, 158
- Rational, 3, 5, 7
- Representation, 3, 8, 10, 11, 26, 46, 52, 77–80, 86, 88, 95, 97–102, 111, 119, 121–124, 130, 131, 134, 135, 137, 138, 153–163, 170, 186, 199, 206, 220, 221, 229, 233, 244, 247, 249, 296, 305, 329–331, 335, 343, 351, 352
- Resolution principle, 6, 20
- Retina, 10, 198, 301, 318
- Road, 8, 77, 95
- Rule
  - Conjunction, 20–22, 27, 38, 42
  - Marginalization, 21, 38, 42, 304
  - Normalization, 20, 21
- Safe travelling distance, 92
- Scanner, 9, 10, 103, 115, 117, 129, 132, 134, 144, 149, 234, 235, 258
- Search space, 34, 43, 215, 217, 225
- Self-organizing map, 101
- Sensor
  - Calibration, 206
  - Fusion, 132
- Sensory-motor, 3, 4, 7, 9, 41, 51–53, 64, 65, 67, 69, 70, 72–74, 177, 198, 274, 329–331, 342, 347, 348, 351
  - Trajectory, 7, 51–53, 64, 65, 67, 69, 70, 72, 74
- Shape
  - Calibration, 206
- Situations analysis, 130
- Smart, 116, 119, 120
- Spatial, 8, 74, 99–102, 121–124, 129, 145, 153, 157–160, 163, 263, 270
- Spatial Semantic Hierarchy (SSH), 160, 161
- Species, 4, 10, 214, 279, 282
- Specification, 9, 21–23, 30–33, 35, 37, 39, 44, 46, 54, 56, 64, 68, 83, 84, 86, 89, 106, 135, 156, 165, 166, 179, 180, 184, 186, 189, 192, 196, 199, 205–207, 211, 219, 222, 229, 248, 268–270, 273, 275, 286, 302, 323, 324, 329, 345
- Speech, 11, 129, 132, 149, 329–335, 338, 342, 352, 353
- Standard deviation, 28, 29, 32, 56, 61, 63, 107, 168, 222, 250, 285, 286, 295, 325, 332, 338, 347

- State-space tracking, 51  
 Stereovision, 109  
 Strategies, XI, XII, 114, 130, 155, 157,  
 159, 161, 163, 188, 190, 330, 342  
 Structure from motion, 10, 301  
 Subjectivist, 5, 11  
 Subsumption, 39  
 Surgery, 9, 227, 233–235, 237  
 Symbol, 3, 109, 110, 166, 170, 308  
     grounding problem, 3  
 Symbolic, 3–5, 43, 99, 101, 130, 165–167,  
 169  
 Synergies, XII, 198
- Tactile, 11, 329, 331, 335, 336  
 Target, 8, 77–80, 330, 333, 344, 345, 347,  
 349–351  
 Time  
     To collision, 92  
 Tomography, 9, 234  
 Tongue, 11, 329, 331, 332, 334, 335, 337,  
 340, 342, 346, 347  
 Topologic, 160  
 Topological Map, 111, 117, 119  
 Topological map, 99–102, 104, 106, 111,  
 112, 114, 115, 117–120  
 Topology, 101, 111, 119, 134, 239, 258,  
 260, 266  
 Tracking, 8, 12, 51, 53, 55–57, 60, 63–72,  
 77–79, 91, 95, 96, 165, 229, 333  
 Training, 10, 135, 136, 139, 148, 265, 267,  
 272, 274, 276  
 Trajectory, 7, 51–53, 55, 63–65, 67,  
 69–74, 92, 115, 118–120, 160, 170,  
 234, 324
- Uncertain, 6, 12, 77, 130, 162, 206, 241,  
 243, 298, 323  
 Uncertainties, 130  
 Uncertainty, 3–7, 9, 11–13, 20, 41, 55, 56,  
 60, 62, 78–80, 95, 97, 100, 103, 104,  
 108–111, 113–115, 124, 130, 131,  
 134, 149, 154, 167, 205–208, 210,  
 221–224, 226, 229, 240–244, 249,  
 250, 269, 288, 289, 297, 302, 311,  
 313, 316, 319, 322  
 Unreal tournament, 10, 264, 266, 270,  
 273, 275
- Variables  
     Context, 135  
     Intrinsic, 135  
 Velocity, 78, 81–84, 86–95, 97, 280,  
 282–286, 289–291, 293–297, 301,  
 305, 307, 308, 314, 321, 335  
 Ventriloquism, 12  
 Vestibular, 10, 12, 279, 280, 282–286,  
 289–291, 295, 298  
 Video game, 10, 263, 265, 266, 274–276  
 Visual, 8, 10, 11, 51, 103, 123, 129,  
 134, 144, 145, 194, 198, 222, 260,  
 280–286, 288, 290, 291, 294, 295,  
 297, 298, 301, 302, 329, 331, 334,  
 337, 346, 351  
     servoing, 51  
 Visuo-vestibular, 10, 12, 279, 282, 283,  
 286, 289, 291, 295, 298  
 Vocal tract, 11, 329–332, 336, 340  
 Vocalization, 11, 329, 331, 338–345, 348,  
 349, 351  
 Voronoi graph, 101  
 X-ray, 9, 241

---

# Authors

- Abbas 12, 16  
Abry 330, 332, 334 342, 352, 353, 354,  
356, 357  
Adams 132, 150  
Adelson 12, 18  
Adobbati 266, 276  
Aho 108, 124  
Ahuactzin 43, 48, 163, 173, 214, 219, 230  
Aji 13, 14, 44, 47  
Alais 12, 14  
Alami 206, 230  
Albright 13, 14  
Amavizca-Ruiz 237, 238, 261  
Anastasio 12, 14  
Angelaki 282, 291, 293, 297, 299  
Arai 291, 299  
Arkin 51, 74  
Arleo 122, 123, 124  
Arnborg 12, 14  
Arras 78, 98, 126, 165, 174  
Arrigoni 263, 276  
Arrouas 333, 356  
Aslin 12, 14  
Aspert 133, 134, 150  
Atal 338, 356  
Attias 164, 172  
Augeras 207, 231  
Aycard 13, 14
- Badin 330, 331, 342, 353, 354, 357  
Baeza-Yates 108, 124  
Baille 51, 74  
Bailly 330, 331, 338, 353, 354  
Banks 12, 14, 15, 319, 326
- Bar-Shalom 77, 98, 207, 230  
Battaglia 12, 14, 123, 135  
Baum 274, 276  
Bayes 12, 14  
Beal 12, 17, 130, 150  
Beautemps 333, 342, 354, 356  
Becker 130, 134, 150, 301, 326  
Beeson 101, 125  
Bekey 12, 17  
Belkacem-Boussaid 12, 14  
Bennewitz 156, 174  
Benoît 330, 353  
Benson 282, 299  
Bernhardt 13, 14  
Bernstein 198, 200  
Berrah 330, 352, 353  
Berthommier 334, 356  
Berthoz 158, 160, 161, 172, 175, 198,  
200, 283, 299  
Bessière 13, 14, 16, 19, 41, 43, 47, 48, 69,  
75, 77, 78, 80, 86, 98, 130, 150, 154,  
155, 156, 162, 163, 172, 173, 174, 182,  
183, 190, 200, 201, 206, 214, 219, 230,  
263, 276, 302, 308, 319, 326, 330, 331,  
352, 353  
Bilmes 108, 125  
Bishop 81, 98, 130, 151  
Biswas 66, 75  
Bladon 334, 354  
Bodin 282, 299  
Boë 330, 332, 335, 338, 342, 352, 353,  
354, 356, 357  
Boismain 13, 17  
Bonasso 51, 74, 132, 150



- Borrelly 13, 14  
 Bosma 335, 354  
 Bothorel 332, 354  
 Bourdoncle 310, 311, 319, 321, 325  
 Boutillier 155, 162, 172, 173  
 Boyen 186, 200  
 Boyle 284, 289, 300  
 Bozma 194, 201  
 Brafman 13, 14  
 Braillon 69, 75  
 Breazeal 330, 354  
 Bressan 301, 326  
 Bretthorst 12, 14  
 Brooks 41, 47, 330, 354  
 Bruyninckx 194, 200  
 Bücken 156, 174  
 Bülthoff 12, 18  
 Burgard 13, 15, 18, 69, 74, 156, 157, 172, 174, 182, 194, 200, 212, 230  
 Burgess 122, 123, 125, 158, 173  
 Burnham 334, 354  
 Burr 12, 14  
  
 Cacucci 122, 123, 125  
 Campbell 334, 354, 356  
 Caplat 130, 150  
 Cassandra 13, 14, 16, 78, 98, 113, 114, 125, 154, 173, 182, 200  
 Castellanos 101, 125  
 Castle 12, 16  
 Cathiard 330, 331, 335, 353, 356, 357  
 Caudek 314, 315, 316, 325  
 Chase 335, 355  
 Chatila 51, 75, 101, 102, 125, 126  
 Chaumette 51, 74, 75  
 Cheeseman 101, 126  
 Chen 13, 17, 80, 86, 98  
 Chistovich 333, 354  
 Cho 122, 125  
 Choset 101, 102, 115, 125, 126  
 Chou 13, 16  
 Clark 101, 125, 160, 174  
 Clément 283, 299  
 Cohen 282, 283, 285, 289, 291, 293, 295, 299, 300  
 Colas 183, 190, 200, 201  
 Conradt 194, 201  
 Cooper 12, 14, 43, 47  
 Corbillon 233, 261  
  
 Cornilleau-Pérès 301, 309, 311, 312, 319, 321, 325  
 Coste 13, 14  
 Coué 77, 80, 86, 98, 206, 230  
 Cox 12, 14, 154, 173  
 Cremers 156, 172, 174, 182, 200  
 Cressant 123, 125  
 Csorba 101, 125  
  
 Dagum 43, 47  
 Darlot 12, 18, 283, 300  
 Darwiche 13, 14  
 Davalo 130, 150  
 Davis 331, 338, 352, 353, 354, 355, 356, 357  
 Dayan 122, 123, 125  
 De Boer 352, 354  
 Dean 155, 162, 172, 173  
 Dedieu 13, 14, 162, 172  
 Dekhil 13, 14  
 Delcher 13, 15  
 Delessert 130, 150  
 Delgutte 334, 354  
 Dellaert 13, 15, 156, 157, 172, 174, 212, 230  
 Demoment 12, 17  
 Dempster 274, 276  
 Des Tuves 13, 17  
 Diard 13, 16, 46, 47, 130, 150, 153, 154, 155, 156, 163, 169, 173, 174, 182, 200, 302, 308, 319, 326  
 Dichgans 289, 299  
 Dickman 293, 297, 299  
 Dijkstra 300, 309, 312, 325  
 Dissanayake 101, 125  
 Dobler 134, 151  
 Dodd 334, 354, 356  
 Domini 314, 315, 316, 325  
 Donald 13, 15  
 Dose 12, 17  
 Dostrovsky 121, 123, 126  
 Douglas 103, 125  
 Douillard 13, 17  
 Drewing 12, 15  
 Droulez 284, 297, 299, 301, 309, 310, 311, 312, 313, 314, 319, 321, 325, 326  
 Duboudieu 13, 17  
 Dufourd 102, 125  
 Durrant-Whyte 101, 125, 126, 154, 155, 157, 173

- Eaton 132, 150  
 Eichenbaum 122, 125  
 Elfes 83, 98  
 Erickson 12, 15, 17, 18  
 Ernst 12, 15, 319, 326  
 Escudier 330, 333, 334, 356, 357  
 Espiau 13, 14
- Fant 338, 354  
 Fink 132, 150  
 Fisher 12, 17  
 Florez-Larrahondo 274, 276  
 Fortman 77, 98  
 Fortmann 207, 230  
 Fougère 12, 15  
 Fox 13, 15, 18, 69, 74, 154, 155, 156, 157,  
 162 172, 174, 182, 190, 194, 200, 212,  
 230  
 Fraichard 69, 74, 77, 80, 86, 98, 206, 230  
 Franz 160, 161, 173  
 Freeman 130, 132, 134, 150, 322, 323,  
 326  
 Frey 12, 15  
 Fritsch 132, 150  
 Fröhlinghaus 156, 174  
 Fry 12, 15
- Gabioud 330, 332, 354  
 Gadeyne 194, 200  
 Gallistel 111, 125  
 Garnier 69, 74  
 Garrido 13, 17  
 Geisler 12, 15  
 Geoffroy 13, 17  
 Gepshtein 12, 15  
 Gerstner 122, 123, 124  
 Geweke 212, 213, 230  
 Ghahramani 13, 16, 155, 174  
 Gielen 301, 304, 312, 325  
 Giese 122, 125  
 Giralt 51, 75  
 Glasauer 283, 299  
 Glauser 117, 126  
 Glotin 330, 352, 353  
 Goldstein 332, 354  
 Gondran 209, 230  
 Gopnik 12, 15  
 Gordon 287, 299  
 Gothard 123, 125, 158, 173  
 Graham 301, 326
- Grandy 12, 18  
 Gray 280, 299  
 Grefenstette 214, 230  
 Grootenboer 12, 18  
 Grove 13, 15  
 Guedry 279, 282, 296, 299  
 Guenther 331, 355  
 Guérin 338, 354  
 Guestrin 186, 200  
 Guiard Marigny 332, 355  
 Gusev 12, 15  
 Gutmann 13, 15
- Hafner 101, 125  
 Hähnel 156, 172, 174  
 Hall 338, 356  
 Halpern 12, 15  
 Hanks 155, 172  
 Hanson 12, 15  
 Hardcastle 335, 355  
 Harnad 3, 15  
 Hartley 123, 125, 158, 173  
 Hassan 235, 261  
 Hauskrecht 162, 173  
 Hayes 12, 17  
 Heckerman 155, 174  
 Heidbreder 12, 15  
 Henderson 12, 14  
 Hennig 156, 174  
 Herbert 160, 174  
 Hermosillo 51, 69, 74, 75  
 Hess 282, 291, 293, 297, 299  
 Highstein 284, 289, 300  
 Hillis 12, 15  
 Hofmann 156, 174  
 Holland 214, 230  
 Hoole 335, 355  
 Huber 132, 150
- İstefanopulos 194, 201
- Jaakkola 13, 16, 17  
 Jackson 130, 150  
 Jacobs 12, 14, 16, 18, 41, 47, 159, 173  
 Jacquemier 255, 261  
 Jakobson 331, 355  
 Jaynes 5, 11, 12, 162, 173, 241, 261  
 Jazwinsky 79, 80, 98  
 Jeka 12, 16  
 Jensen 109, 126, 134, 150, 207, 230

- Johnston 319, 326  
 Jong 101, 125  
 Jordan 12, 13, 16, 17, 41, 47, 155, 174  
 Juang 154, 155, 174  
  
 Kaelbling 13, 15, 16, 78, 98, 113, 114,  
 125, 154, 162, 173, 182, 186, 200  
 Kali 122, 123, 125  
 Kalman 81, 98  
 Kaminka 266, 276  
 Kanade 109, 125  
 Kandel 333, 356  
 Kapellos 13, 14  
 Kasif 13, 15  
 Kavraki 163, 173  
 Keller 212, 230  
 Kent 331, 335, 355  
 Kepple 242, 250, 254, 261  
 Kersten 12, 15, 16  
 Kiefer 235, 261  
 Kiemel 12, 16  
 Klein 69, 75  
 Knill 12, 16  
 Knuth 12, 16  
 Koenderik 301, 326  
 Koenig 13, 16, 182, 201  
 Koike 69, 75, 181, 185, 197, 200  
 Koller 13, 16, 66, 75  
 Konolige 13, 15, 16  
 Koopman 12, 18  
 Koopmans-Van Beinum 331, 355  
 Körding 12, 16  
 Kortenkamp 51, 74, 101, 125, 132, 150  
 Krell 156, 174  
 Kruppa 13, 15  
 Kshirsagar 242, 261  
 Kuhl 331, 338, 344, 345, 350, 355  
 Kuipers 101, 125, 126, 160, 161, 173  
 Kurien 13, 14, 113, 114, 125  
  
 Labhart 157, 159, 173  
 Laboissière 300, 342, 352, 353, 355  
 Laird 274, 276  
 Lakemeyer 156, 172  
 Lallouache 334, 356  
 Lambrinos 157, 159, 173  
 Lamiroux 51, 75  
 Lamouret 109, 117, 126  
 Lamouret 301, 302, 312, 317, 318, 326  
 Landgren 335, 355  
  
 Landy 12, 15, 319, 326  
 Lane 162, 173, 186, 200  
 Laplace 11, 16  
 Latombe 13, 14, 163, 173  
 Laugier 51, 69, 74, 75, 80, 86, 98, 206,  
 231  
 Laumond 51, 75  
 Laurens 284, 297, 299  
 Lauritzen 12, 16, 134, 150  
 Lawton 157, 173  
 Le Hy 263, 276  
 Lebeltel 13, 14, 19, 47, 130, 150, 162,  
 163, 172, 173, 190, 200, 263, 276, 302,  
 308, 319, 326  
 Lefebvre 194, 200  
 Leitner 235, 261  
 Leonard 101, 126, 154, 155, 157, 173  
 Lerner 66, 75  
 Lever 122, 123, 125  
 Levitt 157, 173  
 Lewinnek 235, 261  
 Liljencrants 352, 355  
 Lindblom 335, 352, 355  
 Linden 12, 17  
 Lisien 102, 126  
 Little 101, 126  
 Littman 13, 16, 78, 98, 154, 162, 173,  
 182, 186, 200  
 Loevenbruck 330, 353  
 Longuet-Higgins 301, 305, 326  
 López-de Teruel 13, 17  
 Lowe 101, 126  
 Lozano-Pérez 13, 17, 206, 230  
 Lubker 335, 356  
 Luby 43, 47  
 Luzeaux 102, 125  
  
 MacDonald 335, 356  
 MacKay 212, 230  
 Mackenzie Beck 333, 355  
 MacNeilage 331, 335, 352, 354, 355, 356  
 Maeda 332, 354, 356  
 Maes 41, 47  
 Malis 51, 75  
 Mallot 160, 161, 173  
 Maloney 319, 326  
 Mamassian 12, 16  
 Marin 310, 311, 319, 321, 325  
 Marjanovic 330, 354  
 Marshal 266, 276

- Martin 335, 355  
 Martinelli 102, 126  
 Maskell 287, 299  
 Mason 13, 17  
 Matalon 12, 17  
 Matsuo 282, 283, 289, 291, 295, 299, 300  
 Matyear 331, 338, 356, 357  
 Mayhew 301, 326  
 Mayne 298, 299  
 Mazer 13, 14, 16, 17, 19, 43, 47, 48, 77,  
     78, 98, 130, 150, 154, 155, 162, 163,  
     172, 173, 182, 200, 206, 214, 219, 230,  
     302, 308, 319, 326  
 McAllister 335, 355  
 McEliece 13, 14, 44, 47  
 McGuire 132, 150  
 McGurk 335, 356  
 McLachlan 41, 47  
 McNaughton 123, 124, 125, 126, 158,  
     173  
 Mekhnacha 13, 14, 43, 47, 48, 78, 80, 86,  
     98, 162, 172, 206, 208, 219, 230, 231,  
     243, 261  
 Meltzoff 331, 338, 344, 345, 350, 355, 356  
 Ménard 333, 356  
 Merfeld 12, 18, 282, 283, 293, 299, 300  
 Meuleau 162, 172  
 Meyer 160, 161, 175  
 Miège 310, 311, 319, 321, 325  
 Mihaylova 194, 200  
 Miller 51, 74  
 Mills 352, 356  
 Minguez 69, 75  
 Minoux 209, 230  
 Miolo 331, 355  
 Mohammad-Djafari 12, 17  
 Mollard 235, 261  
 Möller 157, 159, 173  
 Montano 69, 75  
 Moore 123, 125, 158, 173, 283, 299  
 Morales 102, 126  
 Moravec 78, 98, 206, 230  
 Morel 51, 75  
 Morris 12, 16  
 Moseley 255, 261  
 Moses 13, 14  
 Moutarlier 101, 126  
 Muller 123, 125  
 Murphy 13, 16, 17, 66, 75, 132, 134, 150,  
     151, 155, 162, 173  
 Naïm 130, 134, 150  
 Nadel 122, 126  
 Nagatani 101, 102, 115, 125  
 Najj 322, 323, 326  
 Navarro 108, 124  
 Neal 12, 17, 213, 230  
 Needleman 109, 126  
 Nefian 12, 17  
 Nehmzow 101, 126  
 Neudorfer 12, 18  
 Newlands 293, 297, 299  
 Newman 101, 125  
 Norman 301, 326  
 Norvig 134, 151  
 Nourbakhsh 102, 109, 115, 116, 126, 127,  
     165, 174  
 O'Connell 301, 326  
 O'Keefe 121, 122, 123, 125, 126  
 Ohta 109, 125  
 Oie 12, 16  
 Olsson 335, 355  
 Orliaguet 334, 342, 353, 356  
 Overmars 163, 173, 174  
 Owen 101, 126, 207, 231  
 Paige 291, 294, 296, 299, 300  
 Panerai 301, 312, 326  
 Pardo-Castellote 13, 17  
 Parr 66, 75, 186, 200  
 Patton 12, 14  
 Pavlovic 132, 150  
 Pearl 12, 13, 15, 17, 134, 150  
 Peel 41, 47  
 Perrier 330, 332, 338, 342, 354, 356  
 Perzanowski 132, 150  
 Peterka 283, 299  
 Peucker 103, 125  
 Pfeffer 13, 16  
 Pfeifer 157, 159, 173  
 Pineau 162, 174  
 Piquemal 334, 356  
 Pissard-Gibolet 13, 14  
 Pizlo 12, 17  
 Poggio 12, 17  
 Pols 334, 356  
 Poole 13, 18  
 Poucet 123, 125  
 Poupart 186, 200

- Pradalier 51, 69, 74, 75, 80, 86, 98, 183,  
 190, 200, 201  
 Preuss 12, 17  
 Provan 13, 14  
 Puget 207, 231  
  
 Rabbitt 284, 289, 300  
 Rabiner 130, 150, 154, 155, 174, 274, 276  
 Ramel 133, 134, 145, 150, 151  
 Raphan 282, 283, 285, 289, 291, 293,  
 295, 299, 300  
 Recasens 335, 336, 356  
 Redish 122, 123, 126, 158, 174  
 Rekleitis 102, 126  
 Richards 12, 16  
 Ritter 132, 150  
 Rives 160, 175  
 Robert 12, 17  
 Robert-Ribes 330, 356  
 Robinson 6, 17, 20, 48  
 Rogers 301, 312, 326  
 Rootes 335, 355  
 Rosenberg 156, 174  
 Rosenblatt 13, 17  
 Röthling 132, 150  
 Roumeliotis 13, 17  
 Roweis 12, 17, 155, 174  
 Roy 156, 174  
 Rubin 132, 134, 151, 274, 276  
 Ruiz 13, 17  
 Russel 134, 151  
 Rychert 12, 15, 17  
  
 Sagerer 132, 150  
 Sanderson 207, 231  
 Santos-Victor 69, 75  
 Saul 12, 13, 16, 17  
 Savariaux 330, 342, 353, 356  
 Scassellati 330, 354  
 Schaal 194, 201  
 Schaffer 266, 276  
 Schenk 159, 173  
 Schmidt 156, 174  
 Schneider 13, 17  
 Scholer 266, 276  
 Schroeder 338, 356  
 Schulte 156, 174  
 Schultz 132, 150, 156, 172  
 Schulz 12, 15, 156, 174  
 Schutter 194, 200  
  
 Schwartz 330, 331, 333, 334, 335, 338,  
 352, 353, 354, 356, 357  
 Se 101, 126  
 Seidman 291, 296, 299, 300  
 Sekhavat 51, 74, 75  
 Semenov 12, 15  
 Serkhane 331, 357  
 Shatkay 13, 18  
 Shibata 194, 201  
 Shoham 13, 14  
 Shulz 132, 150  
 Siegwart 78, 98, 102, 104, 109, 113, 117,  
 119, 126, 127, 133, 134, 150, 151, 165,  
 174  
 Silva 122, 125  
 Silver 12, 15, 102, 126  
 Simeon 206, 230  
 Siméon 51, 75  
 Simmons 13, 16, 182, 201  
 Simon 13, 14, 332, 354  
 Simoncelli 12, 18  
 Simonin 154, 174  
 Sjödin 12, 14  
 Skaggs 123, 124, 125, 126, 158, 173  
 Skapura 130, 150  
 Skilling 12, 18  
 Slack 51, 74  
 Smail 43, 48, 219, 230  
 Smith 12, 15, 18, 101, 126  
 Smyth 155, 174  
 Sock 334, 353  
 Sollitto 266, 276  
 Soyer 194, 201  
 Spelke 158, 159, 175  
 Spiegelhalter 12, 16  
 Stackman 160, 174  
 Stanton 301, 326  
 Steels 352, 357  
 Steil 132, 150  
 Steiner 156, 172  
 Sufit 335, 355  
 Sutherland 124, 125  
 Suzuki 291, 299  
 Svestka 163, 173, 174  
  
 Tanila 122, 125  
 Tapus 102, 104, 113, 114, 117, 126, 133,  
 134, 150, 151  
 Tarantola 12, 18  
 Tardos 101, 125

- Taube 160, 174  
 Tay 80, 86, 98, 206, 231  
 Taylor 13, 17, 206, 207, 231  
 Tejada 266, 276  
 Telford 291, 300  
 Thrun 13, 15, 18, 69, 74, 78, 98, 101, 102,  
 115, 127, 154, 155, 156, 157, 162, 163,  
 172, 174, 182, 186, 201, 212, 230  
 Todd 301, 326  
 Tolman 99, 127, 159, 174  
 Tomatis 74, 98, 102, 104, 115, 116, 117,  
 126, 127, 165, 174  
 Torralba 132, 134, 150, 174  
 Tounsi 13, 17  
 Touretzky 160, 161, 175  
 Trullier 160, 161, 175  
 Turro 13, 14  
  
 Ullman 301, 326  
  
 Vallée 332, 333, 338, 352, 354, 356  
 Van Boxtel 313, 314, 319, 320, 325, 326  
 Van der Kooij 12, 18  
 Van Der Stelt 331, 355  
 Veloso 266, 276  
 Verdot 13, 17  
 Viceconti 238, 261  
 Victorino 160, 175  
 Vijayakumar 194, 201  
  
 Vilain 331, 330, 353, 357  
 Von Helmholtz 301, 326  
  
 Wachsmuth 132, 150  
 Wallach 301, 326  
 Wang 13, 17, 158, 159, 175  
 Watt 12, 15  
 Wehner 157, 159, 173  
 Weiss 12, 18  
 Welch 81, 98, 130, 151  
 Wexler 301, 302, 310, 311, 312, 313, 314,  
 317, 318, 319, 320, 321, 325, 326  
 Weymouth 101, 125  
 Wiener 160, 161, 175  
 Williams 12, 18  
 Williamson 330, 354  
 Wioland 332, 354  
 Wolpert 12, 16  
 Wood 342, 357  
 Woodcock 265, 276  
 Wu 334, 357  
 Wunsch 109, 126  
  
 Yguel 80, 86, 98, 206, 231  
 Young 319, 326  
 Yuille 12, 16, 18  
  
 Zerling 332, 354  
 Zhai 12, 15  
 Zhang 13, 18, 207, 231  
 Zupan 12, 18, 283, 299, 300



---

## Author Index

- Ahuactzin, Juan Manuel 233  
Amavizca, Miriam 233
- Bessière, Pierre 3, 19, 51, 77, 153, 177,  
205, 263, 301, 329
- Colas, Francis 301  
Coué, C. 77
- Diard, Julien 153  
Droulez, Jacques 279, 301
- Fraichard, Th. 77
- Hy, Ronan Le 263
- Koike, Carla Cavalcante 177
- Laugier, Christian 77, 233  
Laurens, Jean 279
- Lebeltel, Olivier 19  
Leitner, Francois 233
- Mazer, Emmanuel 177, 233  
Mekhnacha, Kamel 77, 205
- Pradalier, Cédric 51, 77
- Ramel, Guy 129
- Schwartz, Jean-Luc 329  
Serkhane, Jihène E. 329  
Siegwart, Roland 99, 129
- Tapus, Adriana 99  
Tay, M.K. 77
- Wexler, Mark 301  
Yguel, M. 77





# Springer Tracts in Advanced Robotics

---

Edited by **B. Siciliano, O. Khatib and F. Groen**

- Vol. 46:** Bessière, P.; Laugier, C.; Siegwart R. (Eds.)  
Probabilistic Reasoning and Decision Making in Sensory-Motor Systems  
375 p. 2008 [978-3-540-79006-8]
- Vol. 45:** Bicchi, A.; Buss, M.; Ernst, M.O.; Peer A. (Eds.)  
The Sense of Touch and Its Rendering  
281 p. 2008 [978-3-540-79034-1]
- Vol. 44:** Bruyninckx, H.; Přeučil, L.; Kulich, M. (Eds.)  
European Robotics Symposium 2008  
356 p. 2008 [978-3-540-78315-2]
- Vol. 43:** Lamon, P.  
3D-Position Tracking and Control for All-Terrain Robots  
105 p. 2008 [978-3-540-78286-5]
- Vol. 42:** Laugier, C.; Siegwart, R. (Eds.)  
Field and Service Robotics  
597 p. 2008 [978-3-540-75403-9]
- Vol. 41:** Milford, M.J.  
Robot Navigation from Nature  
194 p. 2008 [978-3-540-77519-5]
- Vol. 40:** Birglen, L.; Laliberté, T.; Gosselin, C.  
Underactuated Robotic Hands  
241 p. 2008 [978-3-540-77458-7]
- Vol. 39:** Khatib, O.; Kumar, V.; Rus, D. (Eds.)  
Experimental Robotics  
563 p. 2008 [978-3-540-77456-3]
- Vol. 38:** Jefferies, M.E.; Yeap, W.-K. (Eds.)  
Robotics and Cognitive Approaches to Spatial Mapping  
328 p. 2008 [978-3-540-75386-5]
- Vol. 37:** Ollero, A.; Maza, I. (Eds.)  
Multiple Heterogeneous Unmanned Aerial Vehicles  
233 p. 2007 [978-3-540-73957-9]
- Vol. 36:** Buehler, M.; Iagnemma, K.; Singh, S. (Eds.)  
The 2005 DARPA Grand Challenge – The Great Robot Race  
520 p. 2007 [978-3-540-73428-4]
- Vol. 35:** Laugier, C.; Chatila, R. (Eds.)  
Autonomous Navigation in Dynamic Environments  
169 p. 2007 [978-3-540-73421-5]
- Vol. 34:** Wisse, M.; van der Linde, R.Q.  
Delft Pneumatic Bipeds  
136 p. 2007 [978-3-540-72807-8]
- Vol. 33:** Kong, X.; Gosselin, C.  
Type Synthesis of Parallel Mechanisms  
272 p. 2007 [978-3-540-71989-2]
- Vol. 32:** Milutinović, D.; Lima, P.  
Cells and Robots – Modeling and Control of Large-Size Agent Populations  
130 p. 2007 [978-3-540-71981-6]
- Vol. 31:** Ferre, M.; Buss, M.; Aracil, R.; Melchiorri, C.; Balaguer C. (Eds.)  
Advances in Telerobotics  
500 p. 2007 [978-3-540-71363-0]
- Vol. 30:** Brugali, D. (Ed.)  
Software Engineering for Experimental Robotics  
490 p. 2007 [978-3-540-68949-2]
- Vol. 29:** Secchi, C.; Stramigioli, S.; Fantuzzi, C.  
Control of Interactive Robotic Interfaces – A Port-Hamiltonian Approach  
225 p. 2007 [978-3-540-49712-7]
- Vol. 28:** Thrun, S.; Brooks, R.; Durrant-Whyte, H. (Eds.)  
Robotics Research – Results of the 12th International Symposium ISRR  
602 p. 2007 [978-3-540-48110-2]
- Vol. 27:** Montemerlo, M.; Thrun, S.  
FastSLAM – A Scalable Method for the Simultaneous Localization and Mapping Problem in Robotics  
120 p. 2007 [978-3-540-46399-3]
- Vol. 26:** Taylor, G.; Kleeman, L.  
Visual Perception and Robotic Manipulation – 3D Object Recognition, Tracking and Hand-Eye Coordination  
218 p. 2007 [978-3-540-33454-5]
- Vol. 25:** Corke, P.; Sukkarieh, S. (Eds.)  
Field and Service Robotics – Results of the 5th International Conference  
580 p. 2006 [978-3-540-33452-1]
- Vol. 24:** Yuta, S.; Asama, H.; Thrun, S.; Prassler, E.; Tsubouchi, T. (Eds.)  
Field and Service Robotics – Recent Advances in Research and Applications  
550 p. 2006 [978-3-540-32801-8]

- Vol. 23:** Andrade-Cetto, J.; Sanfeliu, A.  
Environment Learning for Indoor Mobile Robots  
– A Stochastic State Estimation Approach  
to Simultaneous Localization and Map Building  
130 p. 2006 [978-3-540-32795-0]
- Vol. 22:** Christensen, H.I. (Ed.)  
European Robotics Symposium 2006  
209 p. 2006 [978-3-540-32688-5]
- Vol. 21:** Ang Jr., H.; Khatib, O. (Eds.)  
Experimental Robotics IX – The 9th International  
Symposium on Experimental Robotics  
618 p. 2006 [978-3-540-28816-9]
- Vol. 20:** Xu, Y.; Ou, Y.  
Control of Single Wheel Robots  
188 p. 2005 [978-3-540-28184-9]
- Vol. 19:** Lefebvre, T.; Bruyninckx, H.;  
De Schutter, J. Nonlinear Kalman Filtering  
for Force-Controlled Robot Tasks  
280 p. 2005 [978-3-540-28023-1]
- Vol. 18:** Barbagli, F.; Prattichizzo, D.;  
Salisbury, K. (Eds.)  
Multi-point Interaction with Real  
and Virtual Objects  
281 p. 2005 [978-3-540-26036-3]
- Vol. 17:** Erdmann, M.; Hsu, D.; Overmars, M.;  
van der Stappen, F.A (Eds.)  
Algorithmic Foundations of Robotics VI  
472 p. 2005 [978-3-540-25728-8]
- Vol. 16:** Cuesta, F.; Ollero, A.  
Intelligent Mobile Robot Navigation  
224 p. 2005 [978-3-540-23956-7]
- Vol. 15:** Dario, P.; Chatila R. (Eds.)  
Robotics Research – The Eleventh  
International Symposium  
595 p. 2005 [978-3-540-23214-8]
- Vol. 14:** Prassler, E.; Lawitzky, G.; Stopp, A.;  
Grunwald, G.; Hägele, M.; Dillmann, R.;  
Iossifidis, I. (Eds.)  
Advances in Human-Robot Interaction  
414 p. 2005 [978-3-540-23211-7]
- Vol. 13:** Chung, W.  
Nonholonomic Manipulators  
115 p. 2004 [978-3-540-22108-1]
- Vol. 12:** Iagnemma K.; Dubowsky, S.  
Mobile Robots in Rough Terrain –  
Estimation, Motion Planning, and Control  
with Application to Planetary Rovers  
123 p. 2004 [978-3-540-21968-2]
- Vol. 11:** Kim, J.-H.; Kim, D.-H.; Kim, Y.-J.;  
Seow, K.-T.  
Soccer Robotics  
353 p. 2004 [978-3-540-21859-3]
- Vol. 10:** Siciliano, B.; De Luca, A.; Melchiorri, C.;  
Casalino, G. (Eds.)  
Advances in Control of Articulated and  
Mobile Robots  
259 p. 2004 [978-3-540-20783-2]
- Vol. 9:** Yamane, K.  
Simulating and Generating Motions  
of Human Figures  
176 p. 2004 [978-3-540-20317-9]
- Vol. 8:** Baeten, J.; De Schutter, J.  
Integrated Visual Servoing and Force  
Control – The Task Frame Approach  
198 p. 2004 [978-3-540-40475-0]
- Vol. 7:** Boissonnat, J.-D.; Burdick, J.;  
Goldberg, K.; Hutchinson, S. (Eds.)  
Algorithmic Foundations of Robotics V  
577 p. 2004 [978-3-540-40476-7]
- Vol. 6:** Jarvis, R.A.; Zelinsky, A. (Eds.)  
Robotics Research – The Tenth  
International Symposium  
580 p. 2003 [978-3-540-00550-6]
- Vol. 5:** Siciliano, B.; Dario, P. (Eds.)  
Experimental Robotics VIII – Proceedings  
of the 8th International Symposium ISER02  
685 p. 2003 [978-3-540-00305-2]
- Vol. 4:** Bicchi, A.; Christensen, H.I.;  
Prattichizzo, D. (Eds.)  
Control Problems in Robotics  
296 p. 2003 [978-3-540-00251-2]
- Vol. 3:** Natale, C.  
Interaction Control of Robot Manipulators –  
Six-degrees-of-freedom Tasks  
120 p. 2003 [978-3-540-00159-1]
- Vol. 2:** Antonelli, G.  
Underwater Robots – Motion and Force Control  
of Vehicle-Manipulator Systems  
268 p. 2006 [978-3-540-31752-4]
- Vol. 1:** Caccavale, F.; Villani, L. (Eds.)  
Fault Diagnosis and Fault Tolerance for  
Mechatronic Systems – Recent Advances  
191 p. 2003 [978-3-540-44159-5]