
Contents

1 Toward Hierarchical Multi-Robot Urban Search and Rescue: Development of a ‘Mother’ Agent <i>David A. Williamson and Dale A. Carnegie</i>	1
2 Multi-Robot Search and Rescue: A Potential Field Based Approach <i>J.L. Baxter, E.K. Burke, J.M. Garibaldi, and M. Norman</i>	9
3 Probabilistic Target Search Strategy <i>R. Jarvis and M. Marzouqi</i>	17
4 Localisation and Mapping With a Mobile Robot Using Sparse Range Data <i>Jochen Schmidt, Chee K. Wong, and Wai K. Yeap</i>	25
5 Applying High-Level Understanding to Visual Localisation for Mapping <i>Trevor Taylor</i>	35
6 Development of an Optical Three-Axis Tactile Sensor for Object Handling Tasks in Humanoid Robot Navigation System <i>Hanafiah Yussof, Masahiro Ohka, Hiroaki Kobayashi, Jumpei Takata, Mitsuhiro Yamano, and Yasuo Nasu</i>	43
7 Clustering Methods in Flock Traffic Navigation Based on Negotiation <i>Carlos Astengo-Noguez and Ramón Brena-Pinero</i>	53
8 Using Learned Features from 3D Data for Robot Navigation <i>Michael Happold and Mark Ollis</i>	61

9 A Centre-of-Mass Tracker Integrated Circuit Design in Nanometric CMOS for Robotic Visual Object Position Tracking	
<i>S.M. Rezaul Hasan and Johan Potgieter</i>	71
10 Non-Iterative Vision-Based Interpolation of 3D Laser Scans	
<i>Henrik Andreasson, Rudolph Triebel, and Achim Lilienthal</i>	83
11 RoboSim: A Multimode 3D Simulator for Studying Mobile Robot Co-Operation	
<i>G. Seet, S.K. Sim, W.C. Pang, Z.X. Wu, and T. Asokan</i>	91
12 A Mobile Robot for Autonomous Book Retrieval	
<i>Aneesh N. Chand and Godfrey C. Onwubolu</i>	101
13 Trajectory Planning for Surveillance Missions of Mobile Robots	
<i>Luiz S. Martins-Filho and Elbert E.N. Macau</i>	109
14 An Evolutionary Approach to Crowd Simulation	
<i>Tsai-Yen Li and Chih-Chien Wang</i>	119
15 Application of a Particle Swarm Algorithm to the Capacitated Open Pit Mining Problem	
<i>Jacques A. Ferland, Jorge Amaya, and Melody Suzy Djuimo</i>	127
16 Automatic Adjustment for Optical Axes in Laser Systems Using Stochastic Binary Search Algorithm for Noisy Environments	
<i>Nobuharu Murata, Hirokazu Nosato, Tatsumi Furuya, and Masahiro Murakawa</i>	135
17 An Analysis of the Chromosome Generated by a Genetic Algorithm Used to Create a Controller for a Mobile Inverted Pendulum	
<i>Mark Beckerleg and John Collins</i>	145
18 Robust Flight Stability and Control for Micro Air Vehicles	
<i>M. Meenakshi and M. Seetharama Bhat</i>	153
19 An Ecological Interface Design Approach to Human Supervision of a Robot Team	
<i>H. Furukawa</i>	163
20 Embedded RTOS: Performance Analysis With High Precision Counters	
<i>Kemal Köker</i>	171

21 Simple Biped Walking Robot for University Education Considering Fabrication Experiences <i>Yoshihiko Takahashi, Hirofumi Takagi, Yoshiharu Uchiyama, and Takumi Takashima</i>	181
22 Autonomous Stride-Frequency and Step-Length Adjustment for Bipedal Walking Control <i>Lin Yang, Chee-Meng Chew, Aun-Neow Poo, and Teresa Zielinska</i>	189
23 Application of Extended Kalman Filter Towards UAV Identification <i>Abhijit G. Kallapur, Shaaban S. Ali, and Sreenatha G. Anavatti</i>	199
24 A Novel Strategy for Multiagent Coalitions in a Dynamic Hostile World <i>Madhu Goyal</i>	209
25 Emotion Recognition Using Voice Based on Emotion-Sensitive Frequency Ranges <i>Kyung Hak Hyun, Eun Ho Kim, and Yoon Keun Kwak</i>	217
26 FPGA-Based Implementation of Graph Colouring Algorithms <i>Valery Sklyarov, Iouliia Skliarova, and Bruno Pimentel</i>	225
27 Balancing Sociality in Meta-agent Approach <i>Oomiya Kenta, Miyanishi Keiji, and Suzuki Keiji</i>	233
28 Complex Stability Radius for Automatic Design of Gain-Scheduled Control Part I: Theoretical Development <i>Rini Akmeliawati and Iven M.Y. Mareels</i>	241
29 Complex Stability Radius for Automatic Design of Gain-Scheduled Control Part II: Example on Autopilot Design <i>Rini Akmeliawati and Iven M.Y. Mareels</i>	251
30 Synthesis of Reconfigurable Hierarchical Finite State Machines <i>Valery Sklyarov and Iouliia Skliarova</i>	259
Author Index	267