

Table of Contents

A Curious Emergence of Reaching	1
<i>Goren Gordon and Ehud Ahissar</i>	
A Force-Distance Model of Humanoid Arm Withdrawal Reflexes	13
<i>Torbjørn S. Dahl and Alexandros Paraschos</i>	
A Novel Adaptive Control Algorithm in Application to a Humanoid Robot Arm	25
<i>Muhammad Nasiruddin Mahyuddin, Guido Herrmann, and Said Ghani Khan</i>	
A Wandering Braitenberg Vehicle <i>2b</i> That Densely Covers a Bounded Workspace	37
<i>Iñaki Rañó and Jean-Stephane Jokeit</i>	
Adaptive Interface Mapping for Intuitive Teleoperation of Multi-DOF Robots	49
<i>Jartuwat Rajruangrabin, Isura Ranatunga, and Dan O. Popa</i>	
Adaptive Self-triggered Control of a Remotely Operated Robot	61
<i>Carlos Santos, Manuel Mazo Jr., and Felipe Espinosa</i>	
Autonomous Surveillance Tolerant to Interference	73
<i>Nadeesha Oliver Ranasinghe and Wei-Min Shen</i>	
Bio-inspired Autonomous Navigation and Escape from Pursuers with Potential Functions	84
<i>Dejanira Araiza-Illan and Tony J. Dodd</i>	
Biomimetics of Choice Behaviour for Autonomous Agents	96
<i>Christopher M. Harris and Jonathan Waddington</i>	
Building a Kinematic Model of a Robot's Arm with a Depth Camera ...	105
<i>Alan Broun, Chris Beck, Tony Pipe, Majid Mirmehdi, and Chris Melhuish</i>	
Control of a Compass Gait Biped Robot Based on Partial Feedback Linearization	117
<i>Sreeja Kochuvila, Shikha Tripathi, and Sudarshan T.S.B.</i>	
Cutting Down the Energy Consumed by Domestic Robots: Insights from Robotic Vacuum Cleaners	128
<i>Florian Vaussard, Philippe Rétornaz, David Hamel, and Francesco Mondada</i>	

Designing Competitions for Education in Robotics	140
<i>Nils Axel Andersen and Ole Ravn</i>	
Dual-Rate Non-Linear High Order Holds for Visual Servoing Applications.....	152
<i>J. Ernesto Solanes, Leopoldo Armesto, Josep Tornero, Pau Muñoz-Benavent, and Vicent Gírbés</i>	
Efficient Local Sampling for Motion Planning of a Robotic Manipulator.....	164
<i>S. Byrne, W. Naeem, and R.S. Ferguson</i>	
Engaging with Robots While Giving Simple Instructions	176
<i>Terry Tritton, Joanna Hall, Angela Rowe, Sophie Valentine, Alicja Jedrzejewska, Anthony G. Pipe, Chris Melhuish, and Ute Leonards</i>	
Experiences with LEGO MINDSTORMS as an Embedded and Robotics Plattform within the Undergraduate Curriculum.....	185
<i>Dominik Aufderheide, Werner Krybus, and Ulf Witkowski</i>	
Explorative Sensor-Based Grasp Planning	197
<i>Ekaterina Nikandrova, Janne Laaksonen, and Ville Kyrki</i>	
Ice Skating Humanoid Robot	209
<i>Chris Iverach-Brereton, Andrew Winton, and Jacky Baltes</i>	
Learning the Geometric Meaning of Symbolic Abstractions for Manipulation Planning	220
<i>Chris Burbidge and Richard Dearden</i>	
Minimizing Jitter in Ethernet Using a Linear Backoff for Real-Time Robot Control Communication and Its Implementation on FPGA	232
<i>Mohamad Khairi Ishak, Guido Herrmann, and Martin J. Pearson</i>	
Mobile Robot Obstacle Avoidance Based on Quasi-Holonomic Smooth Paths.....	244
<i>Leopoldo Armesto, Vicent Gírbés, Markus Vincze, Sven Olufs, and Pau Muñoz-Benavent</i>	
Model Checking Applied to Humanoid Robotic Soccer	256
<i>Adalberto Llarena and David A. Rosenblueth</i>	
Modular Mobile Robot Platform for Research and Academic Applications in Embedded Systems.....	270
<i>Thomas Tetzlaff, Florian Wagner, and Ulf Witkowski</i>	
Motion Planning of Self-reconfigurable Modular Robots Using Rapidly Exploring Random Trees.....	279
<i>Vojtěch Vonásek, Karel Košnar, and Libor Přeučil</i>	

Multiobjective Quantum-Inspired Evolutionary Algorithm with Preference-Based Selection 2: Comparison Study	291
<i>Si-Jung Ryu, Ki-Baek Lee, Bum-Soo Yoo, Tae-Jin Kim, Seung-Jae Lee, and Jong-Hwan Kim</i>	
My Familiar Robot Companion: Preferences and Perceptions of CHARLY, a Companion Humanoid Autonomous Robot for Living with You	300
<i>Michael L. Walters, Dag Sverre Syrdal, Kerstin Dautenhahn, Anna Dumitriu, Alex May, Bruce Christiansen, and Kheng Lee Koay</i>	
New Robust Tracking Control for Safe Constrained Robots under Unknown Impedance Environment	313
<i>Haifa Mehdi and Olfa Bouabaker</i>	
Novel Positioning System for Mobile Robot Using RFID Power Control	324
<i>Soo Hyeok Kang, Byung-Cheol Min, Ji Hyeon Hong, Eric T. Matson, Soon-Geul Lee, Jinung An, and Dong Han Kim</i>	
Planning in Discrete and Continuous Spaces: From LTL Tasks to Robot Motions	331
<i>Erion Plaku</i>	
Predictive Prey Pursuit in a Whiskered Robot	343
<i>Ben Mitchinson, Martin J. Pearson, Anthony G. Pipe, and Tony J. Prescott</i>	
Process Modeling and Task Execution of FIRA Weight-Lifting Games with a Humanoid Robot	354
<i>Chung-Hsien Kuo, Yu-Chen Kuo, and Ting-Shuo Chen</i>	
Real-Time Autonomous Colour-Based Following of Ill-Defined Roads ...	366
<i>Marek Ososinski and Frédéric Labrosse</i>	
Repetitive Control for Systems with Time-Delays and Application to Robotic Servo Motor	377
<i>Jing Na, Xuemei Ren, Ramon Costa-Castelló, Robert Griñó, and Yu Guo</i>	
Sensitivity Analysis of a Parametric Hand Exoskeleton Designed to Match Natural Human Grasping Motion	390
<i>Thomas M.W. Burton, Ravi Vaidyanathan, Stuart C. Burgess, A.J. Turton, and Chris Melhuish</i>	
Walking Control Method of Humanoid Robot Based on FSR Sensors and Inverted Pendulum Model	402
<i>Bi Sheng, Min Huaqing, Zhuang Zhongjie, Huang Quanyong, Mo Huaxi, Zhou Yanping, and Li Shaojun</i>	

Extended Abstracts

A Novel Image Similarity Measure for Place Recognition in Visual Robotic Navigation 414
Juan Cao, Frédéric Labrosse, and Hannah Dee

A Stochastic Self-reconfigurable Modular Robot with Mobility Control 416
Runxiao Ding, Paul Eastwood, Francesco Mondada, and Roderich Groß

An Approach for Matching Desired Non-feature Points on Mars Rock Targets Based on SIFT 418
Gui Chen, Dave Barnes, and Pan LiLan

Autonomous Exploration Using Kinect and Laser Range Finder 420
Jingjing Du, Marina Indri, Douwe Dresscher, and Stefano Stramigioli

Behavior Selection Algorithm for Personal Service Robots Using Intelligence Operating Architecture 422
Woo-Ri Ko, Chang-Young Jung, Yong-Ho Yoo, Deok-Hwa Kim, and Jong-Hwan Kim

Bioinspired Control of Electro-Active Polymers for Next Generation Soft Robots 424
Emma Wilson, Sean R. Anderson, Tareq Assaf, Martin J. Pearson, Peter Walters, Tony J. Prescott, Chris Melhuish, Jonathan Rossiter, Tony Pipe, Paul Dean, and John Porrill

Combining Evolution and Training in a Robotic Controller for Autonomous Vehicle Navigation 426
Jefferson Rodrigo de Souza, Gustavo Pessin, Fernando Santos Osório, Denis Fernando Wolf, and Patrícia Amâncio Vargas

Design and Implementation of Omni-directional Walking System for Humanoid Robot 428
Chi-Tai Cheng, Ching-Chang Wong, Hao-Che Chen, Yueh-Yang Hu, I-Hsiang Tseng, and Li-Feng Chen

Energy Management Module for Mobile Robots in Hostile Environments 430
Ramviyas Parasuraman, Prithvi Pagala, Keith Kershaw, and Manuel Ferre

Exploring Haptic Interfacing with a Mobile Robot without Visual Feedback 432
Jacques Penders, Peter Jones, and Thrish Nanayakkara

Finger Movements Classification for the Dexterous Control of Upper Limb Prosthesis Using EMG Signals	434
<i>Ali Al-Timemy, Guido Bugmann, Nicholas Outram, Javier Escudero, and Hai Li</i>	
Hardware Accelerator Design for Image Processing	436
<i>Shih-An Li, Ching-Chang Wong, Ching-Yang Yang, and Li-Feng Chen</i>	
High-Performance Combination of Low Resolution Tactile Images Using a Bit-Based Representation	438
<i>Frederick Pollard</i>	
Hybrid Path Planning Incorporating Global and Local Search for Mobile Robot	441
<i>Ming-Chih Lu, Chen-Chien Hsu, Yuan-Jun Chen, and Shih-An Li</i>	
Learning on Real Robots from Their Direct Interaction with the Environment	444
<i>P. Quintá, R. Iglesias, M.A. Rodríguez, and C.V. Regueiro</i>	
Map Building of Unknown Environment Based on Fuzzy Sensor Fusion of Ultrasonic Ranging Data	446
<i>I-Hsum Lee, Ming-Chih Lu, Chen-Chien Hsu, and Shih-Shiun Lin</i>	
Robotic Control Using Physiological EMG and EEG Signals	449
<i>Aashish Santana and Chenguang Yang</i>	
Solving the PnP Problem for Visual Odometry – An Evaluation of Methodologies for Mobile Robots	451
<i>Dominik Aufderheide, Werner Krybus, Ulf Witkowski, and Gerard Edwards</i>	
Towards a Bio-inspired Cognitive Architecture for Short-Term Memory in Humanoid Robots	453
<i>Fabio Ruini, Jens K. Apel, Anthony F. Morse, Angelo Cangelosi, Rob Ellis, Jeremy Goslin, and Martin H. Fischer</i>	
Towards an Anthropomorphic Design of Minimally Invasive Instrumentation for Soft Tissue Robotic Surgery	455
<i>Antonia Tzemanaki, Sanja Dogramadzi, Tony Pipe, and Chris Melhuish</i>	
Towards an Intelligent Distributed Conveyor	457
<i>Ioannis Georgilas, Andrew Adamatzky, and Chris Melhuish</i>	
Towards Contour Following Exploration Based on Tactile Sensing with the iCub Fingertip	459
<i>Uriel Martinez-Hernandez, Nathan F. Lepora, Hector Barron-Gonzalez, Tony J. Dodd, and Tony J. Prescott</i>	

Towards Running Robots for Discontinuous Terrain (Extended Abstract)	461
<i>Jawaad Bhatti, Pejman Iravani, Andrew R. Plummer, and M. Necip Sahinkaya</i>	
Towards Tactile Sensing Applied to Underwater Autonomous Vehicles for Near Shore Survey and De-mining	463
<i>Thomas Rooney, Anthony G. Pipe, Sanja Dogramadzi, and Martin J. Pearson</i>	
Vision-Aided IMU Estimation of Attitude and Orientation for a Driverless Car	465
<i>Lu Lou, Suzana Barreto, Rokas Zmuidzinavicius, Mark Neal, Hannah Dee, and Frédéric Labrosse</i>	
Author Index	467