Rachid Alami, Raja Chatila, Hajime Asama (Eds.)

Distributed Autonomous Robotic Systems 6

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With 220 Figures

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Preface

The DARS (Distributed Autonomous Robotic Systems) symposia series have spun around the globe every two years since 1992.

The 2004 edition was held on June 23-25 at LAAS-CNRS in Toulouse, France, and attended by over 75 international participants from 16 countries in Asia, the Americas and Europe.

The 46 papers selected by a peer review process provide an excellent coverage of the latest progress in the state of the art in multi-robot systems. The main topics at DARS 2004 addressed the challenges facing the distribution of embodied intelligence, the interaction of intelligent machines and the complex dynamics emerging from interacting agents.

Papers reported on latest research results on several frontier problems. One of the exciting issues is reconfigurability, be it software or hardware, and its relation to growth. Another flourishing research topic is the design of architectures providing for distributed control among (sometimes heterogeneous) robots, while preserving coherence of their behavior. Mobility and motion coordination among multiple robots is another central issue. Other reported work focuses on the relationship between mobility and intelligence, where cooperative behaviors emerge from interaction. Cooperation and coordination are however much wider than mobility and several papers address these issues for the accomplishment of tasks by multiple robots. One of those tasks is perception and mapping, in which cooperation poses difficult problems of information sharing. Several papers addressed the interaction of large numbers of entities in swarms or in groups, a very rich interdisciplinary question on which robotics and ethology share common research agendas.

Transversal to all the issues is the communication problem: how much is necessary? what to exchange, how and when? How to preserve the communication link? This was the topic of several papers as well as the keynote on "Communication-sensitive Planning and Behavior for Multi-Robot Teams" by Ronald C. Arkin.

The conference would not have taken place without the contribution of sponsors, whom we would like to thank: the French National Research Center

(CNRS), the Robotics Society of Japan (RSJ), The French Ministry of Research, the Midi-Pyrénées Region, the European Robotics Network EURON, The Society of Instrument and Control Engineers of Japan (SICE), the Federation of Research in Computer and Control Sciences in Toulouse (FERIA) and LAAS.

The success of the conference is based on the active contribution of the members of the organizing committee, and on the quality and thoroughness of the reviews provided by the Program Committee members whom we would like to thank. We would like also to thank Ms. Jackie Som, Ms. Dominique Daurat, Ms. Marie-José Fontagne, Ms. Marie Dervillers and Jean-Michel Pons for their invaluable help with local arrangements, document edition and the conference website.

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Contents

Part I Reconfigurable Robots I

Self-Reconfiguration Using Directed Growth
Kasper Stoy, Radhika Nagpal 3

A hardware/software architecture for the control of self reconfigurable robots
Claude Guéganno, Dominique Duhaut 13

Emergent Morphology Control of a Modular Robot by Exploiting the Interaction between Control and Mechanical Dynamics
Masahiro Shimizu, Masayasu Takahashi, Toshihiro Kawakatsu, Akio Ishiguro 23

HydroGen: Automatically Generating Self-Assembly Code for Hydron Units
George Konidaris, Tim Taylor, John Hallam 33

Part II Emergence of Intelligence Through Mobility

Local Obstacle Avoidance with Reliable Goal Acquisition for Mobile Robots
Chomchana Trevai, Ryota Takemoto, Yusuke Fukazawa, Jun Ota, Tamio Arai 45

Adaptive Routing System by Intelligent Environment with Media Agents
Takenori Matsuoka, Daisuke Kurabayashi, Katsunori Urano 55

Multi-Robot Concurrent Learning in Museum Problem
Zheng Liu, Marcelo H. Ang Jr., Winston Khoon Guan Seah 65

How a Cooperative Behavior can emerge from a Robot Team
Antonio D'Angelo, Emanuale Menegatti, Enrico Pagello 75

Vehicle Guidance System using Local Information Assistants
Kuniaki Kawabata, Madoka Doi, Daisuke Chugo, Hayato Kaetsu, Hajime Asama..... 85

Part III Multi-Robot Perception

Topological Map Merging
Wesley H. Huang, Kristopher Beevers 97

An approach to active sensing using the Viterbi algorithm
Frank E. Schneider, Andreas Kräußling, Dennis Wildermuth 107

Using Group Knowledge for Multitarget Terrain-Based State Estimation
Edward Sobiesk, Maria Gini, John A. Marin 117

Multi-AUVs for Visual Mapping Tasks
S. Botelho, R. Costa, R. Neves, C. Madsen, V. Oliveira 127

Part IV Reconfigurable Robots II

Cellular Robots Forming a Mechanical Structure (Evaluation of structural formation and hardware design of "CHOBIE II")
Michihiko Koseki, Kengo Minami, Norio Inou 139

Planning Behaviors of Modular Robots with Coherent Structure using Randomized Method
Eiichi Yoshida, Haruhisa Kurokawa, Akiya Kamimura, Satoshi Murata, Kohji Tomita, Shigeru Kokaji.....149

In-Place Distributed Heterogeneous Reconfiguration Planning
Robert Fitch, Zack Butler, Daniela Rus 159

Distributed Metamorphosis of Regular M-TRAN Structures
Esben H. Ostegaard, Kohji Tomita, Haruhisa Kurokawa.....169

Part V Task Allocation — Multi-Robot Cooperation

Multi-Robot Task Allocation Method for Heterogeneous Tasks with Priorities
José Guerrero, Gabriel Oliver 181

Decentralized Markov Decision Processes for Handling Temporal and Resource constraints in a Multiple Robot System
Aurélie Beynier, Abdel-Illah Mouaddib 191

Emergent Robot Differentiation for Distributed Multi-Robot Task Allocation
Torbjørn S. Dahl, Maja J. Matarić, Gaurav S. Sukhatme 201

Cooperative Control Method Using Evaluation Information on Objective Achievement
Hikari Fujii, Daiki Sakai, Kazuo Yoshida 211

Multiple UAV cooperative searching operation using polygon area decomposition and efficient coverage algorithms
Ivan Maza, Anibal Ollero 221

Part VI Control Architectures

A Distributed Architecture for Autonomous Unmanned Aerial Vehicle Experimentation
Patrick Doherty, Patrick Haslum, Fredrik Heintz, Torsten Merz, Per Nyblom, Tommy Persson, Bjorn Wingman 233

Aerial Shepherds: Coordination among UAVs and Swarms of Robots
Luiz Chaimowicz, Vijay Kumar 243

Dispersing robots in an unknown environment
Ryan Morlok, Maria Gini 253

Embedding heterogeneous levels of decisional autonomy in multi-robot systems
Jeremi Gancet, Simon Lacroix 263

Part VII Distributed Problem Solving

Collective Energy Distribution: Maintaining the Energy Balance in Distributed Autonomous Robots using Trophallaxis
Chris Melhuish, Masao Kubo 275

Building Blocks for Multi-robot Construction
Justin Werfel 285

Coordinating Aerial Robots and Sensor Networks for Localization and Navigation
Peter Corke, Ron Peterson, Daniela Rus 295

Pervasive *Sensor-less* Networks for Cooperative Multi-robot Tasks
Keith J. O'Hara, Tucker Balch 305

Part VIII Group Behavior

Communication Strategies in Multi-robot Search and Retrieval: Experiences with MinDART
Paul E. Rybski, Amy Larson, Harini Veeraraghavan, Monica LaPoint, Maria Gini 317

Value-Based Communication Preservation for Mobile Robots
Matthew D. Powers, Tucker Balch 327

Dynamical Reconfiguration of Cooperation Structure by Interaction Network
Kosuke Sekiyama, Yukihisa Okade 337

Collecting Behavior of Interacting Robots with Virtual Pheromone
Toshiya Kazama, Ken Sugawara, Toshinori Watanabe 347

Part IX Swarm Intelligence

Distributed Autonomous Micro Robots: From Small Clusters to a Real Swarm
Heinz Woern, Joerg Seyfried 359

Modeling and Optimization of a Swarm-Intelligent Inspection System
Nikolaus Correll, Alcherio Martinoli 369

Scalable Control of Distributed Robotic Macrosensors
Brian Shucker, John K. Bennett 379

Self-Organised Task Allocation in a Group of Robots
Thomas Labella, Marco Dorigo, Jean-Louis Deneubourg 389

Distributed Algorithms for Dispersion in Indoor Environments Using a Swarm of Autonomous Mobile Robots
James McLurkin, Jennifer Smith 399

Part X Motion Coordination

Optimal Design Methodology for an AGV Transportation System by Using the Queuing Network Theory
Satoshi Hoshino, Jun Ota, Akiko Shinozaki, Hideki Hashimoto 411

Control of Vehicle Cooperative Behavior in Non-Signalized Intersection
Yusuke Ikemoto, Yasuhisa Hasegawa, Toshio Fukuda, Kazuhiko Matsuda 421

High-Level Modeling of Cooperative Mobile Robot Systems
Roberto Sánchez-Herrera, Norma Villanueva-Paredes, Ernesto López-Mellado 431

Part XI Distributed Control

Lateral and Longitudinal Stability for Decentralized Formation Control
David J. Naffin, Mehmet Akar, Gaurav S. Sukhatme 443

Decentralized Cooperative Object Transportation by Multiple Mobile Robots with a Pushing Leader
ZhiDongWang, Yugo Takano, Yasuhisa Hirata, Kazuhiro Kosuge 453

Part XII Applications

Attentive Workbench: An Intelligent Production Cell Supporting Human Workers
Masao Sugi, Yusuke Tamura, Jun Ota, Tamio Arai, Kiyoshi Takamasu, KiyoshiKotani, Hiromasa Suzuki, Yoichi Sato 465

Development of a Forward-Hemispherical Vision Sensor for Remote Control of a Small Mobile Robot and for Acquisition of Visual-Information
Jyun-ichi Eino, Masakazu Araki, Jun-ichi Takiguchi, Takumi Hashizume 475