



DARS 04 Detailed Program

Wednesday June 23

8h00: Transfer by bus from Place Wilson to LAAS

8h50 - 9h00: Welcome

*9h00 - 10h20: **Session 1 - Reconfigurable robots I** - chair: Eichi Yoshida*

Self-Reconfiguration Using Directed Growth

Kasper Stoy, Radhika Nagpal

A hardware/software architecture for the control of self reconfigurable robots

Claude Guéganno, Duhaut Dominique

Emergent Morphology Control of a Modular Robot by Exploiting the Interaction between Control and Mechanical Dynamics

Masahiro Shimizu, Akio Ishiguro, Masayasu Takahashi, Toshihiro Kawakatsu

HydroGen: Automatically Generating Self-Assembly Code for Hydron Units

George D. Konidaris, Tim Taylor, John Hallam

Coffee Break

*10h40 - 12h20 : **Session 2 – Emergence of Intelligence through mobility** - chair Daisuke Kurabayashi*

Local Obstacle Avoidance with Reliable Goal Acquisition for Mobile Robots

Trevai Chomchana, Ryota Takemoto, Yusuke Fukazawa, Jun Ota, Tamio Arai

Adaptive Routing System by Intelligent Environment with Media Agents

Matsuoka Takenori, Daisuke Kurabayashi, Katsunori Urano

Multi-Robot Concurrent Learning in Museum Problem

Liu Zheng, Marcelo H. Ang Jr. , Winston Khoon Guan

How a Cooperative Behavior can emerge from a Robot Team

Antonio D'Angelo, Emanuele Menegatti, Enrico Pagello

Vehicle Guidance System using Local Information Assistants

Kuniaki Kawabata, Madoka Doi, Daisuke Chugo, Hayato Kaetsu, Hajime Asama

Buffet

13h30 - 14h50: Session 3 - Multi-robot perception - chair Simon Lacroix

Topological Map Merging

Wesley H. Huang, Kristopher Beevers

An approach to active sensing using the Viterbi algorithm.

Frank E., Schneider, Andreas Kraeusling, Dennis Wildermuth

Using Group Knowledge for Multitarget Terrain-Based State Estimation

Maria Gini, Edward Sobiesk, John A. Marin

Multi-AUVs for Visual Mapping Task

Silvia, S.C. Botelho Costa, R. Neves, C. Madsen, A. Vargas, V. Oliveira

Coffee Break

15h10 - 16h30: Session 4 - Reconfigurable robots II - chair Dominique Duhaut

Cellular Robots Forming a Mechanical Structure (Evaluation of structural formation and hardware design of "CHOBIE II")

Michihiko Koseki, Minami Kengo, Inou Norio

Planning Behaviors of Modular Robots with Coherent Structure using Randomized Method

Eiichi Yoshida, Haruhisa Kurokawa, Akiya Kamimura, Satoshi Murata, Kohji Tomita, Shigeru Kokaji

In-Place Distributed Heterogeneous Reconfiguration Planning

Robert Fitch, Zack Butler, Daniela Rus

Distributed Metamorphosis of Regular M-TRAN Structures

Esben H. Ostegaard, K. Tomita, H. Kurokawa

16h45 - 17h45 : Visit of LAAS Robotics and AI Research Group

Transfer by bus to Place Wilson (downtown)

Thursday, June 24

8h20: Transfer by bus from Place Wilson to LAAS

9h00 – 10h15 DARS 04 Keynote lecture - chair Raja Chatila
Communication-sensitive Planning and Behavior for Multi-robot Teams
Ronald C. Arkin, Mobile Robot Laboratory, Georgia Tech

Coffee Break

10h40 - 12h20: Session 5: Task Allocation - Multi-robot cooperation - chair Maria Gini

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

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

Emergent Robot Differentiation for Distributed Multi-Robot Task Allocation
Torbjorn S. Dahl, Maja J Mataric, Gaurav S. Sukhatme

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

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

Buffet

13h30 - 14h50: Session 6 - Control Architectures - chair Tucker Balch

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

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

Dispersing robots in an unknown environment
Maria Gini, Ryan Morlok

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

Coffee Break

15h10 - 16h30: Session 7 - Distributed Problem solving - chair Patrick Doherty

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

Building Blocks for Multi-Robot Construction
Justin K. Werfel

Coordinating aerial robots and sensor networks for localization and navigation
Daniela Rus, Peter Corke, Ron Peterson

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

16h45: Transfer by bus to Place Wilson

19h30 – 23h00
DARS Banquet
Location : Hôtel d'Assézat
Place d'Assézat

Friday, June 25

8h20: Transfer by bus from Place Wilson to LAAS

9h00 - 10h20: **Session 8 - Group Behaviour** – chair: Jun Ota

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

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

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

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

Coffee Break

10h40 - 12h20 : **Session 9 - Swarm Intelligence** – chair: Hajime Asama

Distributed autonomous micro robots: from small clusters to a real swarm
Joerg Seyfried, H. Woern

Collective Inspection of Regular Structures using a Swarm of Miniature Robots
Nikolaus Correll, Alcherio Martinoli

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

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

Distributed Algorithms for Dispersion in Indoor Environments using a Swarm of Autonomous Mobile Robots
James McLurkin, Jennifer Smiths

Buffet

13h30 - 14h30: **Session 10 - Motion coordination** – chair: Kazuhiro Kosuge

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

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

Adapting Randomized path planning to Multi-Robot systems
Raghunathan Prabhu Ram

High Level Modeling of Cooperative Mobile Robot Systems
Ernesto Lopez-Mellado, Roberto Sanchez-Herrera, Norma Villanueva-Paredes

Coffee Break

14h50 - 15h30 : Session 11 - Distributed Control - chair: Rachid Alami

Lateral and Longitudinal Stability for Formation Control

David J. Naffin, Mehmet Akar , Gaurav S. Sukhatme

Decentralized Cooperative Object Transportation by Multiple Mobile Robots with a Pushing Leader

ZhiDong Wang, Yogo Takano, Yasuhisa Hirata, Kazuhiro Kosuge

15h30 - 16h10: Session 12 - Applications - chair: Rachid Alami

Attentive Workbench: An Intelligent Production Cell Supporting Human Workers

Sugi Masao, Yusuke Tamura, Jun Ota, Tamio Arai , Kiyoshi Takamasu, Kiyoshi Kotani, Hiromasa Suzuki, Yoichi Sato

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, Takumi Hasizume, Jun-ichi Takiguchi

16h30: Transfer by bus to Place Wilson and to the airport (arrival at the airport approx. 17h15)