

Table of Contents

Introduction and Motivation

Holonic Rationale and Self-organization on Design of Complex Evolvable Systems	1
<i>Paulo Leitão</i>	
Service-Oriented Agents for Collaborative Industrial Automation and Production Systems	13
<i>J. Marco Mendes, Paulo Leitão, Francisco Restivo, and Armando W. Colombo</i>	
Usability of Multi-agent Based Control Systems in Industrial Automation	25
<i>Ivanka Terzic, Alois Zotl, Martijn Rooker, Thomas Strasser, Pavel Vrba, and Vladimír Mařík</i>	

Knowledge-Centered Approaches

An Organizational Knowledge Ontology for Automotive Supply Chains	37
<i>Bernd Hellingrath, Markus Witthaut, Carsten Böhle, and Stephan Brügger</i>	
Semantic Extension of Agent-Based Control: The Packing Cell Case Study	47
<i>Pavel Vrba, Miloslav Radakovič, Marek Obitko, and Vladimír Mařík</i>	
Product Design Network Self-contextualization: Enterprise Knowledge-Based Approach and Agent-Based Technological Framework	61
<i>Tatiana Levashova, Kurt Sandkuhl, Nikolay Shilov, Alexander Smirnov, and Vladimir Tarasov</i>	

Selected Theoretical Aspects

Collaboration of Metaheuristic Algorithms through a Multi-Agent System	72
<i>Richard Malek</i>	
Functional Integrity of Multi-agent Computational System Supported by Component-Based Implementation	82
<i>Kamil Piętak, Adam Woś, Aleksander Byrski, and Marek Kisiel-Dorohinicki</i>	

On the Empirical Evaluation of an Interdisciplinary Framework for
Automated Negotiation 92
Fernando Lopes, A.Q. Novais, and Helder Coelho

MAS Scheduling and Simulation

A Decentralized Scheduling Policy for a Dynamically Reconfigurable
Production System 102
Stefano Giordani, Marin Lujak, and Francesco Martinelli

A Study on Real-Virtual Interaction Method for Production Scheduling
Using Model Plant 114
Yi Qian, Nobutada Fujii, and Toshiya Kaihara

Using an Agent-Supported Simulation Environment for Intelligent
Manufacturing Systems 124
Nancy Ruiz, Adriana Giret, and Vicente Botti

A Study on Real-Time Scheduling for Holonic Manufacturing
Systems – Determination of Utility Values Based on Multi-agent
Reinforcement Learning 135
*Koji Iwamura, Norihisa Mayumi, Yoshitaka Tanimizu, and
Nobuhiro Sugimura*

MAS Control

An Open-Control Concept for a Holonic Multiagent System 145
*Emmanuel Adam, Thierry Berger, Yves Sallez, and
Damien Trentesaux*

Plan, Commit, Execute Protocol in Multi-agent Systems 155
Petr Kadera and Pavel Tichy

Distributed Sensing and Control Architecture for Automotive Factory
Automation 165
Ningxu Cai and Robert W. Brennan

MAS - Based Cooperative Control for Biotechnological Process-A Case
Study 175
Dariusz Choinski, Mieczyslaw Metzger, and Witold Nocon

Design and Implementation of LabVIEW-Based IEC61499 Compliant
Device 183
Grzegorz Polaków and Mieczyslaw Metzger

Holonic Systems for Manufacturing

Holonic-Based Environment for Solving Transportation Problems 193
Michał Gołacki, Jarosław Koźlak, and Małgorzata Żabińska

Holonic Manufacturing Paint Shop	203
<i>Morten Lind, Olivier Roulet-Dubonnet, Per Åge Nyen, Lars Tore Gellein, Terje Lien, and Amund Skavhaug</i>	
Development of a Holonic Free-Roaming AGV System for Part Manufacturing	215
<i>Olivier Roulet-Dubonnet, Morten Lind, Lars Tore Gellein, Per Åge Nyen, Terje Lien, and Amund Skavhaug</i>	
Safety Discrete Event Models for Holonic Cyclic Manufacturing Systems	225
<i>Calin Ciufudean and Constantin Filote</i>	
A Holonic Chain Conveyor Control System: An Application	234
<i>Jan Van Belle, Bart Saint Germain, Paul Verstraete, Paul Valckenaers, Osman Ali, Hendrik Van Brussel, and Dirk Cattrysse</i>	
MAS and Holonic Applications	
A Multiagent System for Self-organisation of an 802.11 Mesh Network	244
<i>John Debenham and Ante Prodan</i>	
Mobility Model for Tactical Networks	254
<i>Milan Rollo and Antonín Komenda</i>	
Holonic Modelling of Large Scale Geographic Environments	266
<i>Mehdi Mekni and Bernard Moulin</i>	
Holonic Models for Traffic Control Systems	276
<i>Calin Ciufudean and Constantin Filote</i>	
A Multi-Agent System for the Pay-As-You-GO (PAYGO) Social Security Scheme	285
<i>Athanasios A. Pantelous and Alexandros A. Zimbidis</i>	
Contract Monitoring in Agent-Based Systems: Case Study	295
<i>Jiří Hodík, Jiří Vokřínek, and Michal Jakob</i>	
A Multi-agent Scheduler for Rent-a-Car Companies	305
<i>Slava Andreev, George Rzevski, Peter Shviekin, Peter Skobelev, and Igor Yankov</i>	
A Framework for Multi Robot Guidance Control	315
<i>Onur Keskin and Erol Uyar</i>	
Author Index	325