# Table of Contents

## Part 1: pages 1-516

## Part 2: pages 517-1000

## Part 3: pages 1001-1428

### Part 2

#### Session 5A: Agent Communication Languages

**Papers**

- **517** Open Protocol Design for Complex Interactions in Multi-agent Systems  
  H. Mazouzi, *University of Paris Dauphine*  
  A. El Fallah-Seghrouchni, *University of Paris*  
  S. Haddad, *University of Paris Dauphine*

- **527** Flexible Protocol Specification and Execution: Applying Event Calculus Planning using Commitments  
  P. Yolum, M. P. Singh, *North Carolina State University*

- **535** Operational Specification of a Commitment-Based Agent Communication Language  
  N. Fornara, M. Colombetti, *University of Lugano*

- **543** Representing and Executing Protocols as Joint Actions  
  S. Kumar, M. J. Huber, P. R. Cohen, *OGI School of Science & Engineering*

**Posters**

- **551** CASA: A Distributed Holonic Multiagent Architecture for Timber Production  
  A. Gerber, N. Kammenhuber, M. Klusch, *German Research Center for Artificial Intelligence*

- **553** Implementing Agent Communication Languages Directly from UML Specifications  
  S. Cranefield, M. Nowostawski, M. Purvis, *University of Otago*

- **555** The Design of Agent Communication Languages: An Organizational Approach  
  J. M. Serrano, S. Ossowski, *University Rey Juan Carlos*

- **557** Proving Properties of Open Agent Systems  
  F. Guerin, J. Pitt, *Imperial College of Science, Technology, and Medicine*

- **559** Negotiation as a Mechanism for Language Evolution  
  P. J. Gmytrasiewicz, *University of Illinois at Chicago*

- **561** Facilitating Message Exchange through Middle Agents  

- **563** Automatic Ontology Mapping for Agent Communication  
  F. Wiesman, N. Roos, P. Vogt, *IKAT, Universiteit Maastricht*

- **565** Supporting Software Agents on Small Devices  
  S. Tarkoma, *University of Helsinki*  
  M. Laukkanen, *Sonera Corporation*

### Session IT2: Invited Talk

- **567** Direct Execution of Team Specifications in STAPLE  
  S. Kumar, P. R. Cohen, M. J. Huber, *OGI School of Science & English*

### Session 6A: Applications

**Papers**

- **570** The Techsat-21 Autonomous Space Science Agent  
  S. Chien, R. Sherwood, G. Rabideau, R. Castano, A. Davies, M. Burl, R. Knight, T. Stough, J. Roden, *California Institute of Technology*  
  P. Zetocha, R. Wainwright, P. Klupar, *Air Force Research Laboratory*  
  J. Van Gaasbeck, P. Cappelaere, D. Oswald, *Interface and Control Systems*

- **578** An Open Agent Architecture for Assisting Elder Independence  
  K. Z. Haigh, J. Phelps, C. W. Geib, *Honeywell Technology Center*

**Posters**

- **587** Personal Access to a Worldwide Agent Network  
  A. Lopes, S. Gaio, *Intelligent and Communicating Systems Group of ADETTI*  
  L. Botelho, *Department of Information Sciences and Technologies of ISCTE*

- **589** A First Step Towards Providing Health-Care Agent-Based Services to Mobile Users  
  A. Moreno, D. Isern, *University Rovira I Virgili (URV)*

### Session 7A: Bidding and Bargaining Agents II

- **591** Strategic Sequential Bidding in Auctions using Dynamic Programming  
  G. Tesauro, *IBM T. J. Watson Research Center*  
  L. J. Bredin, *Colorado College*

- **599** The Eager Bidder Problem: A Fundamental Problem of DAI and Selected Solutions  
  M. Schillo, C. Kray, K. Fischer, *German Research Center for Artificial Intelligence (DFKI)*

- **607** Optimal Sequencing of Individually Rational Contracts  
  P. S. Dutta, S. Sen, *University of Tulsa*
Table of Contents

Part 1: pages 1-516

613 Decision Procedures for Multiple Auctions
   A. Byde, C. Preis, Hewlett-Packard Laboratories
   N. R. Jennings, University of Southampton

Session IT3: Invited Talk 3

621 Toward Interactive Humanoid Robots —
   A constructive approach to developing intelligent robots
   H. Ishiguro, Wakayama University

Session 5B: Mobile Software Agents

Papers

623 Core Specification and Experiments in DIET:
   A Decentralised Ecosystem-Inspired Mobile Agent System
   C. Hoile, F. Wang, E. Bonsma, P. Marrow, BTexact Technologies

631 ACQUIRE: Agent-based Complex QUery and Information Retrieval Engine
   S. Das, K. Shuster, C. Wu, Charles River Analytics

639 An Optimal Location Update and Searching Algorithm for Tracking Mobile Agent
   T.-Y. Li, Laboratories for Information Technology
   K.-Y. Lam, National University of Singapore

647 Just-In-Time Information Sharing Architectures in Multiagent Systems
   J. Carter, A. A. Ghorbani, University of New Brunswick
   S. Marsh, Institute of Information Technology

Posters

655 Detecting Anomalous Agents in Mobile Agent System: A Preliminary Approach
   T.-Y. Li, Laboratories for Information Technology
   K.-Y. Lam, National University of Singapore

657 On Splitting BDI Agents
   X. Fan, The Penn State University

659 An Agent Based Framework for Virtual Medical Devices
   Z. Obrenovic, D. Starcevic, The University of Belgrade
   E. Jovanov, The University of Alabama
   V. Radijovic, Polyclinic Median

661 A Knowledge-Based Methodology for Designing Robust Multi-Agent Systems
   M. Klein, C. Dellarocas, Massachusetts Institute of Technology
   J. A. Rodriguez-Aguilar, iSoco S.A.

662 Autonomous Mobile Objects in CORBA-Based Distributed Systems
   A. Stranjak, Lucent Technologies
   I. Cavrik, D. Kovačić, M. Žagar, University of Zagreb

Part 2: pages 517-1000

664 Mobile Agents Point the WAY: Context Sensitive Service Delivery through Mobile Lightweight Agents
   T. D. Lowen, G. M. P. O'Hare, P. T. O'Hare, University College Dublin

666 Software Agents to Support Mobile Services
   Z. Maamar, W. Mansoor, Zayed University
   Q. H. Mahmoud, Simon Fraser University

Subsection: Scaleability, robustness, and complexity

Session 6B: Social Order

Papers

674 Constraining Autonomy through Norms
   F. López y López, M. Luck, Southampton University
   M. d'Inverno, Westminster University

682 An Approach to the Analysis and Design of Multiagent Systems Based on Interaction Frames
   M. Rovatsos, G. Weiss, M. Wolf, Technical University of Munich

Posters

690 No Agent is an Island: A Framework for the Study of Inter-Agent Behavior
   T. J. M. Bench-Capon, P. E. Dunne, The University of Liverpool

692 Methodological Principles in Construction and Observation of Open Computational Systems
   M. Fredriksson, R. Gustavsson, Blekinge Institute of Technology

694 Towards an Organizational Model for Agent Societies Using Contracts
   V. Dignum, Achmea & University Utrecht
   J. J. Meyer, University Utrecht
   H. Weigand, Tilburg University

Part 3: pages 1001-1428

645 A Knowledge-Based Methodology for Designing Robust Multi-Agent Systems
   M. Klein, C. Dellarocas, Massachusetts Institute of Technology
   J. A. Rodriguez-Aguilar, iSoco S.A.

642 Autonomous Mobile Objects in CORBA-Based Distributed Systems
   A. Stranjak, Lucent Technologies
   I. Cavrik, D. Kovačić, M. Žagar, University of Zagreb
### Table of Contents

|---------------------|------------------------|------------------------|

#### Session 7B: Agent Analysis and Design

696  **Skeleton-based Agent Development for Electronic Institutions**  
W. W. Vasconcelos, University of Edinburgh  
J. Sabater, C. Sierra, J. Querol, Artificial Intelligence Research Institute

704  **Extreme Programming of Multi-Agent Systems**  
H. Knublauch, Research Institute for Applied Knowledge Processing (FAW)

712  **Specifying Agent Observable Behaviour**  
M. Viroli, A. Omicini, DEIS, Università degli Studi di Bologna

721  **ViP: A Visual Programming Language for Plan Execution Systems**  
D. Kinny, Agents ISoftware

#### Session 8B: Scalability and Robustness

729  **Towards Robust Teams with Many Agents**  
G. A. Kaminka, Bar Ilan University  
M. Bowling, Carnegie Mellon University

737  **Improving Fault-Tolerance by Replicating Agents**  
A. Fedoruk, R. Deters, University of Saskatchewan

745  **MACE3J: Fast Flexible Distributed Simulation of Large, Large-Grain Multi-Agent Systems**  
L. Gasser, K. Kakugawa, University of Illinois at Urbana-Champaign

753  **Negotiating Complex Contracts**  
M. Klein, P. Faratin, Massachusetts Institute of Technology  
H. Sayama, Y. Bar-Yam, New England Complex Systems Institute

#### Session 5C: Conversational Agents

#### Papers

758  **Embodied Contextual Agent in Information Delivering Application**  
C. Pelachaud, University of Rome "La Sapienza"  
V. Carofiglio, B. De Carolis, F. de Rosi, University of Bari  
I. Poggi, University of Rome Three

766  **Embodied Agents for Multi-party Dialogue in Immersive Virtual Worlds**  
D. Traum, J. Rickel, University of Southern California

#### Session 6C: Mobile Embodied Agents

774  **A Problem Solving Model for Collaborative Agents**  
J. Allen, N. Blaylock, G. Ferguson, University of Rochester

782  **A Plug-in Architecture for Generating Collaborative Agent Responses**  
C. Rich, N. Lesh, Mitsubishi Electric Research Laboratories  
J. Rickel, USC Information Sciences Institute  
A. Garland, Mitsubishi Electric Research Laboratories

#### Posters

790  **Multiple Character-Agents Interface: An Information Integration Platform Where Multiple Agents and Human User Collaborate**  
Y. Kitamura, H. Tsujimoto, Osaka City University  
T. Yamada, T. Yamamoto, Laboratories of Information Science and Technology

792  **DorAM: Real Answers to Real Questions**  
T. Mahlin, School of Computer Science and Engineering  
C. V. Goldman, University of Massachusetts  
J. S. Rosenschein, School of Computer Science & Engineering

794  **Intelligent Interface Agents for a System to Diagnose Eye Disorders**  
Y. Jing, K. Brown, N. Taylor, Heriot-Watt University

796  **Helping Conversational Agents to Find Informative Responses: Query Expansion Methods for Chatterbots**  
M. L'Abbate, U. Thiel, Fraunhofer-IPSI

798  **Modeling Dialogues in Multi-Agent Systems**  
N. Karacapilidis, University of Patras  
P. Moraitis, University of Cyprus

800  **Users Talk to Their Model Trains: Interaction with a Speech-based Multi-Agent System**  
A. Huber, B. Ludwig, University of Erlangen-Nuremberg (IMMD 5)

802  **RCal: A Case Study on Semantic Web Agents**  

#### Session 6C: Mobile Embodied Agents

805  **The AGILO Autonomous Robot Soccer Team: Computational Principles, Experiences, and Perspectives**  
M. Beetz, S. Buck, R. Hanek, T. Schmitt, B. Radić, Munich University of Technology

813  **How to Make a Self-Reconfigurable Robot Run**  
K. Stuy, The Maersk Mc-Kinney Moller Institute for Production Technology  
W.-M. Shen, P. Will, Information Sciences Institute and Computer Science Department
# Table of Contents

## Part 1: pages 1-516

821  Anticipating Where to Look: Predicting the Movements of Mobile Agents in Complex Terrain  
R. W. Hill, Jr., Y. Kim, J. Gratch, University of Southern California

829  Real-time Multi-target Tracking by Cooperative Distributed Active Vision Agents  
N. Ukita, T. Matsuyama, Kyoto University

## Posters

839  Multiagent Reactive Plan Application Learning in Dynamic Environments  
H. Sevay, C. Tsatsoulis, University of Kansas

841  Reinforcement Learning for Landmark-based Robot Navigation  
D. Busquets, R. López de Mántaras, C. Sierra, Artificial Intelligence Research Institute (CSIC)  
T. G. Dietterich, Oregon State University

843  Coevolutive Planning in Markov Decision Processes  
B. Scherrer, F. Charpillet, LORIA

845  A Multiagent Reinforcement Learning Algorithm by Dynamically Merging Markov Decision Processes  
M. Ghavamzadeh, S. Mahadevan, University of Massachusetts Amherst

847  An Agent Enabling Personalized Learning in e-Learning Environments  
H. Shi, S. Revithis, University of Missouri-Columbia  
S.-S. Chen, University of Florida

## Session 7C: Theories of Agency, Autonomy, and Papers

849  The ABC of Rational Agent Modelling  
M. Fisher, C. Ghidini, University of Liverpool

857  Why the Elf Acted Autonomously: Towards a Theory of Adjustable Autonomy  
P. Scerri, D. V. Pynadath, M. Tambe, University of Southern California

865  A Dynamic Perspective on an Agent’s Mental States and Interaction with its Environment  
C. M. Jonker, Vrije Universiteit Amsterdam  
J. Treur, Vrije Universiteit Amsterdam and Utrecht University

873  Multiagent Teamwork: Analyzing the Optimality and Complexity of Key Theories and Models  
D. V. Pynadath, M. Tambe, University of Southern California

## Session 8C: Formalisms and Logics II

881  Ascribing Beliefs to Resource Bounded Agents  
N. Alechina, B. Logan, University of Nottingham

889  Iterated Belief Change in Multi-Agent Systems  
J.-W. Roorda, Chalmers University of Technology  
W. van der Hoek, J.-J. Meyer, Utrecht University

897  Speculative Computation with Multi-Agent Belief Revision  
K. Satoh, National Institute of Informatics  
K. Yamamoto, Hokkaido University

## Session 5D: Formalisms and Logics I

905  What Does it Mean that an Agent is Performing a Typical Procedure? A Formal Definition in the Situation Calculus  
R. Demolombe, E. Hamon, ONERA Toulouse

912  Agents Dealing with Time and Uncertainty  
J. Dix, The University of Manchester  
S. Kraus, Bar-Ilan  
VS Subrahmanian, University of Maryland

920  A Logic of Intention with Cooperation Principles and with Assertive Speech Acts as Communication Primitives  
A. Herzig, D. Longin, IRIT

928  Deduction Systems for BDI Logics Using Sequent Calculus  
N. Nide, Nora Women’s University  
S. Takata, ATR Media Information Science Laboratory

## Posters

936  Expressing Systems Capabilities for Knowledge Coordination  
E. X. Meneses, F. S. C. de Silva, Universidade de São Paulo

938  Agent Negotiation as Proof Search in Linear Logic  
J. Harland, M. Winikoff, RMIT University

940  Coordinating the Safe Execution of Tasks in a Constrained Multi-Agent System  
A. Ciampolini, P. Mello, P. Torroni, Università di Bologna  
E. Lamma, Università di Ferrara

942  Fuzzy Argumentation for Negotiating Agents  
M. Schroeder, R. Schweimeier, City University

---

Session 8C: Formalisms and Logics II

881  Ascribing Beliefs to Resource Bounded Agents  
N. Alechina, B. Logan, University of Nottingham

889  Iterated Belief Change in Multi-Agent Systems  
J.-W. Roorda, Chalmers University of Technology  
W. van der Hoek, J.-J. Meyer, Utrecht University

897  Speculative Computation with Multi-Agent Belief Revision  
K. Satoh, National Institute of Informatics  
K. Yamamoto, Hokkaido University

Session 5D: Formalisms and Logics I

905  What Does it Mean that an Agent is Performing a Typical Procedure? A Formal Definition in the Situation Calculus  
R. Demolombe, E. Hamon, ONERA Toulouse

912  Agents Dealing with Time and Uncertainty  
J. Dix, The University of Manchester  
S. Kraus, Bar-Ilan  
VS Subrahmanian, University of Maryland

920  A Logic of Intention with Cooperation Principles and with Assertive Speech Acts as Communication Primitives  
A. Herzig, D. Longin, IRIT

928  Deduction Systems for BDI Logics Using Sequent Calculus  
N. Nide, Nora Women’s University  
S. Takata, ATR Media Information Science Laboratory

Posters

936  Expressing Systems Capabilities for Knowledge Coordination  
E. X. Meneses, F. S. C. de Silva, Universidade de São Paulo

938  Agent Negotiation as Proof Search in Linear Logic  
J. Harland, M. Winikoff, RMIT University

940  Coordinating the Safe Execution of Tasks in a Constrained Multi-Agent System  
A. Ciampolini, P. Mello, P. Torroni, Università di Bologna  
E. Lamma, Università di Ferrara

942  Fuzzy Argumentation for Negotiating Agents  
M. Schroeder, R. Schweimeier, City University
<table>
<thead>
<tr>
<th>Page</th>
<th>Section/Title</th>
<th>Authors/Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>944</td>
<td>Planning in a Multi-Agent Environment: Theory and Practice</td>
<td>J. Dix, The University of Manchester</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H. Muñoz-Avila, Lehigh University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D. Nau, L. Zhang, University of Maryland</td>
</tr>
<tr>
<td>946</td>
<td>The Bit Transmission Problem Revisited</td>
<td>A. Lomuscio, M. Sergot, Imperial College of Science, Technology, and Medicine</td>
</tr>
<tr>
<td>948</td>
<td>Modular Definition of Agent-oriented Languages using Action Semantics</td>
<td>L. Menezes, G. Ramalho, H. Moura, UFPE</td>
</tr>
<tr>
<td>950</td>
<td>A Logic for Semi-Public Communication in Multi-Agent Systems</td>
<td>L. Aszalos, University of Debrecen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A. Herzig, Université Paul Sabatier</td>
</tr>
<tr>
<td>952</td>
<td>Session 6D: Agent Analysis and Validation</td>
<td></td>
</tr>
<tr>
<td>952</td>
<td>Model Checking Multi-Agent Systems with MABLE</td>
<td>M. Wooldridge, M. Fisher, M.-P. Huget, S. Parsons, University of Liverpool</td>
</tr>
<tr>
<td>968</td>
<td>An Approach to Conforming a MAS into a FIPA-Compliant System</td>
<td>C. Georgousopoulos, O. F. Rana, Cardiff University</td>
</tr>
<tr>
<td>976</td>
<td>The Computational Complexity of Boolean and Stochastic Agent Design Problems</td>
<td>P. E. Dunne, M. Wooldridge, M. Laurence, University of Liverpool</td>
</tr>
<tr>
<td>984</td>
<td>Interaction Graphs for Planning Problem Decomposition</td>
<td>M. Iwen, A. D. Mali, University of Wisconsin</td>
</tr>
<tr>
<td>986</td>
<td>An Analysis of Multi-Agent Diagnosis</td>
<td>N. Roos, Universiteit Maastricht</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A. ten Teije, Utrecht University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A. Bos, C. Witteveen, Delft University of Technology</td>
</tr>
<tr>
<td>990</td>
<td>Using Agents to Reach an Ontology Consensus</td>
<td>A. B. Williams, T. A. Krygowski, G. Thomas, University of Iowa</td>
</tr>
<tr>
<td>992</td>
<td>Kodama: Towards a Distributed Web Searching</td>
<td>T. Helmy, S. Amamiya, M. Amamiya, Kyushu University</td>
</tr>
<tr>
<td>994</td>
<td>Author Index Part 2</td>
<td></td>
</tr>
</tbody>
</table>