An Index to Volumes 1–5 of the *Intelligent Agents* Series

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Abstract. We present a subject classified index to all articles that have appeared in the first five volumes of the *Intelligent Agents* series. Papers are classified using the classification scheme for agent-related research activities developed by the AGENTLINK project (see http://www.AgentLink.org/). These research activities are summarised in Table 1.

1.1: Agent Control Architectures

ATAL-94: [34, 49, 69, 73]. ATAL-95: [46, 12, 37]. ATAL-96: [41]. ATAL-97: [98, 16, 119]. ATAL-98: [40, 80].

1.1.1: Deliberative/Cognitive Control Architectures

ATAL-94: [1, 34, 69]. ATAL-96: [13]. ATAL-97: [28]. ATAL-98: [128].

1.1.2: Reactive/behavioural Control Architectures

ATAL-95: [46, 42]. ATAL-97: [98, 114].

1.1.4: Hybrid Architectures

ATAL-94: [36, 81]. ATAL-95: [12]. ATAL-96: [83, 78, 25]. ATAL-98: [54].

1.1.4: Layered Architectures

ATAL-94: [36, 81]. ATAL-95: [12]. ATAL-96: [83, 78, 25]. ATAL-98: [54].

1.2: Foundations of Agency

ATAL-94: [18]. ATAL-96: [19].

1.2.1: Practical Reasoning/Planning & Acting

ATAL-94: [7, 29, 1, 85]. ATAL-95: [118, 112, 86, 2]. ATAL-97: [48]. ATAL-98: [50, 90, 128].

1.2.2: Rational Action & Agency

ATAL-94: [18, 29, 49, 85]. ATAL-95: [86, 2]. ATAL-96: [75, 115, 15, 13]. ATAL-97: [28, 60, 31]. ATAL-98: [54, 128].

1.2.3: Decision Making, Decision Theory & Agency

ATAL-94: [85]. ATAL-95: [86]. ATAL-96: [129]. ATAL-98: [93].

1.2.4: Agent Representation & Specification Formalisms

ATAL-94: [7]. ATAL-95: [118, 94, 105, 116, 127, 43, 120, 65]. ATAL-96: [58, 39, 67, 75, 30, 8, 96, 13, 99, 25, 4, 126, 66]. ATAL-98: [20, 40, 47, 54, 74, 97, 117].

1.2.5: Semantics of Agency & Logics of Agency

ATAL-94: [7, 22, 29, 32, 109, 38, 113, 123]. ATAL-95: [62, 118, 94, 105, 116, 127, 65]. ATAL-96: [41, 125, 121, 67, 75, 30, 8, 96, 27, 25, 126, 66]. ATAL-97: [48, 60, 31]. ATAL-98: [23, 40, 47, 74, 97].

1.2.6: Computational/Complexity Issues of Agency

ATAL-95: [94]. ATAL-96: [126]. ATAL-98: [97].

2.1: Cooperation

ATAL-94: [18, 44]. ATAL-97: [100]. ATAL-98: [57, 87].

2.1.1: Cooperation Protocols

ATAL-94: [44]. ATAL-95: [5, 79].

2.1.2: Models and Formalisms for Cooperation

ATAL-95: [11, 79]. ATAL-96: [14, 15, 61, 78]. ATAL-98: [50, 101, 111].

2.1.3: Game/Economic Theoretic Models for Cooperation

ATAL-95: [11].

2.1.4: Conflict Detection & Resolution for Agent Systems

ATAL-95: [21]. ATAL-98: [33].

2.1.5: Coalitions & Coalition Formation

ATAL-97: [103]. ATAL-98: [111].

2.2: Coordination

ATAL-94: [44]. ATAL-95: [11]. ATAL-96: [4]. ATAL-97: [106, 114, 64, 103]. ATAL-98: [95, 111].

2.2.1: Coordination Techniques & Protocols

ATAL-97: [106, 114, 64, 103].

2.3.1: Market-Based Control

ATAL-95: [77].

2.3.2: Market-Oriented Programming

ATAL-95: [77]. ATAL-97: [100].

2.4: Communication

ATAL-96: [89, 115, 83, 15, 27, 84, 4]. ATAL-97: [119, 104, 63].

2.4.1: Agent Communication Languages

ATAL-95: [71]. ATAL-97: [63]. ATAL-98: [20, 117].

2.4.2: Speech Acts

ATAL-98: [20].

2.5: Negotiation, Bidding, and Argumentation

ATAL-96: [83, 129, 78, 84]. ATAL-97: [100, 104].

2.6.1: Emergence of Cooperation and Social Action

ATAL-95: [112]. ATAL-96: [19, 61]. ATAL-98: [6, 23, 87, 101].

2.6.2: Sociology, Ethology, and Their Relationship to Agents

ATAL-94: [110, 122]. ATAL-96: [19]. ATAL-98: [6, 23, 87].

2.6.3: Emergent Functionality and Swarm Behaviour

ATAL-94: [122].

2.6.4: Semantics & Logics of Multi-Agent Systems

ATAL-94: [22, 32, 110, 124]. ATAL-95: [43, 120, 10]. ATAL-96: [39, 67, 30, 8, 96, 14, 27, 61]. ATAL-97: [3, 106, 104, 55]. ATAL-98: [6, 9, 35, 102, 117].

3.1: Environments and Testbeds for Agent System Development

ATAL-94: [124, 36, 81]. ATAL-95: [37, 5, 52, 42, 70, 79, 108]. ATAL-96: [14, 92]. ATAL-97: [82, 26]. ATAL-98: [51].

3.2: Programming Languages & Tools for Agent Development

ATAL-94: [17, 38, 72, 91, 113, 123]. ATAL-95: [10, 65]. ATAL-96: [68, 92, 66]. ATAL-97: [3, 64, 76, 48, 55, 24]. ATAL-98: [57, 47, 51, 90, 93, 102, 107].

3.3: Relationship of Agents to Other Paradigms (e.g., OO)

ATAL-94: [17, 72, 91]. ATAL-95: [52]. ATAL-96: [41, 58, 89, 125, 99]. ATAL-97: [3, 76, 24]. ATAL-98: [33, 107].

3.5: Benchmarks for Agent Systems

ATAL-94: [36]. ATAL-95: [71]. ATAL-97: [76]. ATAL-98: [33, 95].

4.1.1: Agent Communication Standards

ATAL-95: [71]. ATAL-96: [89]. ATAL-97: [63].

4.2: Agent-based Software Engineering

ATAL-94: [17, 38, 91, 113, 123]. ATAL-96: [68, 121]. ATAL-97: [59, 98, 16, 88, 56, 82, 26, 53, 45]. ATAL-98: [51, 80].

4.2.1: Analysis & Design Techniques for Agent Systems

ATAL-96: [58]. ATAL-97: [59, 88, 53, 45].

4.2.2: Specification Techniques for Agent Systems

ATAL-94: [32, 124]. ATAL-96: [39]. ATAL-98: [9, 35].

4.2.3: Verification Techniques for Agent Systems

ATAL-98: [9, 35].

4.2.4: Relationship of Agents to Software Engineering

ATAL-94: [73]. ATAL-96: [125, 92]. ATAL-97: [16, 53, 45].

4.3: Pragmatics of Agent-based Development

ATAL-95: [62]. ATAL-96: [68, 121]. ATAL-97: [59, 56].

4.4: Experience with Agent Development Projects

ATAL-94: [122]. ATAL-96: [84]. ATAL-97: [88, 82, 26, 24]. ATAL-98: [80].

4.5: Commercialising Agent Technology

ATAL-98: [57, 93].

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Research Areas

RA1: Micro/agent-level issues in agent technology
- *1.1*: Agent control architectures
  - *1.1.1*: deliberative/cognitive agent control architectures & planning
  - *1.1.2*: reactive/behavioural agent control architectures
  - *1.1.3*: hybrid agent control architectures
  - *1.1.4*: layered agent control architectures
- *1.2*: Foundations of agency
  - *1.2.1*: practical reasoning/planning and acting
  - *1.2.2*: rational action & agency
  - *1.2.3*: decision making, decision theory, & agency
  - *1.2.4*: agent representation & specification formalisms
  - *1.2.5*: semantics of agency & logics of agency
  - *1.2.6*: computational/complexity issues of agency

RA2: Macro/society level issues in agent technology
- *2.1*: cooperation
  - *2.1.1*: cooperation protocols
  - *2.1.2*: models and formalisms for cooperation
  - *2.1.3*: game/economic theoretic models of cooperation
  - *2.1.4*: conflict detection & resolution in multi-agent systems
  - *2.1.5*: coalitions & coalition formation
- *2.2*: coordination
  - *2.2.1*: coordination techniques and protocols
  - *2.2.2*: coordination languages & systems
- *2.3*: computational market systems
  - *2.3.1*: market-based control
  - *2.3.3*: market-oriented programming
- *2.4*: communication
  - *2.4.1*: agent communication languages
  - *2.4.2*: speech acts
- *2.5*: negotiation, bidding, and argumentation
- *2.6*: foundations of multi-agent systems
  - *2.6.1*: emergence of cooperation and social action
  - *2.6.2*: sociology, ethology, and their relationship to multi-agent systems
  - *2.6.3*: emergent functionality and swarm behaviour in multi-agent systems
  - *2.6.4*: semantics of multi-agent systems & logics of multi-agent systems
  - *2.6.5*: computational/complexity issues of multi-agent systems

RA3: Agent system implementation issues
- *3.1*: environments & testbeds for agent system development
- *3.2*: programming languages, tools, & libraries for agent system development
- *3.3*: relationship of agents to objects and other paradigms (e.g., logic programming)
- *3.4*: standardised scenarios for evaluating agent systems
- *3.5*: benchmarks for agent systems
- *3.5*: evaluating agent systems

RA4: Best-practice in agent system development
- *4.1*: standards for (multi-) agent systems
  - *4.1.1*: agent communication standards
  - *4.1.2*: agent management standards
  - *4.1.3*: agent interaction standards
  - *4.1.4*: libraries, tools, testbeds for implementing agent standards
  - *4.1.5*: relationship of agent standards to other standards (e.g., CORBA MAF)
- *4.2*: agent-based software engineering
  - *4.2.1*: analysis & design techniques for agent systems
  - *4.2.2*: specification techniques for agent systems
  - *4.2.3*: verification techniques for agent systems
  - *4.2.4*: relationship of agent-based software engineering to other disciplines (e.g., OO)
- *4.3*: pragmatics of agent-based software development
- *4.4*: experience with agent development projects
- *4.5*: commercialising agent technology

Table 1. Research areas.