首页 | 期刊介绍 | 编 委 会 | 投稿指南 | 期刊订阅 | 广告服务 | 相关链接 | 下载中心 | 联系我们 | 留言板

论文　　　　　　　　最新目录 | 下期目录 | 过刊浏览 | 高级检索　　◀◀ ◀◀ 前一篇 | 后一篇 ▶▶ ▶▶

复杂自适应系统的MAS动态协作任务求解时序逻辑模型

蒋伟进[1,2], 张莲梅[1,3], 史德嘉[1,2]

1. 湖南商学院 计算机与电子工程学院, 长沙 410073;
2. 湘潭大学 信息工程学院, 湘潭 411000;
3. 武汉大学 电气工程学院, 武汉 430072

The sequential logic model to solve the multi-Agent dynamic cooperative tasks of complex self-adaptive system

JIANG Wei-jin[1,2], ZHANG Lian-mei[1,3], SHI De-jia[1,2]

1. School of Computer Science, Hunan University of Commerce, Changsha 410073, China;
2. School of Information Engineering, Xiangtan University, Xiangtan 411000, China;
3. Electrical Engineering College, Wuhan University, Wuhan 430072, China

- 摘要
- 参考文献
- 相关文章

全文: PDF (754 KB)　HTML (KB)　输出: BibTeX | EndNote (RIS)　背景资料

摘要 借鉴组织学思想将自适应系统中的自主运行单元抽象为Agent, 把复杂自适应系统视为多Agent组织, 从时间和状态角度对复杂动态系统的行为进行描述, 提出了基于时序活动逻辑的多Agent动态协作任务求解自适应机制和构造模型; 分析了任务求解BDI Agent的信念、愿望、意图的产生过程和实现方法, 建立了协商推理的语义规则和行为规则, 给出了协作群组的选择算法. 并从任务求解Agent的心智变化角度, 描述了动态协作任务求解模型实现的六个阶段: 任务动态分配、协作意愿产生、协作群体生成、共同计划制定、协作群体行动和结果评估. 通过在MAGE等平台上实验和仿真测试, 验证了方法的可行性和有效性.

关键词:　复杂自适应系统　动态协作　任务求解　多Agent系统　时序逻辑

Abstract： Solving dynamic complex problem is difficult in the theory and applied research of artificial intelligence and complex adaptive systems. Idea from histology is that the auto-run unit in self-adaptive system is abstracted to be Agent, the complex adaptive system is considered as a multi-Agent tissue. The behavior of complex dynamic systems in time and space is described. The adaptive mechanisms and structure model of solving multi-Agent dynamic cooperative tasks based on sequential active logic are proposed. The production process and realization of BDI belief, desire, intention of solving task are analyzed. The semantic rules and action rules of cooperative deduction is builded. The selection algorithm of cooperative groups is given. From the mind change of task solving Agent, the paper describes the six stages to realize the solving model of dynamic cooperative tasks. The six stages are dynamic allocation of tasks, collaboration will produce, generate collaborative groups, common planning making, collaborative groups action and evaluation of results. Experiments and simulation on MAGE and other platforms prove the feasibility and effectiveness of our proposed approaches.

Key words:　complex self-adaptive system　dynamic cooperation　task solving　MAS　sequential logic

引用本文:

蒋伟进,张莲梅,史德嘉. 复杂自适应系统的MAS动态协作任务求解时序逻辑模型[J]. 系统工程理论实践, 2012, (6): 1305-1313.

JIANG Wei-jin,ZHANG Lian-mei,SHI De-jia. The sequential logic model to solve the multi-Agent dynamic cooperative tasks of complex self-adaptive system[J]. Systems Engineering - Theory & Practice, 2012, (6): 1305-1313.

[1] Shi Z Z, Dong M K, Jiang Y C, et al. A logical foundation for the semantic web[J]. Science in China, Ser F, 2005, 48(2): 161-178.

[2] 常亮, 史忠植, 邱莉榕, 等. 动态描述逻辑的Tableau判定算法[J]. 计算机学报, 2008, 31(6): 1-14.Chang L, Shi Z Z, Qiu L R, et al. Dynamic

服务
- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- E-mail Alert
- RSS

作者相关文章
- 蒋伟进
- 张莲梅
- 史德嘉

description logic the Tableau determine algorithm[J]. Journal of Computers, 2008, 31(6): 1-14.

[3] 蒋运, 史忠植, 汤庸,等. 一种分布式动态描述逻辑[J]. 计算机研究与发展, 2006, 43(9): 1603-1608.Jiang Y, Shi Z Z, Tang Y, et al. A distributed dynamic description logic[J]. Computer Research and Development, 2006, 43(9): 1603-1608.

[4] 董洁,尹怡欣,彭开香. 流程工业多智能体系统协调控制[J]. 系统工程理论与实践, 2008, 28(10): 119-124. Dong J, Yin Y X, Peng K X. An industrial process coordinated control based on multi-agent technology[J]. Systems Engineering -- Theory & Practice, 2008, 28(10): 119-124.

[5] Boulier J F, Huang S, Taillard G. Optimal management under stochastic interest rates: The case of a protected defined contribution pension fund[J]. Insurance: Mathematics and Economics, 2001, 28: 173-189. cross ref

[6] Horrocks I. DAML+OIL: A description logic for the semantic web[J]. Bull of the IEEE Computer Society Technical Committee on Data Engineering, 2002, 25(1): 4-9.

[7] Cairns A J G, Blake D, Dowd K. Stochastic lifestyling: Optimal dynamic asset allocation for defined contribution pension plans[J]. Journal of Economic Dynamics and Control, 2006, 30: 843-877. cross ref

[8] Shi Z Z, Zhang H J, Dong M K, et al. MAGE: Multi-agent environment[C]// 2nd International Conference on Computer Networks and Mobile Computing, Shanghai, China: IEEE Computer Soc, 2003: 181-188.

[9] Zhang H J, Shi Z Z. Dynamic contract net protocol[J]. Computing Engineering, 2004, 30(21): 44-46.

[10] Deelstra G, Grasselli M, Koehl P F. Optimal investment strategies in the presence of a minimum guarantee[J]. Insurance: Mathematics and Economics, 2003, 33: 189-207. cross ref

[11] Smith R G. The contract net protocol: High-level communication and control in a distributed problem solver[J]. IEEE Transaction on Computer, 2005, C-29(12): 1104-1113.

[1] 张涛;孙林岩;孙海虹;李刚. 供应链的系统运作模式分析与建模——基于复杂自适应系统范式的研究[J]. 系统工程理论实践, 2003, 23(11): 8-13.

[2] 刘海龙;吴铁军. 基于模糊认知图的多Agent协调模型[J]. 系统工程理论实践, 2002, 22(2): 49-54.

[3] 胡代平;王浣尘. 基于Agent的宏观经济决策支持系统[J]. 系统工程理论实践, 2002, 22(1): 33-37.

[4] 龚报钧;王树青. 支持动态企业模型的MAS模型及其获取方法[J]. 系统工程理论实践, 2001, 21(5): 44-49.

[5] 董红斌;王建华. 智能工作站的MAS模型[J]. 系统工程理论实践, 2001, 21(3): 70-74.

[6] 夏敬华;陆宝春;张卫;张世琪. 多Agent诊断系统的几个问题研究[J]. 系统工程理论实践, 2000, 20(2): 21-27.