中国有色金属学报
中国有色金属学报(英文版)
中国科学技术协会 主管
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论文摘要

中国有色金属学报
ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO
第11卷 第6期 (总第45期) 2001年12月

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文章编号：1004-0609(2001)06-1104-05

基于Multi-agent的分布式专家系统协作机制

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摘 要： 探索了基于Internet/Intranet松耦合环境设计分布式选矿专家系统DMPES，采用面向Agent的系统开发方法和Multi-agent分布协作求解模式。基于DCOM 技术，以C++构建框架类加速了Agent的实现。文中提及的智能主体的通信机制、协同求解中的领域问题描述、协商及分布式协作机制的建立思想对复杂问题求解提供了支持。DMPES系统在网络环境下基于Windows NT-WorkStation采用C++开发实现，这里描述的协作机制已在该系统中获得应用，运行结果表明其具有较好的性能。

关键字： 多智能体； 通信机制； 协商式协同； 分工式协同； 组件对象模型； 框架类

Cooperative mechanism of distributed expert system based on Multi-agent

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Abstract: The design of Distributed Mineral Processing Expert System (DMPES) based on Internet/Intranet was explored under slack coupling with Agent-oriented Programming (AOP) method and Multi-agent distributed cooperating solution pattern. Inhomogeneous agents were proposed，that is，agents may be built on WAN，LAN and single CPU by tense coupling mode，and solution agents need interoperation of heterogeneous software agents based on symbol system，neural network，gentic algorithm for background analytical applications. All agent communication is performed through

message passing and blackboard mechanism. Message passing includes synchronous communication method and asynchronous communication method. Cooperative mechanism includes negotiatory mechanism and dividual mechanism. Based on Distributed Component Object Model (DCOM) technology， building frame class by C++， it accelerates the execution of Agent. It makes knowledge transferred among Agents easy， and brings up communicating efficiency greatly.

Key words: multi agent; communication mechanism; negotiatory cooperation; dividual cooperation; distributed component object model; framework class