计算机工程与应用 2010 46 (12): 72-74 ISSN: 1002-8331 CN: 11-2127/TP

研发、设计、测试

搜索空间平滑技术在软硬件划分中的应用

张 维，吴 强，陈 宇，李哲涛

湖南大学 计算机与通信学院，长沙 410082

收稿日期 2009-1-13 修回日期 2009-4-7 网络版发布日期 2010-4-21 接受日期

摘要 软硬件划分问题是软硬件协同设计的重要问题之一，它涉及到系统建模，划分算法和划分方案评价等问题，其中划分算法设计是关键点。以提高系统时间性能为目标，利用任务流图构造系统模型，在其上实现了基于优先权的评价函数，提出了搜索空间平滑技术与离散粒子群算法相结合的软硬件划分算法，并且解决了两者的融合问题，并能根据系统信息动态适应调整算法参数。实验结果表明，算法时间开销稳定，求解质量较高。

关键词 软硬件划分 搜索空间平滑技术 离散粒子群算法

分类号 TP311.1

HW/SW partitioning using search space smoothing technology

ZHANG Wei，WU Qiang，CHEN Yu，LI Zhe-tao

College of Computer and Communication，Hunan University，Changsha 410082，China

Abstract

HW/SW partitioning is one of the most important issues in the HW/SW co-design and consists of system modeling，partitioning algorithm design and the results evalution and so on，the cost of the algorithm and the quality of its solution are the key points.This paper aims at the time performance of the entire system and uses the task flow graph as the system model.Based on it，an evaluation function based on the priority is achieved，then a new algorithm combining the search space smoothing technology with discrete particle swarm is proposed and whose parameters can be adjusted automatically.At last，the combination problem is addressed.Experimental results show that the algorithm has the advantages of stable time cost and high-quality solution.

Key words hardware/software partitioning search space smoothing discrete particle swarm

DOI: 10.3778/j.issn.1002-8331.2010.12.019

通讯作者 张 维 dreamer_shax@yahoo.com.cn