

## 智能建筑室内环境分布式可计算WSN任务调度研究

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摘要：

针对智能建筑室内环境下并行计算的动态任务调度问题, 本文构建了基于分布式CPS思想的无线传感器网络(WSN)模型, 并分别设计了基于可计算复杂性的任务分配策略和基于动态调度算法的任务调度策略。通过先将任务分配成若干个子任务, 采用多带图灵机输入任务, 由合适的计算节点进行计算, 形成有向无环图, 再按调度优先级排列任务, 形成任务调度序列表, 依序处理任务, 从而达到了将任务分配、调度和执行相结合的目的。实验结果表明该策略可有效减少智能建筑室内环境分布式可计算WSN分布运行时任务之间的通讯时间和等待时间, 同时提高了任务调度的成功率, 最终优化系统的运行效率。

关键词：WSN; 图灵机; 有向无环图; 任务调度; 智能建筑

## Research on distributed computing WSN task scheduling in intelligent building indoor environment

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**Abstract:**

For addressing the dynamic task scheduling problems of distribution parallel computing in intelligent environment building ,a structure model of WSN based on distributed CPS conception is formed. A task allocation strategy based on the computability complexity and a dynamic scheduling algorithm based on the task scheduling strategy are designed. First, according to Multi-band Turing machine task is decomposed the directed acyclic graph by namely a number of sub-tasks, then selecting a appropriate computing nodes calculate. Second, the tasks in each computing node are arranged through scheduling priority, task scheduling sequence tables are formed, and tasks are processed in sequence. The experimental results show that this strategy reduces the communication times among tasks of distributed running-time waiting times, meanwhile improving the success rate of the task Scheduler is improved, the final optimized efficiency of the system, finally operational efficiency of the system is optimized.

**Keywords:** WSN; Turing machines; The directed acyclic graph; Task scheduling; Intelligent building

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