

一种改进的邻近粒子搜索算法

梁志剑^{1,2}, 周文娟²

(1 中北大学 电子测试技术重点实验室, 山西 太原 030051; 2 中北大学 计算机与控制工程学院, 山西 太原 030051)

摘要: 为提高 SPH 方法中邻近粒子的搜索效率, 采用条形 Point-In-Box(PIB)搜索法和邻域区域相关搜索法交替执行机制, 实现了一种邻近粒子融合搜索算法. 实验中, 分别用融合搜索法的 SPH 方法和条形 PIB 搜索法的 SPH 方法对溃坝现象进行了模拟, 并对条形 PIB 搜索法、邻域相关搜索法和融合搜索法在搜索时间和准确率上进行了比较, 证明了融合算法的可行性和高效性.

关键词: 邻近粒子搜索; 条形 PIB 搜索; 邻域相关搜索; 融合搜索

An Improved Neighbor Particle Search Algorithm

LIANG Zhi-jian^{1,2}, ZHOU Wen-juan²

(1 Science and Technology on Electronic Test and Measurement Laboratory, North University of China, Taiyuan 030051, China; 2 School of Computer and Control Engineering, North University of China, Taiyuan 030051, China)

Abstract: To improve the efficiency of searching for neighboring particles in SPH, a merge search algorithm, which used striped point-in-box (PIB) search algorithm and neighborhood correlation search algorithm work alternatively, was employed. In experiment, the Dam Break phenomenon was simulated by using SPH with merge search algorithm and striped PIB search algorithm respectively. And compare striped search method, neighborhood correlation search method and merge search method by testing the search time and accuracy. All of them proved that this modified search method is highly efficiency and feasibility.

Key words: neighborhood particle search; striped PIB search; neighborhood correlation search; merge search

作者简介:

梁志剑 男, (1978-), 博士, 副教授, 硕士生导师. 研究方向为仿真与可视化、计算机技术. E-mail: zhijianliang@163.com.

周文娟 女, (1991-), 硕士研究生. 研究方向为仿真与可视化.