

Assignment 2 for FHPC
kd-tree construction and analysis with OpenMP
and OpenMPI

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1 Introduction

2 Algorithm

Algorithm 1 Build kD-tree

Input arrayOfNodes

Output treeRootNode

function BUILDKDTree(startNode, length, axis, dim)

$myaxis \leftarrow \text{todo}$

$medianNode \leftarrow \text{MEDIANOFMEDIANS}(\text{startNode}, \text{startNode} + \text{length} - 1, myaxis, \text{len})$

$medianNode.left \leftarrow \text{MAKETREE}(\text{startNode}, medianNode - \text{startNode}, myaxis, \text{dim})$

$medianNode.right \leftarrow \text{MAKETREE}(\text{startNode}, \text{startNode} + \text{length} - (medianNode + 1), myaxis, \text{dim})$

return treeNode

end function

function MEDIANOFMEDIANS(startNode, endNode, myaxis, length)

todo

return median

end function

procedure INSERTIONSORT(startNode, length, axis)

todo

end procedure

3 Implementation

4 Performance model and scaling

5 Conclusion