07-H-04

# Geometric Range Search

## Range Tree: Performance

## - Beyond 2D

Junhui DENG

deng@tsinghua.edu.cn

❖ Let S be a set of n points in $\mathbb{E}^d$, $d \geq 2$

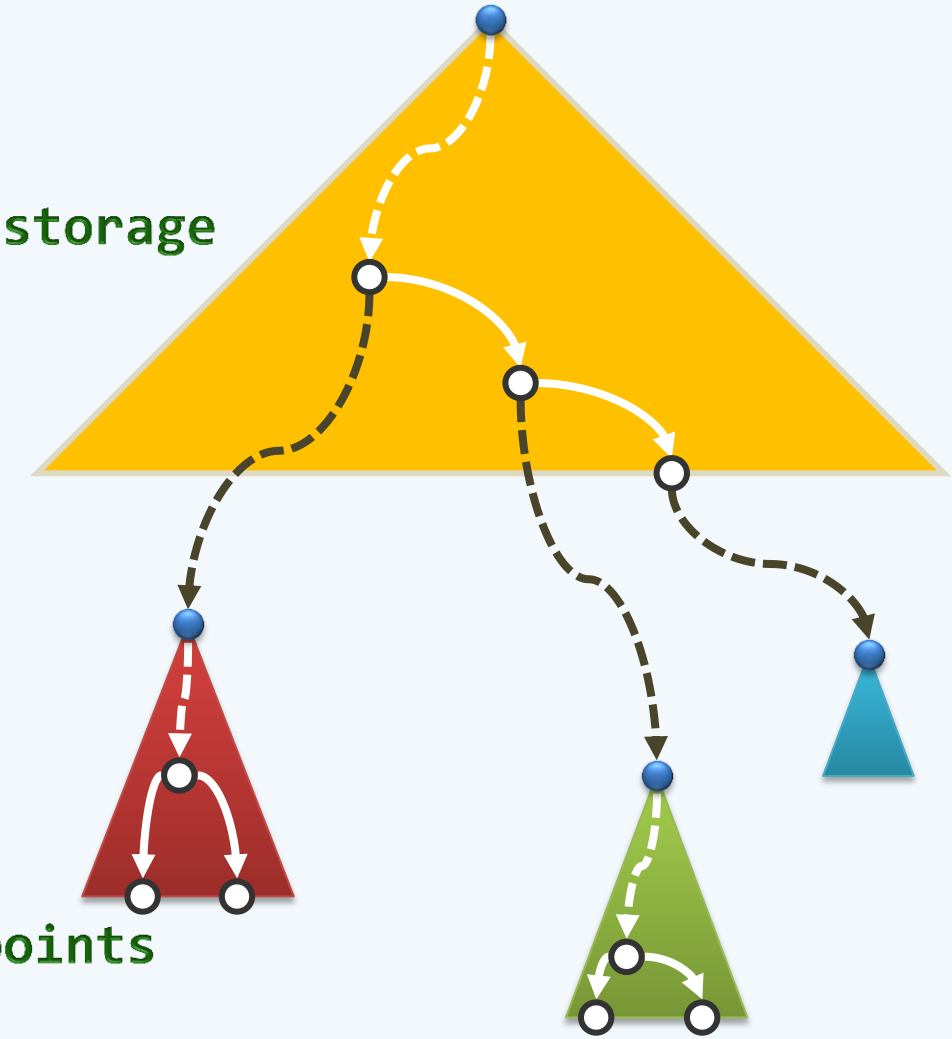
- A d-level tree for S uses $\boxed{O(n\log^{d-1}n)}$ storage
- Such a tree can be constructed

  in $\boxed{O(n\log^{d-1}n)}$ time
- Each rectangular range query of S

  can be answered

  in $\boxed{O(r + \log^d n)}$ time, where

  r is the number of reported points



❖ For planar case, can the query time be improved to, say, $\boxed{O(\log n)}$?