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Assignment 8

(Due: 16.01.2023)

Task 1 Interaction Techniques

(a) **Name and describe two interaction techniques from the Tweetmap tool, corresponding to distinct interaction categories as defined by Yi et al.**

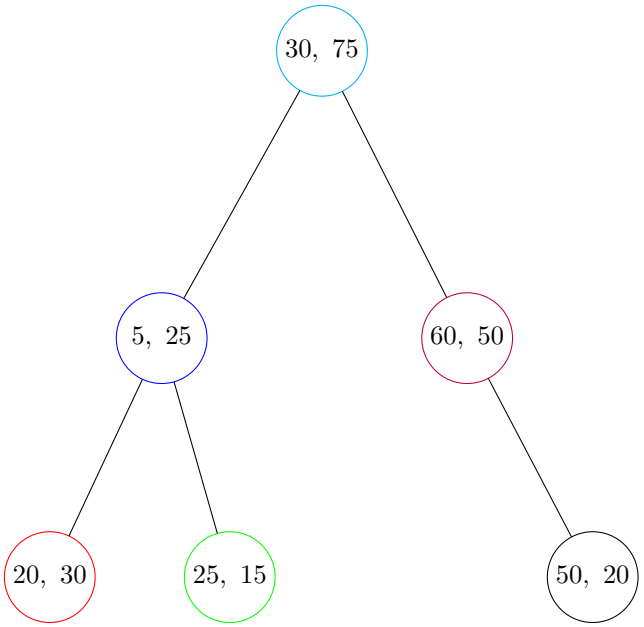
Navigation: The Tweetmap tool allows users to pan and zoom in on the map to explore different locations and see tweets from those areas.

Filtering: The Tweetmap tool also has a feature that allows users to filter tweets by keywords, hashtags, and user mentions. This helps users to narrow down the data set to only the those tweets that are relevant to their current interest or requirement.

(b) **Describe the difference between "overview+detail" and "focus+context".**
Both "Overview+detail" and "focus+context" are two different interaction techniques used in the Tweetmap.
"Overview+Detail" allows users to see the big picture and also the details for a more detailed analysis. and "Focus+Context" allows users to see a specific subset and the surrounding context to understand how a particular tweet or location fit into the broader context of the data set.

Task 2 k-D Tree

(a) **Sketch a homogeneous 2-D tree. Make sure to find an insertion order that leads to a balanced tree**
A homogeneous 2-D tree is a data structure that organizes a 2-D dataset in a hierarchical manner, dividing the data into smaller regions based on a chosen split value and split dimension.



(b) **Perform spatial partitioning according to the previously found tree.**
Spatial partitioning using a 2-D tree involves dividing the data into smaller regions based on a chosen split value and split dimension
Spatial partitioning : Figure 1 (Page 3)

(c) **Briefly explain the type of problem that might occur when arbitrary insertion orders are used to build k-D Trees.**
When arbitrary insertion orders are used to build k-D Trees, the tree can become unbalanced. This can lead to poor performance when querying the tree, as it may require traversing a large number of nodes to find a specific point.

Task 3 Quadtree

(a) Impl

(b) Impl

(c) Impl

Figure 1: Task 2 (b)