Hierarchy Vis

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By

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Papers


Why Hierarchy Vis is first?
- Space-Tree
- SequoiaView (or Cushion TreeMap)
- H3
- TreeViewer
- Star-Tree
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- Star-Tree
Space-Tree

Sequoia View
(or Cushion TreeMap)

H3

Tree Viewer

Star-Tree
- Trees are easily visualized.

- Trees are not versatile enough
Hierarchical Vis: Concerned with DAGs

But there are DAGs that cannot be easily visualized (eg some DAGs cannot be put on a plane without crossovers)
Multitrees:

- Is a DAG and not a tree
- Easy reuse of data
Creating a Multitree
Add another Tree On top of the Old
Continue...
Proposition I: The following properties are equivalent:

- The DAG can be constructed by adding new tree structure above existing (or newly added) disjoint complete subtrees.

- The DAG is diamond free.

- The descendants of any node form a tree.

- The ancestors of any node form an inverted tree.
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At any one node, we have a topological tree (t-tree).

Actually, this can be extended to a set of points along a path from $x$ to $y$, where $x \leq y$. 
Proposition II: Consider any two nodes \( x \geq y \) in a multitree, and the necessarily unique path connecting them. The union of all the ancestors of this path and all the descendants of this path is a topological tree.
Multitrees are Great

- More options then trees
- Reuse of data
- Ability to view Ancestors & Descendants in a tree-like fashion
Multitrees are Bad:

- Diamonds are Forever... (and local Multitrees)
- Cannot view the whole Multitree
- Reused data is static
- Difficult construction
Animated Visualization of Multiple Intersecting Hierarchies
Multiple Intersecting Hierarchy: Polyarchy

Data is replicated at several nodes among several hierarchies

Metadirectory

Intersecting data is organized into a metadirectory for easy referencing
Polyarchy Visualization:

Viewing points that are distributed amongst several hierarchies
Polyarchy
Stacked View
Goals:

- Show how instances in each database (hierarchy) relate to each other

- Simple transition from one hierarchy view to another

- Help understand the relationships between several hierarchy views
Pivot Point
Horizontal Animation
Pros

- User study to determine best approach
- Comprehensive visualization of a complicated structure
- Searchable
- Superset of Multitrees...
Cons

- No order to databases
- Pivots only around one point
- Text gets cluttered during animation
- No general browse option
- Doesn’t exploit any other infovis sources.
Thanks

Questions?
Comments?