



pcriri in situ



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Matrix Exploration

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Goal

- Navigation
- Overview
- Filtering
- Aggregation

Of social networks

Prior to Node-Link Diagram Visualization

Why Matrices?

- Matrices are easier to interact with
- Ordering
- Filtering
- Aggregation
(van Ham 03)
- Weak for path finding
(Ghoniem et al. 05)

Zoom in

Ordering the Matrix

- Matrix require reordering to be understood (Bertin 67)
- Method?
 - By hand
 - long and painful
 - Interactive (TableLens/InfoZoom)
 - Useful but hard with large matrices
 - Automatic
 - How do we asses order quality?

Automatic Reordering

- We use methods applied to tables
 - with a trick
- Objective function + exhaustive evaluation too complex
- 3 types
 - Heuristics (Siirtola et al.)
 - Clustering + linearization (Bioinformatics, Bar-Joseph 02)
 - Global optimization (traveling salesman)

How does automatic methods work?

- Find one order for rows and one for columns
- Find a distance or similarity metrics between row/columns
 - e.g. Manhattan, Euclidian, etc.
- Clustering+linearization:
 - compute a hierarchical clustering tree
 - order its leaves
- TSP: Find a path that minimizes the sum of distances between adjacent rows

From matrix to table (trick)

- Adjacency matrices are usually sparse
 - Not enough information to have a meaningful order
- Use a transient table containing the Dijkstra (weighted) shortest path between all the vertices
 - pb. with unconnected components
 - pb. with directed graphs
- Compute the ordering on this table instead of the adjacency matrix

Assessing the quality of the methods

- What is a good order?
- We are currently performing an evaluation comparing Clustering+linearization with TSP ordering

Conclusion

- Matrices for interacting with social networks prior to their visualization with node-link diagrams
- Ordering matters
- Assessing the quality of ordering is hard
- We are currently evaluating 2 automatic ordering