Visualization & Visual Analytics 1

Angus Forbes

creativecoding.evl.uic.edu/courses/cs424
• A graph $G$ consists of a collection of vertices (or nodes) $V$ and a set of edges $E$, consisting of vertex pairs.

• An edge $e_{xy} = (x,y)$ connects two vertices $x$ and $y$.

• For example: $V = \{1,2,3,4\}$, $E = \{(1,2),(1,3),(2,3),(3,4),(4,1)\}$
• Graphs
  • Model relations amount data
  • Have nodes and edges

• Trees
  • Graphs with hierarchical structure
    • A connected graph with N-1 edges
  • Nodes referred to as parents and children
Webpages as Graphs
Figure 3 Matrix view of different protein orderings and lensing (last panel) in the Rb-E2F pathway.
Dynamic Graph Visualization

Digital library for publication The State of the Art in Visualizing Dynamic Graphs

Timeline

Publications per year

- 20195
- 2000
- 2005
- 2010
- 20

Citations per publication

- 1
- 45

Keywords

- technique
- application
- evaluation
- animation
- timeline
- generic
- node-link
- matrix
- list
- case_study
- user_study
- survey
- expert
- algorithmic
- theoretical

162 publications

1. Archambault2015Animation

Can animation support the visualisation

Archambault, Daniel Purchase, Helen C

Abstract: Animation and small multiples are much used in visualising dynamic graphs. Animations present an interactive view of graphs, allowing smooth transitions and smoothly interpolated as the graph evolves. Not common in data sets, small multiples present... ➔

type: evaluation time: animation time: timeline evaluation: user_study application: generic_juxtaposition

select similar cited by this

2. Bach2015Small

Small MultiPiles: Piling Time to Explore Networks

Bach, Benjamin Henry-Riche, Nathalie Dwyer, Tim Grabowski, Thomas

Abstract: We introduce MultiPiles, a visualisation technique for exploring temporal networks. MultiPiles is based on the physical act of piling one temporal dataset on another, allowing the user to represent a single temporal snapshot. Compared to older visualisation techniques such as: flipp... ➔

type: technique time: animation time: timeline application: biology animated_timeline weight
Visualizing Group Structures in Graphs - Bibliography

Digital library for publication The State of the Art in Visualizing Group Structures in Graphs

   Visualizing Large Graphs with Compound-Fisheye
   Abello, James Kobourov, Stephen G. Yusufov, Roman
   Abstract: Compound-fisheye views are introduced as an interaction with large graphs. The method relies on a fisheye view and a generalization of the traditional fisheye view, termed fisheye of the cluster tree.

   ASK-GraphView: A Large Scale Graph Visualization
   Abello, James van Ham, Frank Krishnan, Neeraj
   Abstract: We describe ASK-GraphView, a node-link-based tool that allows clustering and interactive navigation of large graphs. The system uses a scalable architecture and a set of advanced clustering algorithms to construct...
Critique

Inter-group discussions

- Do you understand what visualization tasks will be enabled?
- Do you think that this is an appropriate visualization technique? If so, why? If not, why not?
- What do you like about it or not like about it?
- What parts of the visualization might be confusing?
- If you had to grade it, what grade would you give it? How could the group improve their grade?
- Do you have any suggestions for the group? How would you implement the technique if you were given this dataset?
Homework:

- Thursday: Coding assignment is due by class (3:30pm)

- Tuesday: Read Munzner, Chapters 9 & 10 (quiz during Tuesday’s class)

- Optional: Munzner, Chapters 7 & 8 (especially if you are using map data or table data)