Übung zur Vorlesung
Informationsvisualisierung

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Time-Based Data
Visualization Basics [6]

Common Questions

- Does a data element exist at a specific time?
- How long is the time span of the data element?
- How often does a data element occur?
- How fast is a data element changing?
- In what order do data elements appear?
- …

Time Axis Configuration

- Discrete time points vs. interval time
- Linear time vs. cyclic time
- Ordinal time vs. continuous time
Visualization Basics [6]

- Discrete time points vs. interval time
Visualization Basics [6]

• Linear time vs. cyclic time
Visualization Basics [6]

- Ordinal time vs. continuous time:
Types of Visualization [6]

Static
- Discrete or continuous data
- Visualization does not change over time
- Explore patterns, time steps without temporal limitations

Dynamic
- Discrete or continuous data
- Visualization changes over time
- Conclusion of temporal behavior

Event-based:
- Discrete, continuous and event-based data
- Changes in data can not be foreseen
Example: LastHistory [1]
Text and Documents
Text and Documents: Basics

Characteristics
- Nominal data
- Interesting properties:
  - Meta data
  - Structure
  - Statistics
  - Semantics
  - ...

Goals
- Detecting patterns
- Keyword search
- Cluster maps
Action Science Explorer
The Action Science Explorer [2]

http://www.youtube.com/watch?v=wdp-jZUqgcU
The Action Science Explorer [2]

Goals

• Find key authors and key papers
• Explore similar papers
• Explore historical development
• Summarize research fields

Interaction

• Linking and brushing
• Overview and detail
• Details on demand
• Dynamic queries
Arc Diagrams
Arc Diagrams [5]

- Visualization complex patterns of repetitions
Thread Arcs [3]

- Visualization of e-mail threads
- Design goals:
  - Keep chronology
  - Show relationships
  - Compactness
  - Stability
  - Quick scanning
  - Quick interaction
  - Easy interpretable
Thread Arcs

• Chronological ordering
  • width = linear function of thread size

  time ordering → ● ● ● ● ● ● ●
  ↑ first message
  ↑ last message

• Relationships

  “reply to” arcs

[3]
Thread Arcs

• Improvements
  • “The relationships between messages are clearer when arcs are drawn above and below nodes.” [3]
Thread Arcs

• Improvements
  • “Constraining the maximum height of the arcs makes the visualization more compact.” [3]

• Problem: Overlap

Solution: selection highlighting
Thread Arcs

- Conversation types:
  - Advantages: makes different conversations easily comparable

Several answers per message => Could be a **group** conversation

One answer per message => Could be a **private** conversation

bushy

[3]
Thread Arcs

- **Pseudo-code [3]:**
  sort all messages chronologically
  find the generation depth of each message
  for each message
    if the message is the root then
      place the node at the starting position and don’t draw an arc
    else
      place the message to the right of the last message
      if the message generation depth is odd then
        draw an arc above the line to the message’s parent
      else
        draw an arc below the line to the message’s parent
      next message
Create a thread arc for the following message structure (represented as a tree diagram).
The number represent the chronological order.
Thread Arcs

- Stability, Compactness and Chronology

Thread Arc
(S,C,Ch)

Tree Diagram
(null)

Tree Table
(null)

Compact Chronological Tree Table [3]
(Ch)
Thread Arcs

- Chronology

Tree Diagram

Tree Table

Thread Arc
Thread Arcs

- Example: ThreadVis (Thunderbird)
Roadmap

• Finale Abgabe: 22.01.2015
• Präsentationen in den Übungen am 22./ 23. Januar

• Wiederholung in den Übungen am 29./30. Januar
  -> Fragen zu Vorlesung und Übung vorab per Mail
References


