CMV, Brushing and Linking
• CMV stands for coordinated multiple views
• Brushing
• Linking

Personal Agency
• People "strongly desire that they are in charge of the interface and that the interface responds to their actions." 1
• Interaction techniques that facilitate a high sense of personal agency are likely to have a strong empowering effect for users. 2

Source, Link, and Target
1. Source is the set of one or more selected data points in a view.
2. Link is the expression of relationship between the source and the related data points in other views (target).
3. Target is the set of data points that are related to the source.

MyBrush: Brushing and Linking with Personal Agency
Authors: Philipp Koytek, Charles Perin, Jo Vermeulen, Elisabeth Andre, and Sheelagh Carpendale
Presented by: Alexandra Kim

Example

Existing techniques

Source
• Visual attributes
  • Fill color
  • Outline color
  • Size
  • Shape
  • Focus and blur
  • Transparency
  • Container
  • Label
  • Temporality
  • Transient
  • Temporary
  • Persistent

Link
• Visual attributes
  • Stroke color
  • Color gradient
  • Thickness
  • Thin
  • Ribbon
  • Variable
  • Curvature
  • Angle
  • Line
  • Multiple selections
  • Logical combination
  • Degree-of-interest functions
  • Binary
  • Non-binary

Target
• Visual attributes (similar to source's attributes)
  • Fill color
  • Outline color
  • Size
  • Shape
  • Focus and blur
  • Transparency
  • Container
  • Label
  • Hide unselected
  • De-aggregation

Design goals
• DG1. Provide direct access to brush components.
• DG2. Offer choice in degree of personal agency.
• DG3. Support complex personal agency.

Demo

Qualitative study
12 participants [5F, 7M]:
• vis group (2F, 2M)
• sports group (4M)
• mixed group (3F, 1M)
• six views.
• soffa.com dataset of the 50 most valuable soccer players
• shown at 65" multi-touch SMART Board 6000 series with 3840×2160px resolution
• prelude (10 min), training (10 min), exploration (30 min), wrap-up (10 min)

Users’ feedback
• "had a bit of a learning curve", but "it was easy to learn" and "very fun"
• the brush menus were "nicely done" and "very helpful"
• they were able to "so easily connect this many views"
• "I really like the many possibilities cause every person is gonna try differently"
• "I could learn about the players [...] and was able to search for answers to the questions I had"

Limitations (mentioned in the paper)
• Scalability
• Exploit links (link bundling, routing)
• More features – input of UI
• Mobile devices
• More configurable attributes needed (?)
• Ordering
• Conflict resolution
• Collaborative interfaces

Critique (screen-dependent)

- Very screen-dependent
- Links can be virtually intractable
- Hard to choose individual points
- Unnatural behaviour for some views
- Lacking UI elements
- Zoom-in, zoom-out
- Undo, redo
- Overlapping layers

Critique (intractable links)

- Includes extensive survey of existing brushing and linking papers.
- Deconstructed brushing and linking into three components:
  - Source
  - Link
  - Target
- Introduced MyBrush – a tool for flexible brushing and linking.
- Conducted a qualitative study and received positive feedback.
- Minor UI problems, scalability is the main issue.

Critique (hard to choose individual points)

- Summary

- Critical (unnatural behaviour)

- Critique (lacking UI)

- Summary

- Links

Thank you!
Questions?