CIS 602: Provenance & Scientific Data Management

Visualization & Provenance

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Visualization and Provenance

• Aruvi:
  - Link visualizations with knowledge and history provenance
• Tracking user actions has some different concerns than the provenance of executions
• Can use this provenance to do a number of interesting things!
Generating Photo Manipulation Tutorials by Demonstration

F. Grabler, M. Agrawala, W. Li, M. Dontcheva, T. Igarashi

Presented by: Prudhvi Pathri
Tutorial Generation

• Purpose is not to record everything but rather to generate tutorials
  - Undos discard unused actions
  - Remove uninteresting actions
  - Ordering can sometimes be improved from original recording

• Macro generation
  - Automate the tutorials: don’t always need to show someone when the computer can just do it
  - Depends on specific knowledge about content or image recognition
Generating Photo Manipulation Tutorials by Demonstration

F. Grabler, M. Agrawala, W. Li, M. Dontcheva, T. Igarashi

(Video)
Nonlinear Revision Control for Images

H.-T. Chen, L.-Y. Wei, C.-F. Chang

(Video)
Graphical Histories for Visualization: Supporting Analysis, Communication, and Evaluation

J. Heer, J. D. Mackinlay, C. Stolte, and M. Agrawala

Presented by: Venkata Satish Kumar Tiriveedhi
History Visualization

- Chunking Filter & Sort Actions (4,139) 23.8%
- Chunking Formatting Actions (4,139) 23.8%
- Management Technique Items culled (out of 17,401) 10,740

Table 1. Estimated Reductions from History Management.

<table>
<thead>
<tr>
<th>Management Technique</th>
<th>Items culled</th>
<th>% culled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter &amp; Sort Actions</td>
<td>10,740</td>
<td>61.7%</td>
</tr>
<tr>
<td>Formatting Actions</td>
<td>10,740</td>
<td>61.7%</td>
</tr>
</tbody>
</table>

...
Provenance Data

[Image of behavior graphs showing user actions in Tableau.

- **4.1 Analyzing Individual Usage with Behavior Graphs**
  - As we designed our history interface, we wanted information about how users used the existing undo and redo features. Looking at the usage logs, we found a total of 1,023 undo events and 82 redo events. Of these, 17,401 actions per user. Of these, 17,401

- **4.3 Findings**
  - **4.3.1 The Undo / Redo Ratio**
    - In analyzing command usage, we found that formatting actions, undone actions were never revisited, a finding that supports our expectation presented histories to be as little as 40% the size they would be without our techniques. We note, however, that this is an estimate from recorded data and as such does not include manual deletion of data consists of 20,192 actions from Tableau employees and 27 customers willing to share their data. The patterns of branching and revisitation. Patterns for these and other history analysis tasks, we have used

- **4.3.2 Estimation of History Management Techniques**
  - For the analysis of collected history logs: the primary display contains thumbnails for operation events: undo was ~12.5 times more common than redo. Thus, most usage sessions, suggesti

- **4.3.3 Use of Automation**
  - Of the 1,023 undo events, 61.7% of states are either coalesce all formatting events. As runs of consecutive resize events

- **4.3.4 Estimated Impact of History Management Techniques**
  - Improving Tableau's automatic sizing routines. Furthermore, they were in which users adjust size and styling, accounted for 23.8% of all actions. They were performed in succession: 73.6% of tick selection of items, as non-visual actions—such as little as 40% the size they would be without our techniques. We note, however, that this is an estimate from recorded data and as such does not include manual deletion of data consists of 20,192 actions from Tableau employees and 27 customers willing to share their data. The patterns of branching and revisitation. Patterns for these and other history analysis tasks, we have used

- **Tableau's Automated Presentation Features**
  - We used Tableau's automated presentation features (named “ShowMe”) [21] to help users create more perceptually effective visualizations. We used

- **Comparison of Automated vs. Manually Adjusted Mark Types**
  - We also discovered that the automated method resulted in a rate of mark type adjustment

- **Discussion**
  - In the future, we plan to incorporate our augmented history model into Tableau that includes our augmented history model, but without a
Graphical Histories

• Chunking
  - Group similar operations, especially when repetitive
  - Example: formatting operations

• Undo-as-delete
  - Again, paper suggests it is ok to delete some history information...
  - Many more undos than redos based on user study

• Does having “Goto” help users?

• Targeted to Tableau
  - How does this generalize?
  - What aspects change in other types of software?
Provenance Review (continued)
Reminders

• Next class: Reproducibility
• Project Progress Reports Due November 13
  - Can serve as the start to your final project report