Elision Based Text Zooming

Sam Davis

Basic Idea

- Add zoom control to web browser
- Zoom out to show more of document
- Focused on text, not images
- Instead of shrinking the text, hide pieces of it
- Indicate where things are hidden:
  - Looks similar to Eclipse but also shows how much is hidden

"Never put anything important in the middle of a paragraph."

Quick Demo

Other Approaches

- Tie zooming to scrolling:
  - Shrink text as scroll speed increases
- Multi-Scale Table of Contents:
  - Replace lowest level text, by increasingly higher level structure (headings)
- Hidden annotations (e.g. definitions, explanations) that pop out of text
- Source code folding

Original Idea

- As zoom increases, chop lines off the end of every block of text (paragraph)

Modification

- Line lengths hard to determine
- Rate of zooming too great
- Instead, for each block of text
  - Hide words in groups of 6

Proportional Zooming

- Paragraph lengths differ greatly
- When hiding text, for each paragraph, rate of zooming proportional to paragraph length
- When showing previously hidden text, rate of zooming constant for all paragraphs
  - Sudden jump when zooming all the way in

Proportional Zooming Demo

Showing Specific Paragraphs

- Clicking a paragraph:
  - Zooms it in all the way
  - Draws a permanent box around it to make finding it again easier
- Moving mouse over indicators temporarily pops up paragraph in gold box, reduced font
  - To improve continuity, first hidden word highlighted

Screenshots…

f. **Webcasting Rights and Statutory Royalties** . For the avoidance of doubt, where the Work is a sound recording, Licensor waives the exclusive right ▭

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to ▭

4. Restrictions. The license granted in Section 3 above is expressly made subject to and limited by the following restrictions: ▯

Mouseover

f. **Webcasting Rights and Statutory Royalties** . For the avoidance of doubt, where the Work is a sound recording, Licensor waives the exclusive right to collect, whether individually or via a performance-rights society (e.g. SoundExchange), royalties for the public digital performance (e.g. webcast) of the Work, subject to the compulsory license created by 17 USC Section 114 of the US Copyright Act (or the equivalent in other jurisdictions).

The above whether now known or hereafter devised. The above rights include the right to ⬚

4. **Restrictions.** The license granted in Section 3 above is expressly made subject to and limited by the following restrictions: ⬚

Click

f. **Webcasting Rights and Statutory Royalties** . For the avoidance of doubt, where the Work is a sound recording, Licensor waives the exclusive right to collect, whether individually or via a performance-rights society (e.g. SoundExchange), royalties for the public digital performance (e.g. webcast) of the Work, subject to the compulsory license created by 17 USC Section 114 of the US Copyright Act (or the equivalent in other jurisdictions).

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to ▭

4. Restrictions. The license granted in Section 3 above is

What to Show While Zooming

- When zooming, relative position of elements in page changes
  - Undesired, uncontrollable scrolling
- Solution: fix position of element vertically closest to location *initially* clicked
  - If element becomes hidden, find closest element that is still visible
- Zooming widget draws eyes to fixed location, changes appear smoother

Scrolling

- Originally intended to combine zooming with scrolling
- Result: very hard to follow
- Better to zoom and scroll in separate steps
- Perhaps possible to combine effectively, but:
  - Very complex interaction between zoom level, scroll position, content under the mouse, user's focus
  - Not clear what should be hidden/shown
  - Might work if zooming restricted to off-screen elements while scrolling.

My Impressions

- Fun to play with
- Useful for getting context when reading:
  - Zoom out and quickly back in
- Zoom out, scroll, zoom in: much easier than just scrolling
- Effective on both structured and plain text
- First conceived as navigation aid, but also produces useful overview with details on demand
- Could use more fine tuning for smoothness

Future Work

- Better handle nested structures, e.g. lists, and lists within lists
  - For lists of many short items, hide one complete item at a time
  - Treat longer list items as paragraphs – don't hide all at once
- Combine with traditional zooming (resizing)
- One control for both zooming and scrolling that prevents doing both at once
  - Smoothly switch between zooming and scrolling

Conclusions

- Zooming by elision is effective
- Smoothness is key
- Should be combined with details on demand

Questions?