

## Elision Based Text Zooming

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### 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

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*“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

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### Original Idea

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

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### Modification

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

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### 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

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### 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

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### Screenshots...

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### Mouseover

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### Click

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### 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.

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### 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

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## 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

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## Conclusions

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

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## Questions?

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