Touch Interaction in Scientific Visualization

Tobias Isenberg

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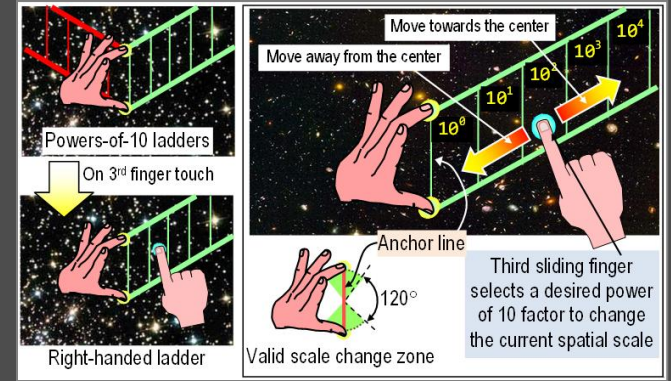
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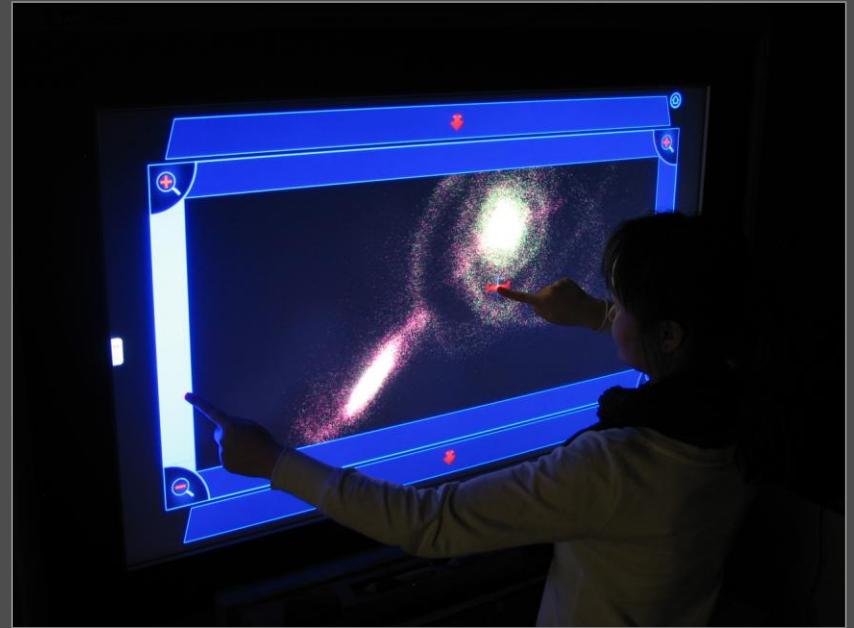
Little Work on Touch Interaction w/ SciVis
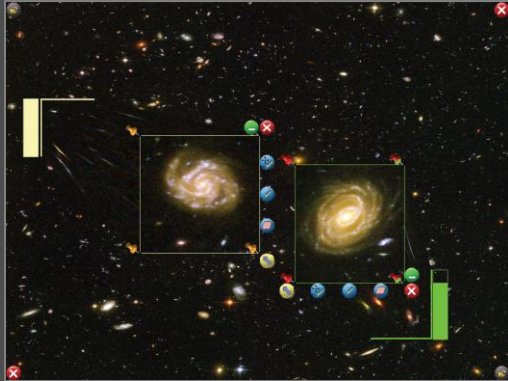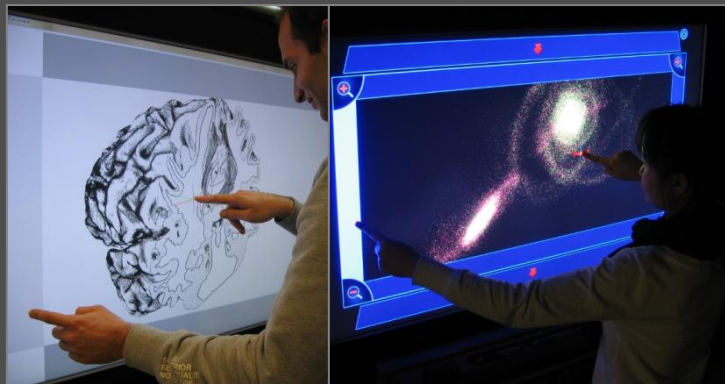

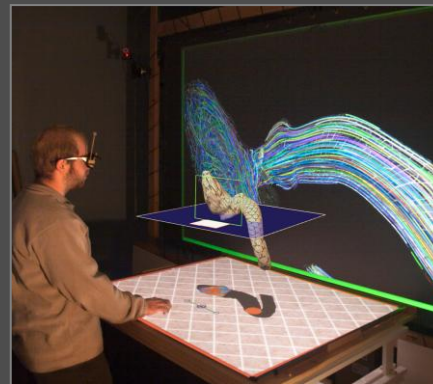DT Lens [Forlines & Shen, 2005]

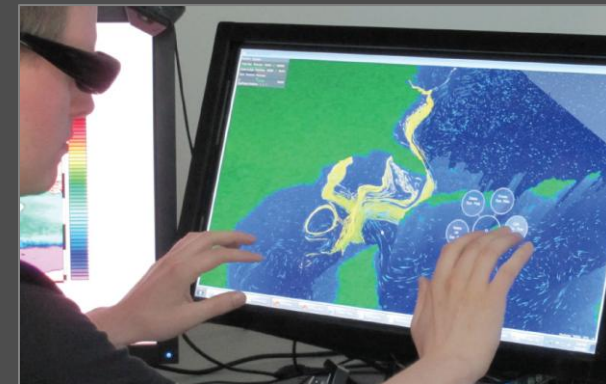
2D Vector Vis [Isenberg et al., 2008]

Powers of 10 ladder [Fu et al., 2010]

FI3D [Yu et al., 2010]

Slice WIM [Coffey et al., 2011]

Stereo ocean flow [Butkiewicz & Ware, 2011]

Special Aspects of Scientific Visualization

- usually data defined 3D space

- mapping of 2D input to 3D actions

- diversity of data types:
  planar surfaces, 3D surfaces, volumes, particles, …

- use of additional data exploration elements
  (cutting planes, probes, transfer functions, …)

- additional multi-dimensional data aspects

Supporting Touch Interaction w/ 3D SciVis

- integrated interaction toolkit for wide range of data
  - space navigation and exploration
  - data selection (specific element, ranges, sub-spaces, ...)
  - data manipulation (location, orientation, scale)
  - specification of parameters (transfer functions, seeds)
- precise control (precise input & constraining)
- stereoscopic displays (2D touch vs. 3D display)
- collaboration in a SciVis exploration scenario
  - extension of existing SciVis settings (CAVE, walls)
  - settings: colleagues, groups discussions, presentations
  - solving conflicts, integrating results?

A Bright Future

- touch settings becoming increasingly ubiquitous
- lots of challenges – lots of opportunities