

# 3D Interaction Using Autostereoscopic Displays

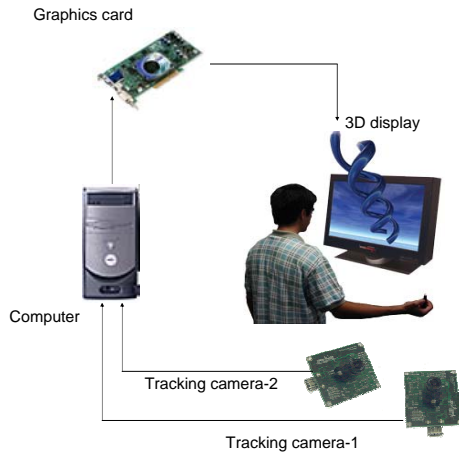
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## Research Goal

- Investigate human interaction with stereo displays, particularly desktop autostereoscopic (no-glasses) displays
- Develop interactive input and manipulation methods and evaluate their effectiveness in immersive applications

## Research Approach

- Combine video cameras, tracking and autostereoscopic displays to create an immersive 3D interaction system
- Separate interaction space and visualization space, so users can utilize the whole visualization space created by the 3D display



## Uniqueness and Related Work

- Uses all commercially available components
- Several people can see the interaction at the same time and interact with the display by tracking multiple light sources
- Head tracking is not necessary
- Utilizes the whole volume created by the display

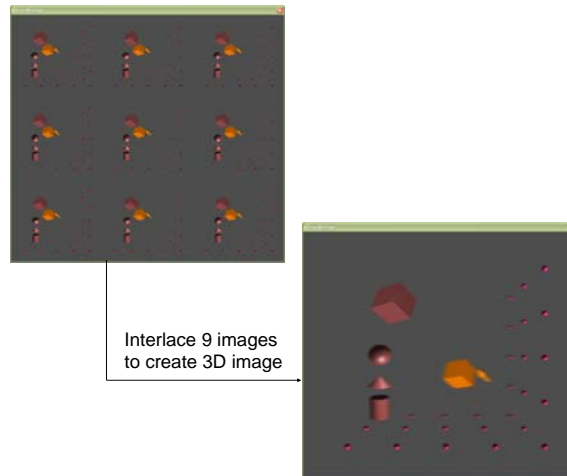
Related Work: Multimo3D group at Heinrich-Hertz-Institute, Phillips Labs.

## Role in IMSC

- Interaction techniques for autostereoscopic 3D display systems to enhance and extend the immersive experience for users in visualization, design, simulation, monitoring, security, entertainment, gaming, teleconferencing, and command-control

## Accomplishments

- Full screen interaction in real-time
- Applicable to commercially available 3D autostereoscopic displays by click of a button
- Publications
  - Z. Y. Alpaslan and A. A. Sawchuk, "Three-Dimensional Interaction with Autostereoscopic Displays," *Proc. Stereoscopic Displays and Virtual Reality Systems XI Symposium*, Proc. SPIE, Vol. 5291, San Jose, CA, 2004.
- Best Presentation Award at the 2004 SPIE Stereoscopic Displays and Applications conference



## 5-Year Plan

- Explore interaction over the Internet
- Integration with hand gesture recognition and 10.2 audio
- Determine minimum necessary resolution and image quality
- Determine maximum tolerable latency
- Determine effectiveness of various stereo video compression and display modes in immersive applications