3D Viewing to Improve Early Detection of Lung Cancer

Researchers at CELEST (Center of Excellence for Learning in Education, Science, and Technology), an NSF-funded Science of Learning Center, have developed 3D viewing software that is designed to help radiologists find early signs of lung cancer more efficiently and reliably.

Jeremy Wolfe and colleagues at the Brigham & Women’s Hospital Radiology Research facility at Crosstown Center in Boston, Massachusetts are working with CELEST graduate student Jeffrey Doon and faculty member Ennio Mingolla at Boston University to improve display technologies and protocols for radiologists. By combining studies of how radiologists learn to discriminate visual patterns with principles derived from models of human visual search and stereo (3D) vision, this CELEST team is designing tools that may improve medical diagnostic procedures that require human analysis of 3D scans of human anatomy.

Lung nodules can be a precursor to lung cancer, but are very difficult to find through visual inspection of conventional medical imagery. Advanced scans capture data from a volume in the inside of the lungs, but radiologists traditionally view this 3D data as a series of 2D images. By exploiting powerful graphics-card computing that makes 3D stereo viewing of anatomical data possible, CELEST research will enable radiologists to view shape information in a faster, more intuitive way than is possible by looking at a sequence of 2D images.

New software quickly creates 3D images of medical scans that can be viewed from whatever vantage point a user desires.