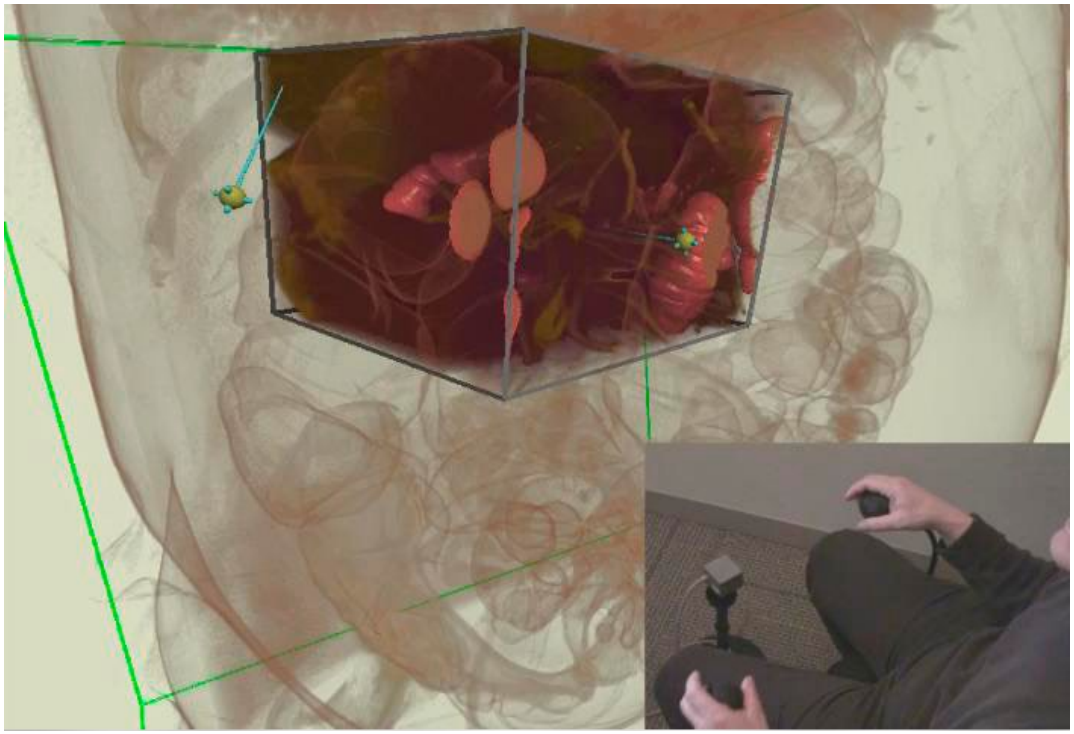
iMedic: Immersive Medical Environment for Distributed Interactive Consultation



This interactive medical visualization system is based on two hand-held tracked controllers that directly control the position and orientation of two 3D cursors. Button presses enable direct manipulation of space with either or both hands, resulting in intuitive manipulation of the viewpoint. You can place yourself anywhere at any orientation and at any scale with just a few simple gestures. A control panel, held in the left hand, acts as a container for tools and widgets such as sliders and buttons. For example, the widgets can be used to select various tools, or control transparency and rendering mode.

iMedic also includes the FilterBox, which enables radiologists to dynamically and simultaneously visualize multiple mappings of their data. They can see beyond obstructing anatomy to hidden or partially hidden structures, and they can quickly identify, isolate, and view structures of interest from any angle, which reduces the time-consuming need to reposition and rescan or physically inspect the patient.

The system uses several real-time raycasting shaders. These shaders include isosurface, transparency, maximum-intensity projection, and lit volumetric rendering, as well as hybrid shaders that combine these rendering methods. The shaders also support mixing of volumetric and polygonal data, which provides accurate depth cues.

iMedic currently supports several features including measurement (for example, linear, angular, and area), volume segmentation and editing, and multiple avatar collaboration. The software will be commercially available later this year.

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