

Employing Immersive Environments for Exploration and Analysis in Virtual Nuclear Engineering

Patrick O'Leary

Exploration and analysis, with the possibility of scientific discovery, are difficult active processes to perform using static images, fixed animations and presumably interactive scientific visualization systems. Although visualization systems, such as Visit and ParaView, are constantly being updated with a bevy of methods and tools to assist in exploration and analysis, the interaction process is far from natural. In fact, the addition of a new method or a new tool, in general, leads to a greater number of menus, dialog windows, buttons, sliders and text boxes of the desktop environment user interface. At the Idaho National Laboratory, we have been developing scientific visualization tools for the exploration and analysis of nuclear imaging, simulation, and design data using immersive environments. We have exposed, in-depth, immersive interfaces that provide a natural interaction for grabbing, touching, seeding, moving, probing or measuring in three-space. The resulting scientific visualization systems deliver a significant differentiation between scientific visualization systems that primarily utilize the desktop environment user interfaces for exploration and analysis.