

The Visible Human Project - Descriptive Statement

1.0 Overview

This video showcases visualization techniques applied to the U.S. National Library of Medicine's Visible Human Male Dataset. This unique dataset was created by radiologically imaging and digitally photographing a complete male cadaver at 1 mm intervals. The anatomical data, true-color volumetric renderings, and future applications are presented.

2.0 Background

In 1991, the National Library of Medicine (NLM) funded a project to develop a digital database of volumetric data representing a complete adult male and female. This scientific effort was named the Visible Human (TM) Project. The contract for the development of the dataset was awarded to the University of Colorado Center for Human Simulation in Denver, Colorado. A primary objective of the project was to provide the radiologic and photographic definition of a complete, human male cadaver at a resolution of 1mm in all three dimensions. The female cadaver would be done at a later time.

Assistance in rendering the volumetric visualizations was provided by the Visualization Group of the Scientific Computing Division at the National Center for Atmospheric Research, located in Boulder, Colorado. NCAR's Visualization Group not only had the expertise to help project personnel visualize the dataset, but they also had access to several high-performance computing systems that were absolutely necessary to the overall visualization effort.

3.0 Movie

NCAR's Visualization Group, in collaboration with researchers from the CU Health Sciences Center and with the generous sponsorship of Sony Pictures High-Definition Center, began work on the Visible Human Project movie in 1995. This involved developing new volume-visualization techniques appropriate for the unique characteristics of the enormous dataset. The culmination of these collaborative efforts was the production of an HDTV movie which showcased these exploratory visualization efforts.

The movie's goals were to further medical education, stimulate the idea of virtual surgery for medical students, and to foster a stronger awareness of the complexities of human anatomy by the general public. It was also hoped that the movie would challenge people's imaginations about what the future might hold in the areas of medical science education and technology advancement. One focus of the movie was "surgical simulation", a future

technology expected to be a major advance in high-level medical training and, possibly, practice. An amalgam of computational science and advanced visualization techniques provided a foundation for this ambitious exercise in scientific communication and imagination.

4.0 IMPACT on MEDICAL SCIENCE and EDUCATION

The impact of the VHP movie has been phenomenal and unprecedented. Public broadcasters and mass educational fora around the world have shown tremendous interest in the VHP movie. It has already reached the classroom, the broadcast airwaves, major conferences, and even commercial home-entertainment. Unlike the ubiquitous entertainment-oriented applications of visualization technology, the VHP Movie is one of those unique situations where science and technology take center stage - and people take notice.

5.0 Additional Information

Additional information regarding the Visible Human Project may be obtained from:

<http://www.ucar.edu/METASCI/VHP.html>