National Center for Computer Graphics and Scientific Visualization

Mission

The center for Computer Graphics and Scientific Visualization exists to develop integrated computer aided solutions to problems in computer graphics, scientific visualization, computer aided geometric design, and computer aided manufacturing, and bring them to bear in the industrial arena.

The Center

Founded in 1991, the Center for Computer Graphics and Scientific Visualization under the direction of Drs. Richard Riesenfeld and Elaine Cohen is also the Utah site of the National Science Foundation/ARPA Science and Technology Center for Computer Graphics and Scientific Visualization, Since 1980 the Alpha 1 project, headed by Drs. Riesenfeld and Cohen, has attacked problems in visualization, graphics, modeling, design and manufacturing with a holistic integrated approach. This approach is characterized by both theoretical soundness and experimental validity in addressing real world, large scale, engineering problems. Working with a variety of industrial sponsors has insured that our technical solutions solve problems relevant to people in the field.

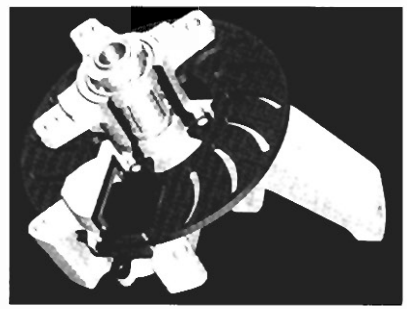
Highlights and Specialties

- The Utah Raster Toolkit, a computer imaging tool, was developed and is maintained and distributed to over 600 sites and has become a standard for representation and manipulation of digital images.
- The Center continues research and development on integrated computer aided design, visualization, and manufacturing to decrease the time and improve quality of product design and manufacture.
- An innovative low cost technique for synthesizing high definition television signals (HDTV) from current NTSC signals has been developed. It can serve as a temporary, low cost transition technology for television stations moving to full HDTV production, and as a feasible permanent format for small, lower budget television stations.
- Software products based on Center technology have been licensed to leading hardware and software vendors to improve accuracy and efficiency of computer graphics rendering.

Center Research Topics

- Developing new mathematical forms for representing complex objects bounded by sculptured surfaces.
- Improving process planning and integrating geometric modeling and manufacturing to reduce time from design to manufacture for the mechanical designer. Create more effective and automated interfaces to manufacturing processes.
- Finding new methods for visualization, animation, simulation, and the interaction of complex models.

Both the picture on the screen and the metal chess pieces were generated from the same Alpha 1 computer designs.



The complete front spindle assembly was parametrically designed, visualized and manufactured in Alpha 1.

For more information, please contact:

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