ISMAR'02 Demo:

„Augmentation of Simulation Results using Foldet Dents Resulting from Buckling an Aluminum Tube“

In this demo simulation results are congruently overlaid on crashed components in reality. Folded dents resulting from buckling (crashing) an aluminum tube is a good example. These phenomena can be well simulated. The tubes used in this demonstration have a diameter of 30mm and a length of 100mm.

The simulation results of the tubes are augmented by using the so-called "AR-Browser" of the basic ARVIKA system that is installed on a MS Windows 2000 PC. The AR-Browser provides a video-see-through display mode. A Toshiba IK-CU 50 micro video camera and a grabber card supply the video input using "Video for Windows". The tube were generated in Medina and meshed for finite element calculation. This is done with Pam Crash. The simulation results are converted into VRML-geometry files.

The evaluation of the simulation results indicates that they can only be appreciated and fully understood when they are shown in 3D or in stereo. The user is able to recognize the simulation results better, benefiting from the additional depth perception. Therefore the Visualization of this demonstration is done in stereo by using two completely separated systems. The same mono application is installed on each system. Thus there are two completely separated systems performing mono augmentation. Each system is simply assigned to one eye. Choosing an adequate value of transparency and coloration, both objects can be well seen and well distinguished at the same time.

The system output can be seen on a stereo display like the i-glasses ProTec.