Subject: Opinions on AVS versus PVWAVE?
Posted by heirich on Thu, 01 Jul 1993 20:19:07 GMT
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I've been doing lot of scientific visualization with AVS. I have not been happy with the experience and am frustrated to the point where I'm about ready to pitch it into the lake. I have heard some opinions about PVWAVE to the effect that it's much easier to use and produces better looking output. I have no experience with PVWAVE so I would like to solicit the net for opinions on a few points.

I'm primarily interested in making films, ie. sequences of images which are visually coherent. (One of the frequent problems AVS has is that it can create a sequence of images, but it resets parameters or resizes or moves windows in the middle of a script, destroying the visual coherence of the sequence).

Is anyone happily making films with PVWAVE? Does it support video hardware such as Abekas equipment and tape decks? Are there any problems with making sequences of frames?

Our biggest applications are computational fluid dynamics on unstructured grids. This means that a visualization package must be prepared to deal with unstructured data, ie. cells that are not distributed on a lattice. The two main reasons we went with AVS initially was the support of an "unstructured cell data" type and support for CFD visualization. One nontrivial nuisance with AVS is that in order to import unstructured data you not only have to give it the data with x,y,z coordinates for each point, but you must also give it a definition of the vertices of the cells which contain the data. This is a practical problem because we often work with data from simulations where the only definition of these vertices is implicit in the simulation code so it's not easily obtained.

Can PVWAVE handle unstructured data (eg. finite element grids)? Does it support vector data (eg. velocity) at each point? Can it draw streamlines, and/or advect particles through a flow field? Can you do simple computations of a vector field, such as computing the surface normal at every point?

A major conceptual flaw in AVS (IMHO) is that AVS has several different data formats which it uses internally, and which are not interchangeable. For example, I can run a simulation on a uniformly spaced grid and visualize the results, but when I rerun it on a slightly different grid (with a slight variation in the point spacing) I either (a) can't put the data through the modules that I used for the uniform grid or (b) can run them through but the results are utterly different and frequently not useful.

Does PVWAVE hide these implementation level details of the data formats from the user? A correctly designed package should be able to suck up the data in whatever format you give it, and nearly all of the features should be available to be performed on that data (barring a very small number which would truly be nonsensical for particular formats).

We also do a lot of particle physics models. Does PVWAVE support particle visualization very well? Can it create a sequence of frames for a movie which show the particles moving through space?

Does PVWAVE support any video-editing features, such as combining images, cross fades (combining images while adjusting their opacities), making titles?

Thanks for any inputs.

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