Visualization for Computational Science

Course Handouts for Lect. 10, Feb. 25, 2002

Lecture Project Assignment due 3/18/2002

Consider the list of links that you sent in for the identifying discipline areas of interest and associated software from the first lecture project. Identify and Email to redmond@engr.wisc.edu six (or more) web links for original data sources that relate to some of those areas of interest. For example, the discipline areas listed as examples in the first handout included:

Molecular Modeling
Medical Imaging
Astronomy
Meteorology
Geology

Molecular Modeling: There is a large database of molecular structures available in a standard format (pdb) at http://www.rcsb.org/pdb/index.html. There is also a "huge" database of molecular biology information at the "Biology Workbench" called the Ndjinn service. Biology Workbench requires a simple registration (for getting a name and password) that can be found at http://workbench.sdsc.edu/

Medical Imaging: The "Visible Human" project has a well-known database of imaged data slices through the body. This is available of CD and through web sources. One location with a nice search applet to get particular anatomy/image slices is at http://anatline.nlm.nih.gov/vh/AppletClient.html

Astronomy: Many sub discipline sites can be found. Here is one for solar activity, both databases and images, at http://umbra.nascom.nasa.gov/solar_data.html

Meteorology: Bill mentioned the data available through the Space Sciences and Engineering Center (SSEC) like http://www.ssec.wisc.edu/data/#rtprod. The National Center for Atmospheric Research (NCAR) provides query driven access to large databases at http://www.atd.ucar.edu/atd_data.html

Geology: There are a number of seismic databases worldwide. One is located at http://www.ceri.memphis.edu/.

Try to pick disciplines and data that you may want to pursue further in your course project for Modules 3 and 4.

If you send me some of these before March 4, I will likely use them in class when talking about finding data sources on the web.

Tuesday, 2/25 Detail

2/25/02	LEC10	Module 2 -- Data Sources and Structures Logistics for Module 2 and Future Projects (Cramer/Redmond) Introduction - Data sources 1 (Redmond) Measured data - Case Studies C. Elegans worm, satellite imaging, human motion capture Web Sites: http://www.loci.wisc.edu/confocal/confocal.html http://www.loci.wisc.edu/optical/sectioning.html http://www.loci.wisc.edu/digital/deconvolution.html http://rst.gsfc.nasa.gov/Intro/Part2_5a.html http://rst.gsfc.nasa.gov/Intro/Part2_1b.html http://www.isd.atr.co.jp/~mriley/oki.html#ex Derived data measurement in protein molecular structures (extra) http://www-structure.llnl.gov/Xray/101index.html Other derived data measurement examples - Interferometry http://www-radar.jpl.nasa.gov/sect323/InSar4crust/SarInterferometry.html http://southport.jpl.nasa.gov/scienceapps/dixon/index.html
2/25/02	LAB9-10	Data Sources/Structures Lab 1 -- Mystery data set 2 project Explore dataset (1/2 hour) What information is missing? (1/2 hour) Analyze to find the important information (remainder)