CIBC @ NU
SCIRun / BioPSE Class
Aug 21, 2006

Lab 1: Data Creation, Manipulation, and Visualization with SCIRun

1. Create a network that:
    a. Generates a 16x16x16 volume of data
        i. **`SCIRun::FieldsCreate::SampleLattice`**
    b. Shows the bounding box of that volume
        i. **`SCIRun::FieldsOther::FieldCage`**
        ii. Change UI: X Size, Y Size and Z Size to 4
        iii. **`SCIRun::Render::Viewer`**
    c. Assigns data values over that volume
        i. **`SCIRun::FieldsData::TransformData`**
        ii. Change UI: result = sqrt(x*x+y*y+z*z);
    d. Shows an isosurface of that volume
        i. **`SCIRun::Visualization::Isosurface`**
        ii. Change UI: Isovalue to 0.5, Update to Auto
    e. Colors the isosurface based on the isovalue
        i. **`SCIRun::Visualization::GenStandardColorMaps`**
        ii. **`SCIRun::Visualization::RescaleColorMap`**

2. Add slice visualization to the network:
    a. Show a slice of the volume
        i. **`SCIRun::FieldsCreate::FieldSlicer`**
        ii. Change UI: k-axis value to 8
        iii. **`SCIRun::Visualization::ShowField`**

3. Add clipping and boundary extraction to the network:
    a. Boundary of a clipped subset of the volume
        i. First, have to Unstructure the geometry:
            1. **SCIRun::FieldsGeometry::Unstructure**
        ii. Next, Clip it by a function:
            1. **SCIRun::FieldsCreate::ClipByFunction**
            2. Change UI: Location to All Nodes
            3. Change UI: Function to v<1 || x>0
        iii. Look at the boundary
            1. **SCIRun::FieldsCreate::FieldBoundary**
            2. **SCIRun::Visualization::ShowField**
        iv. Map data values from original Fields onto Boundary surface
            1. **SCIRun::FieldsData::ApplyingMappingMatrix**
            2. (Make two.)

4. Extra Credit
    a. Experiment with changing the resolution from SampleLattice
    b. Try saving a movie with ViewWindow->File->RecordMovie…

Intermediate results from Parts 1-3 can be downloaded from:
http://www.sci.utah.edu/~dmw/NU/

More information about the Viewer and the ViewWindow can be found at:
http://software.sci.utah.edu/doc/User/Guide/usersguide/index.html

General SCIRun installation and setup information available at:
http://software.sci.utah.edu/doc/