Physics 305

Volume Visualization

Suppose we now have a stack of images from a CT device (e.g CTscans or MRI images). How can we display them as a volume?

Let D be the 3D data, say an MRI image which is 200x200x20.

Let X,Y,Z be the coordinates in matrix form.

Let V be the data value at (X,Y,Z) e.g. grayscale value.

1. Smooth the volume data in 3D using smooth3 (D).
2. Connect data points with the same value using s= isosurface(X,Y,Z,V,isovalue).
3. Display isosurfaces using patch(s).

See more examples at Techniques for Visualizing Scalar Volume Data - MATLAB & Simulink (mathworks.com)

Activity :

1. Follow the 3D visualization examples in the MATLAB link above. Show different views of the volume created.
2. OPTIONAL (Bonus) Search for freely available 3D data outside those provided by MATLAB (eg. MRI, CT Scan, etc.) and apply volume visualization.