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VariPose

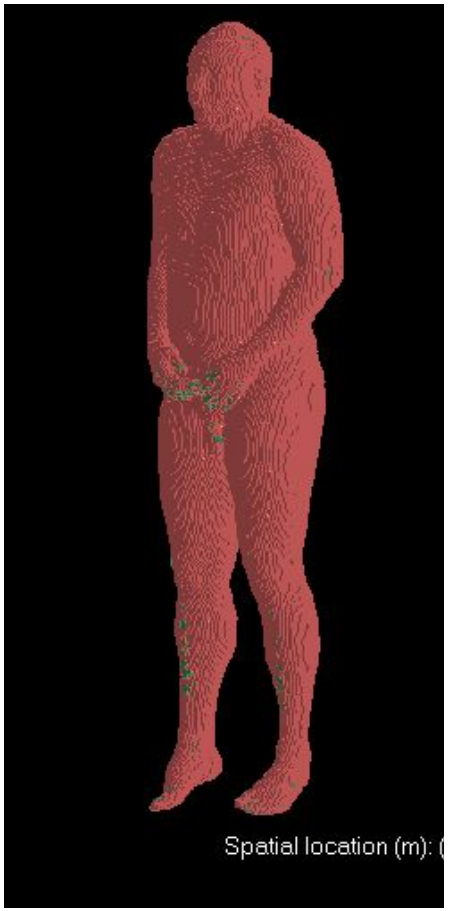
Repositions human meshes including internal structures

$$\nabla \times E = -\frac{\partial \boldsymbol{B}}{\partial t}$$

$$\nabla \times H = J + \frac{\partial D}{\partial t}$$

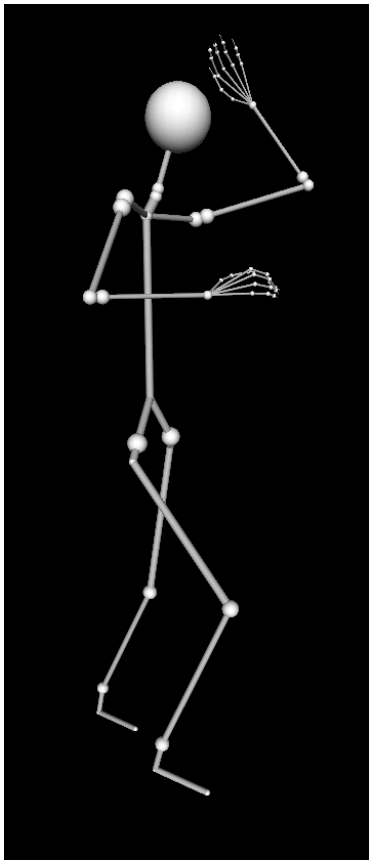
Background

- Visible Human male mesh is in "sleeping" position
- This position is useful for some applications
- However, for many situations the positions of the feet, arms and hands do not allow for accurate modeling
- The US Air Force sponsored an SBIR project for Remcom to develop a method for "posing" the mesh



Project Goals

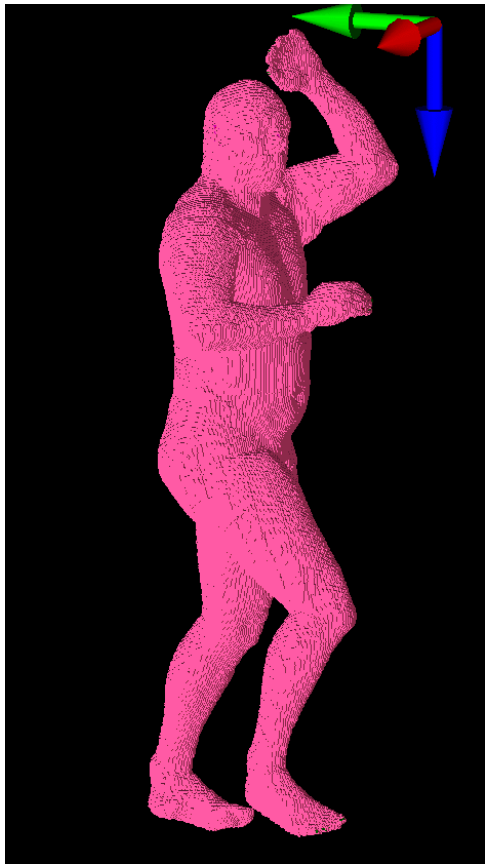
- Interactive GUI to define body position
- Computationally intensive internal repositioning done without user interaction
- Continuity of internal structures, especially nerves and blood vessels
- Conserve mass of individual tissues



$B = \mu H$ $\nabla \cdot B = 0$ $\nabla \cdot D = \rho$ $D = \epsilon E$

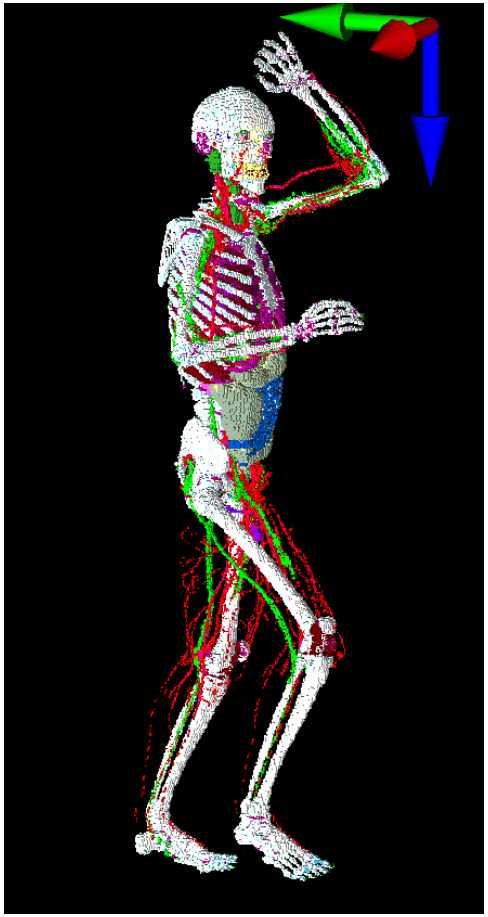
VariPose Capabilities

- Reposition visible human male mesh using 10, 5, 3, 2, or 1 mm meshes
- Reposition visible human male mesh using 10, 5, 3, 2, or 1 mm meshes
- Internal anatomical structures are included in the repositioned mesh
- Output XFDTD format or generic voxel format
- Stick Man GUI allows interactive generation of mesh position data
- GUI display of resulting mesh

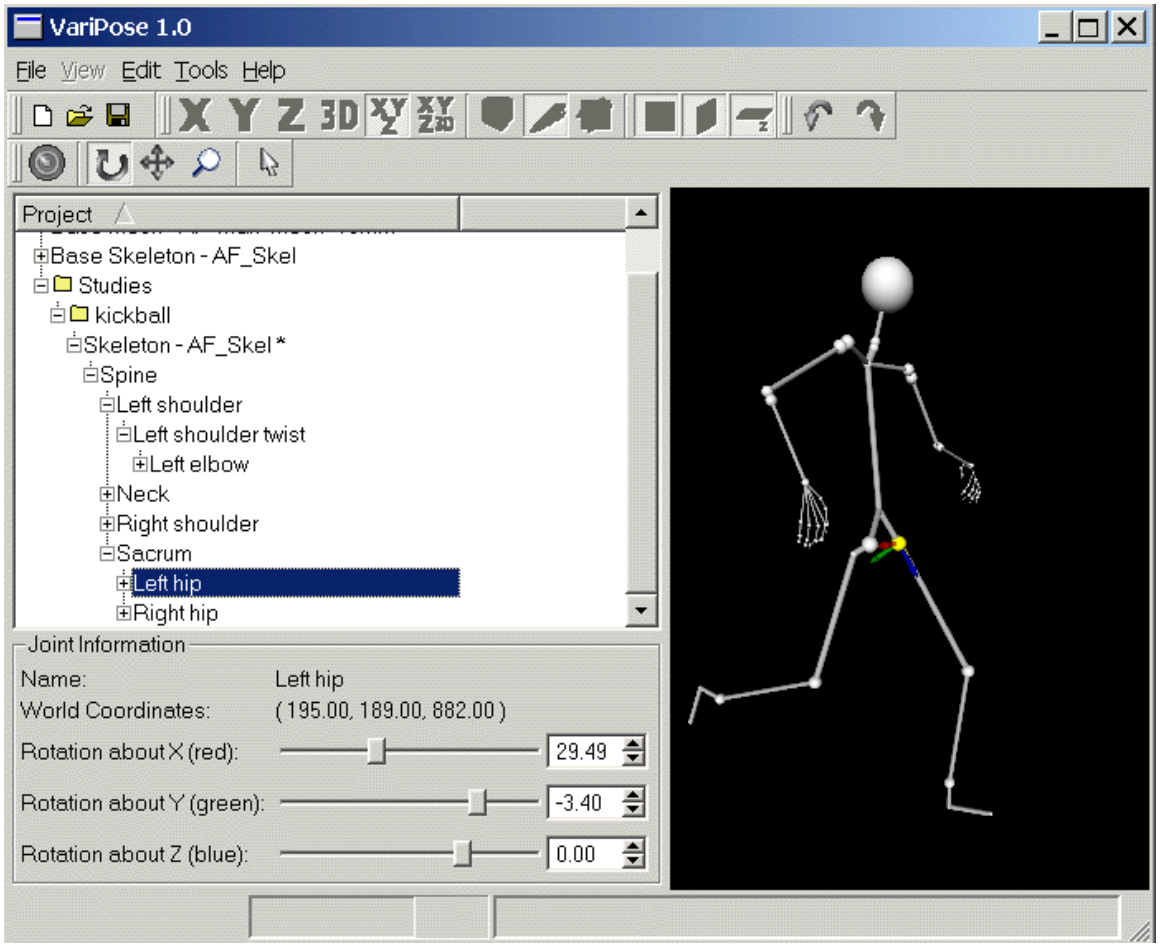


Computer Requirements

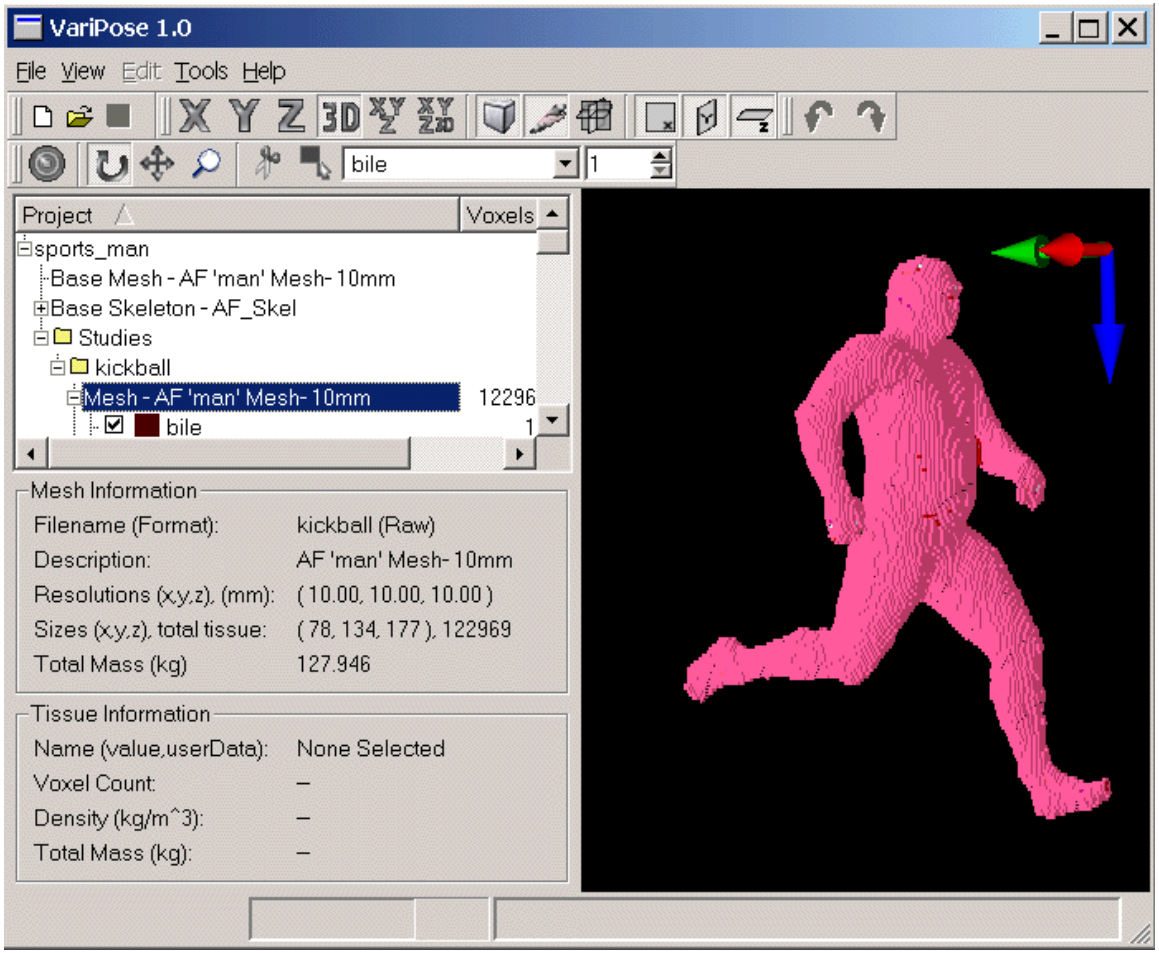
- Windows 2000/XP and Linux
- High quality video card with 128 Mbytes for 1 mm mesh
- 1.5GBytes of RAM for 1mm mesh
- Stick man skeleton is interactive in real time
- Mesh generation may take hours-days depending on mesh resolution and number/type of joints being repositioned



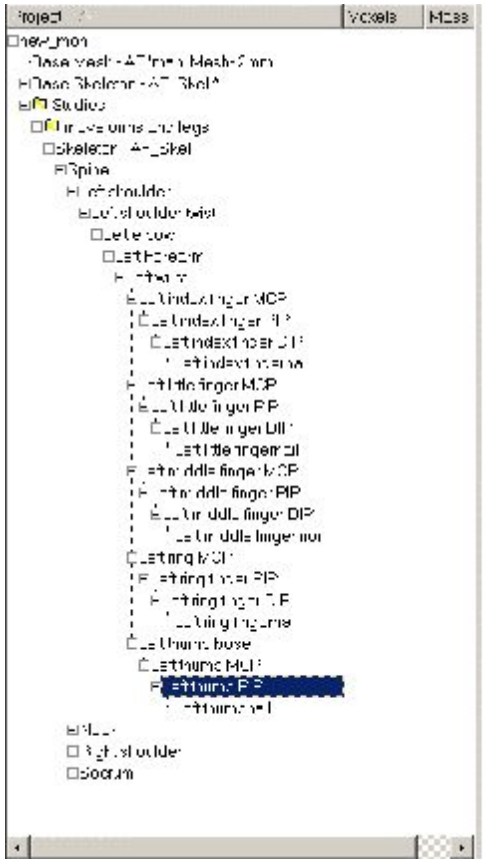
Stick Man GUI



3D Mesh View



Expanded Skeleton Tree



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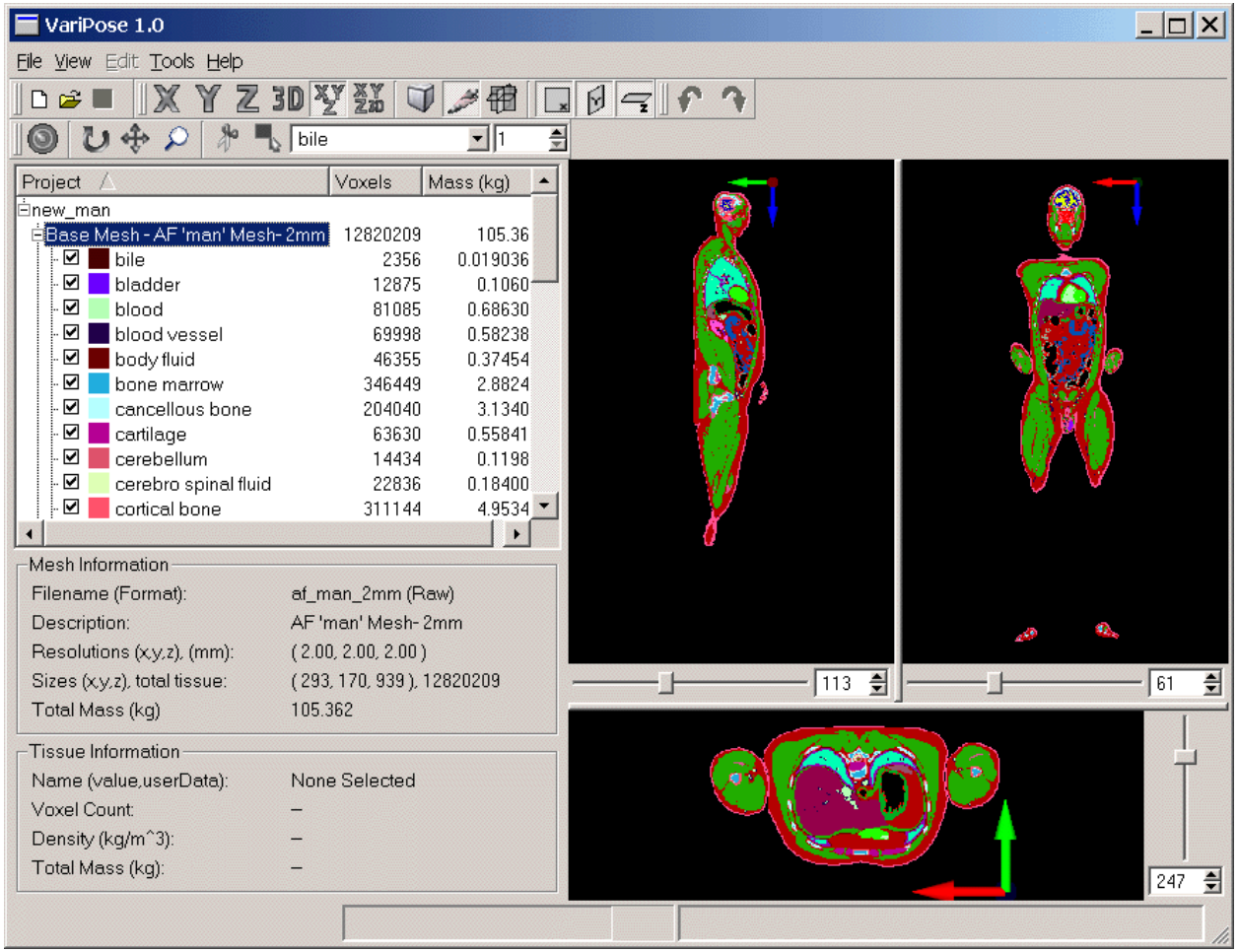
Tissue Summary



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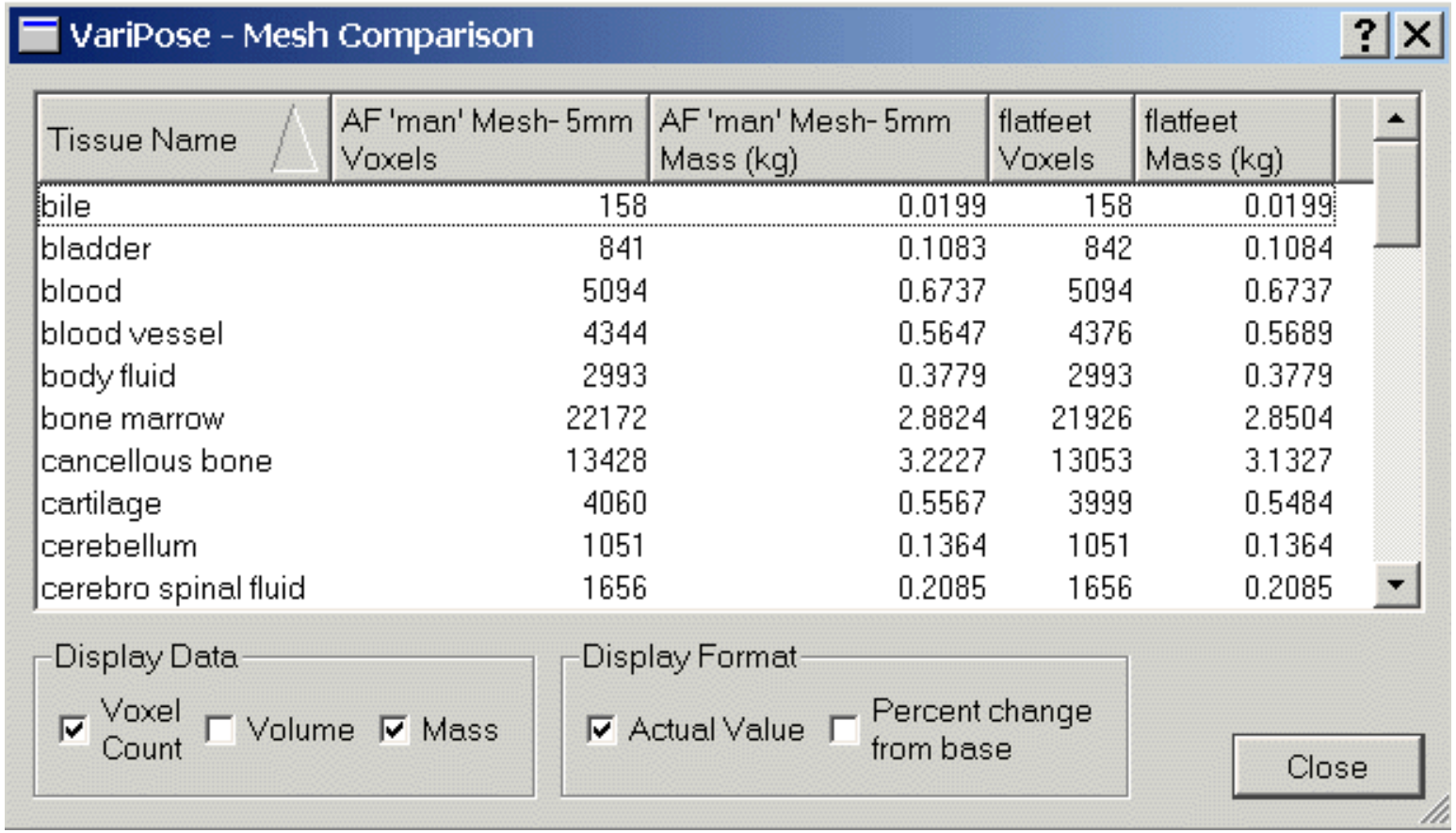
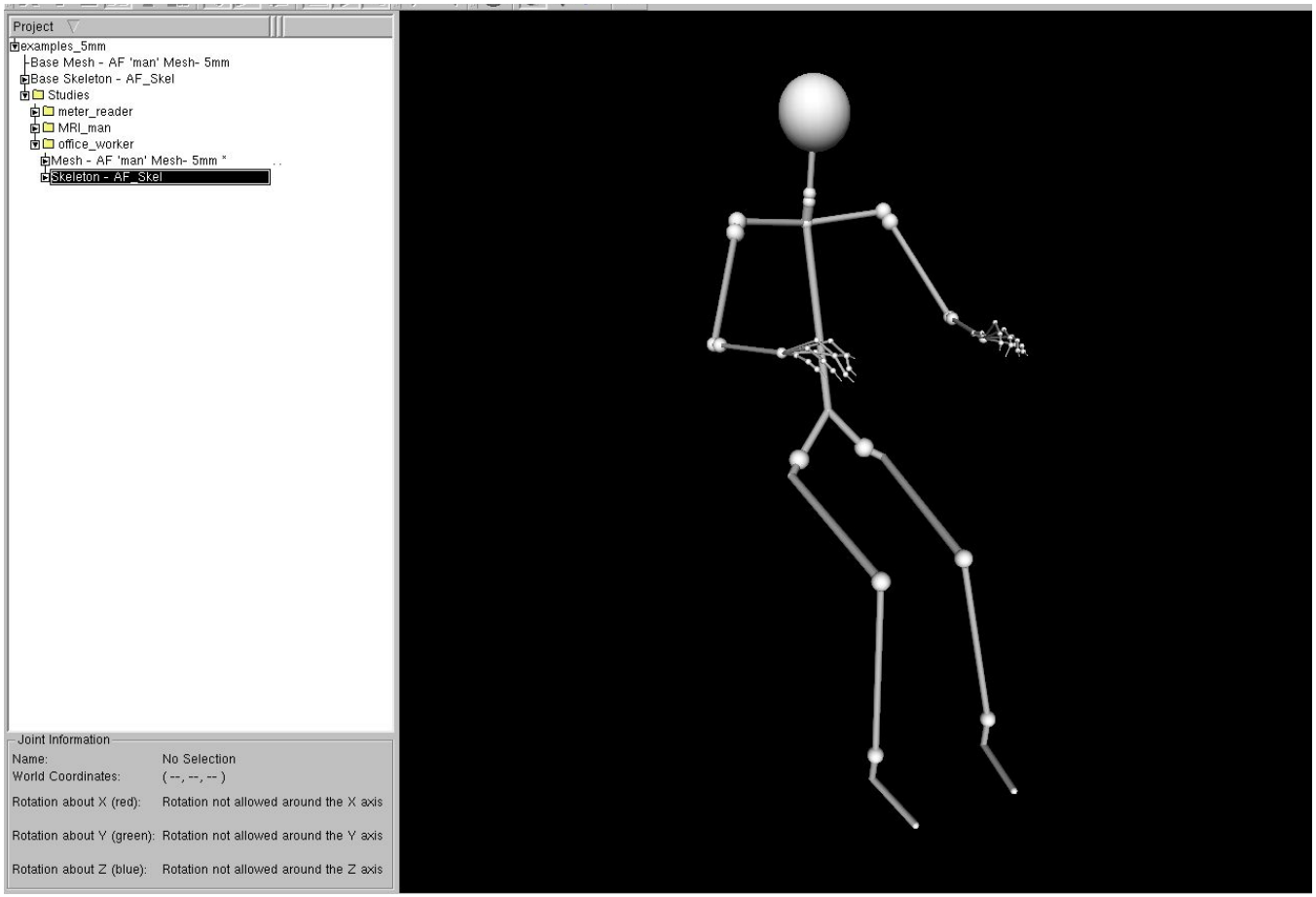
Before/After Tissue Summary



Step 1 Enter Mesh Position



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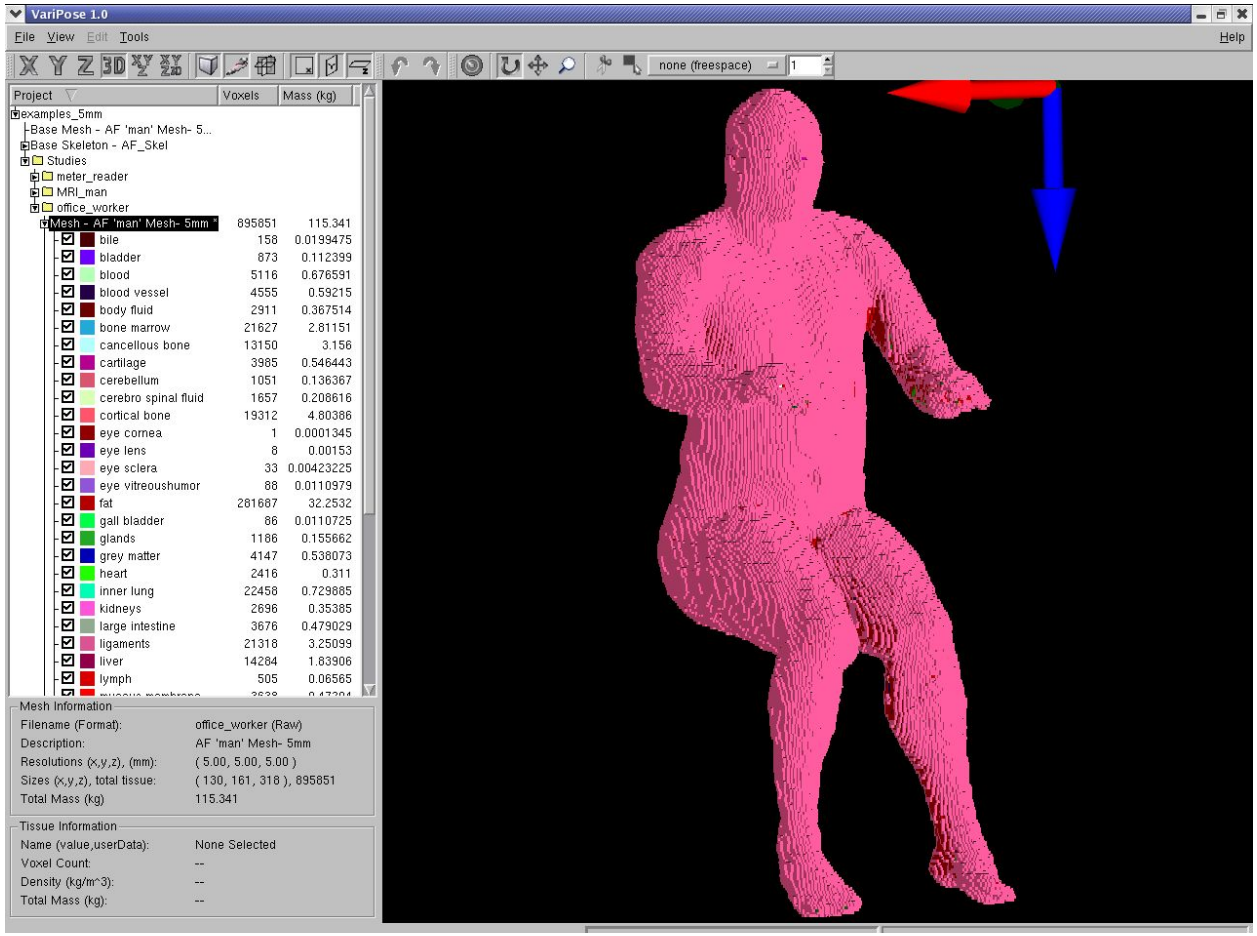
Step 2 Check Position and Tissue Weight/Voxels



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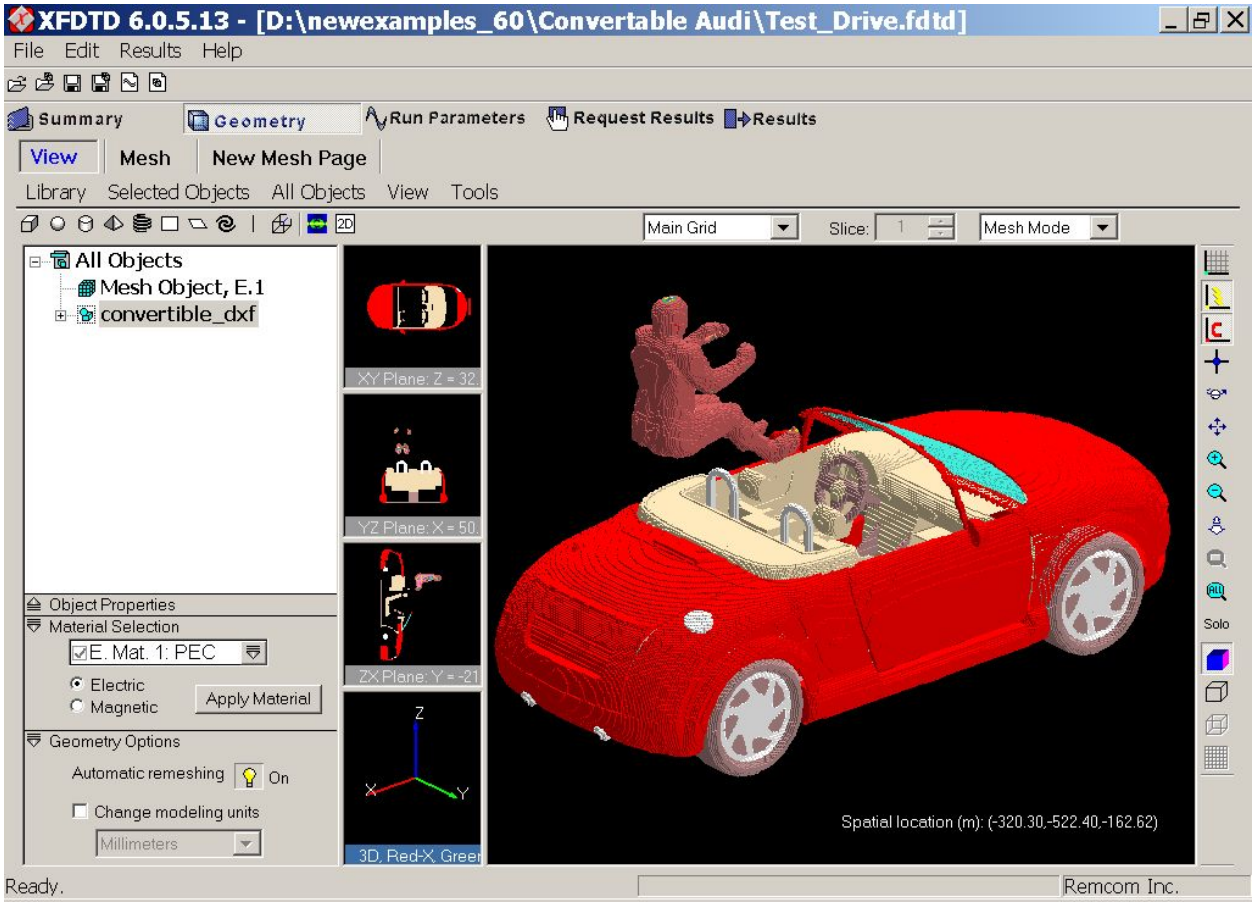
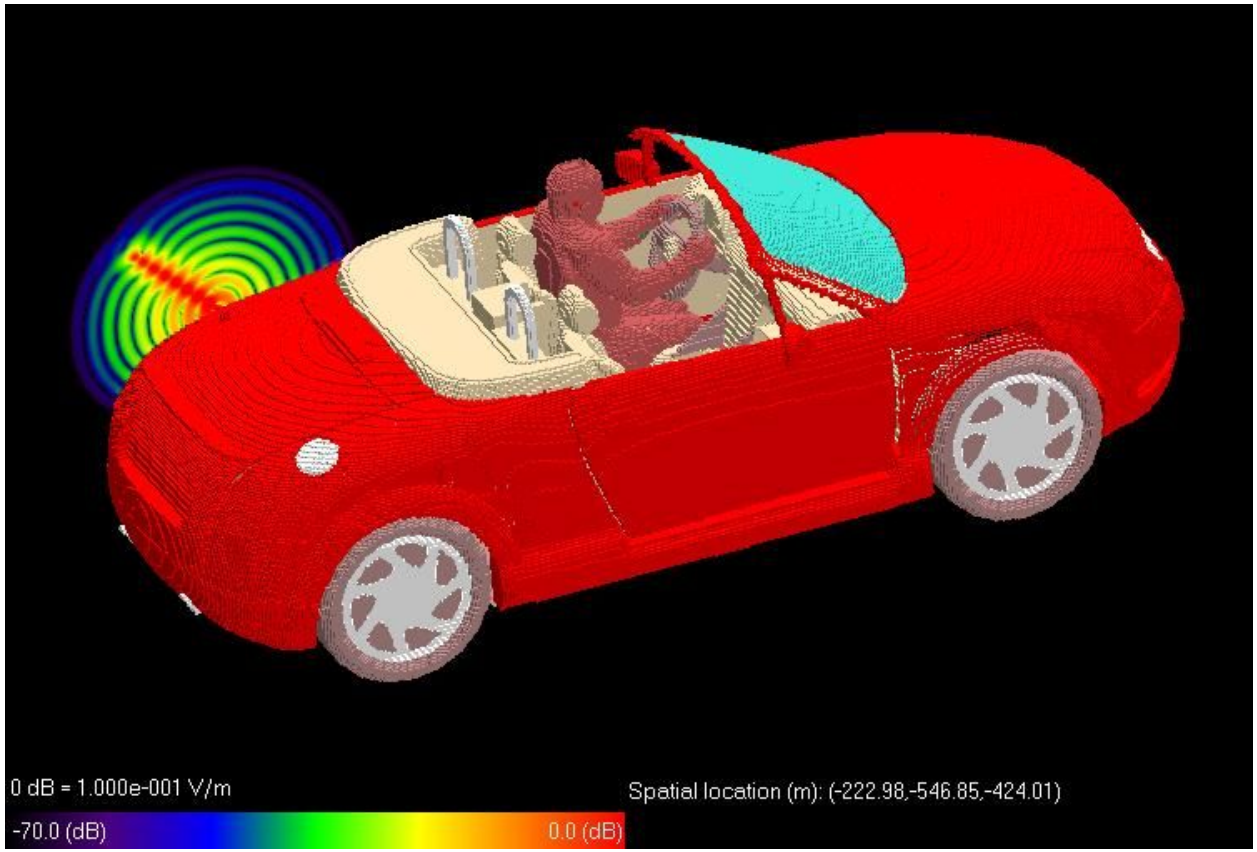
Step 3 Load Mesh into XFDTD



Step 4 Add Excitation and Obtain Results



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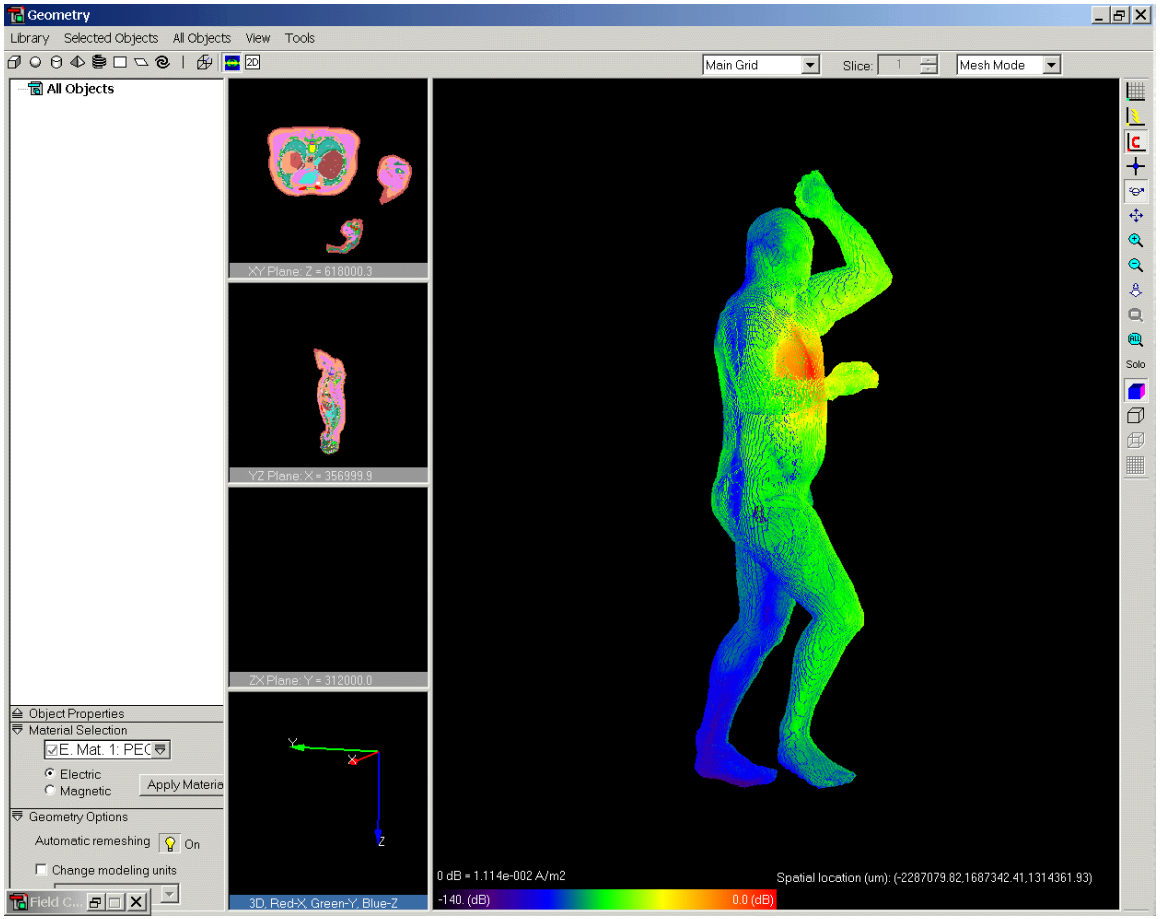
All XFDTD Functions including SAR are Available



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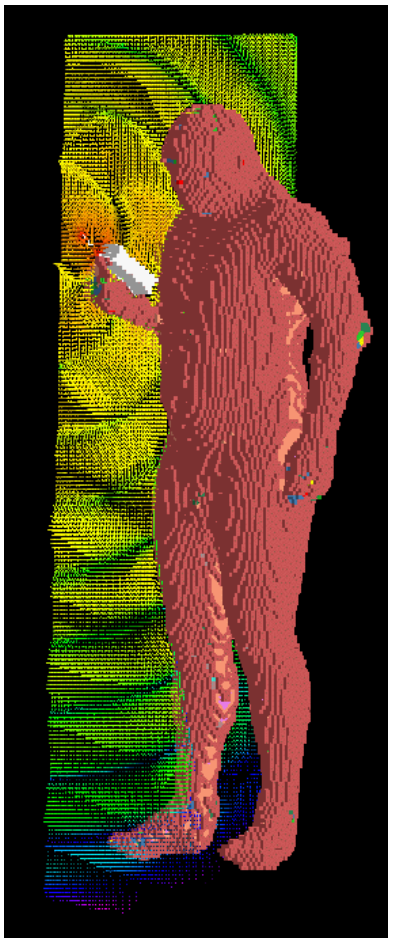
VariPose Summary

- Provide for realistic positioning of heterogeneous human meshes
- Interactive positioning GUI
- Background Mesh Positioning engine
- Provides information on tissue mass/voxels in repositioned mesh
- Internal anatomical structures are included



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