REMCOM® Electromagnetic Simulation Solutions

VariPose®

Repositions Human Meshes Including Internal Structures

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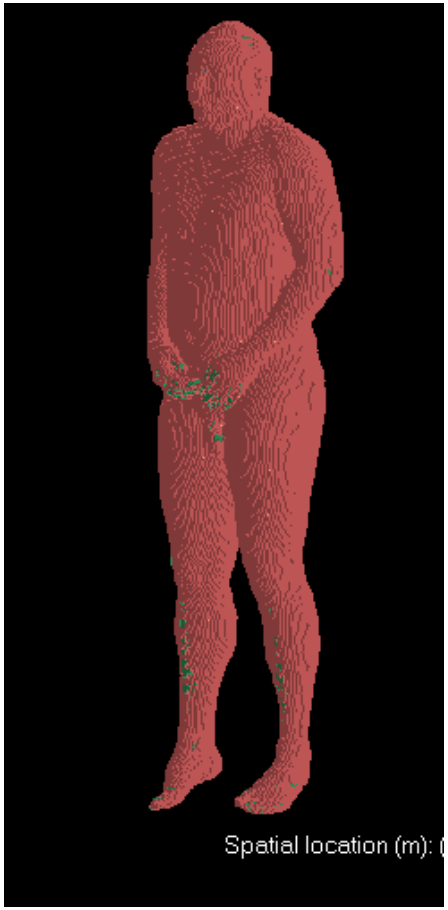
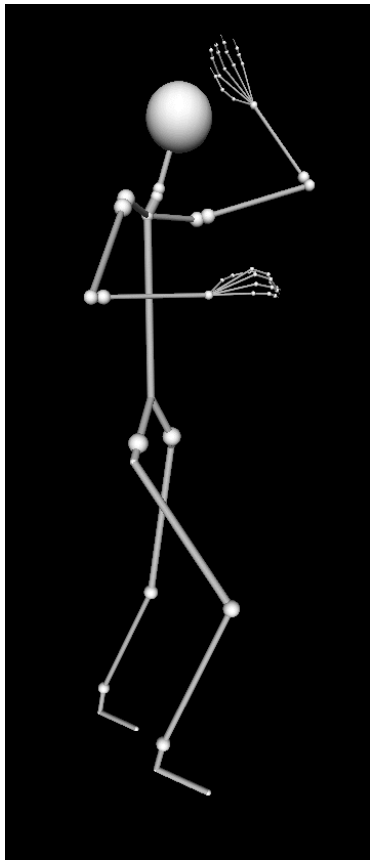
Background

- 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



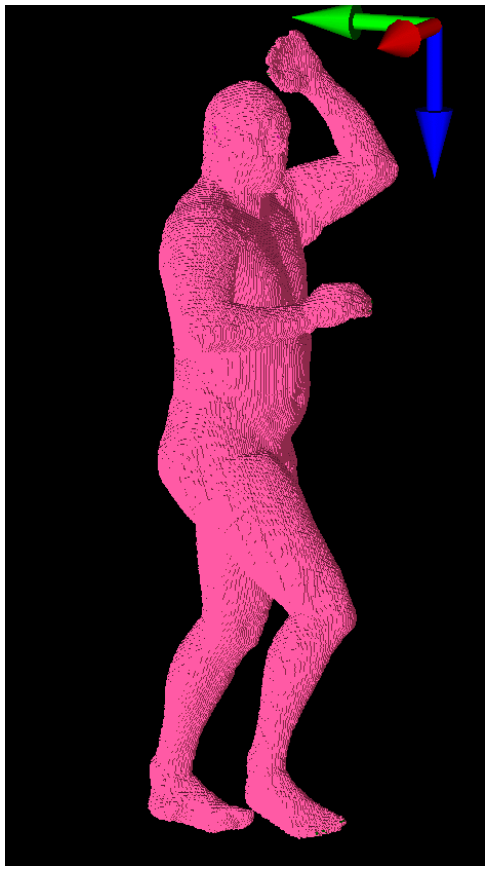
Project Goals

- 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



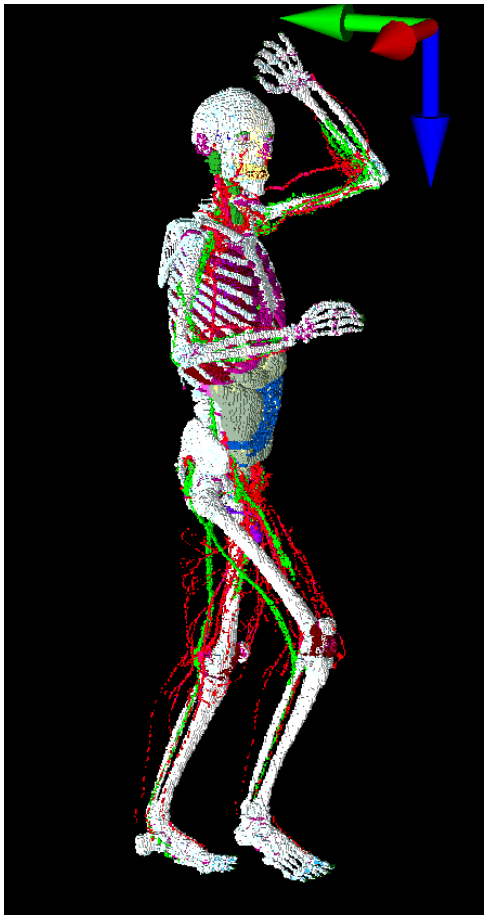
VariPose Capabilities

- 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

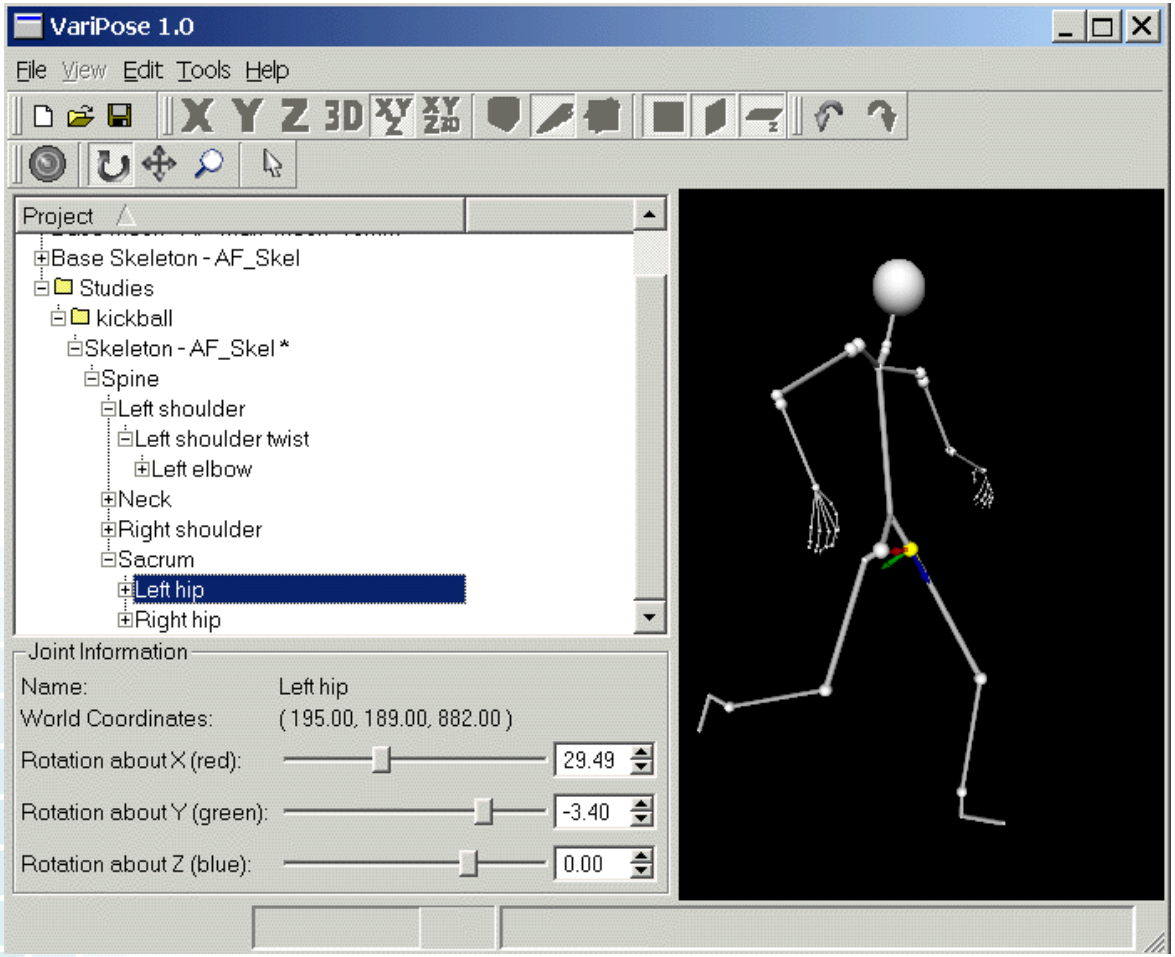


Computer Requirements

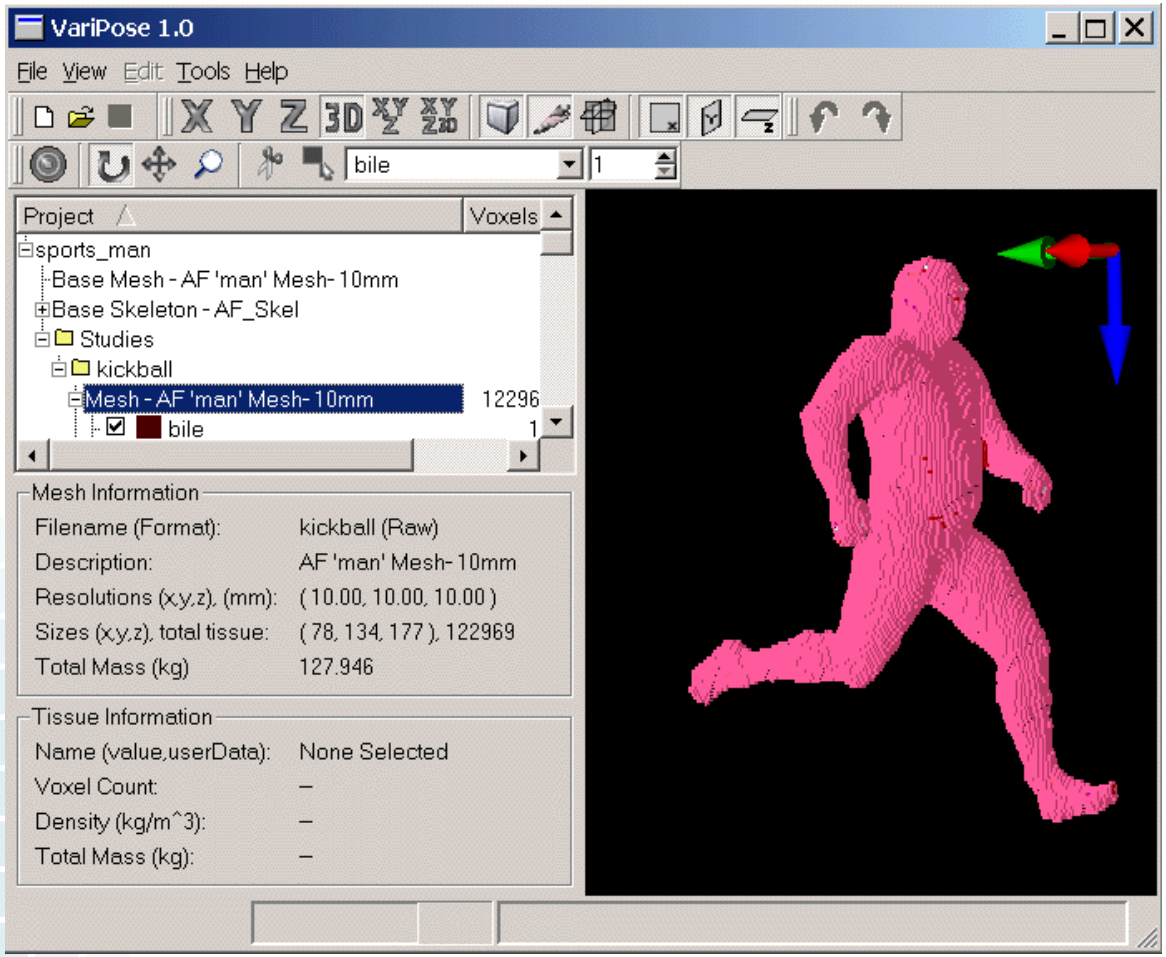
- Windows and Linux
- A minimum of 128 Mbytes of video memory
- 1.5GBytes of RAM for 1mm mesh
- Stick man skeleton repositioning is interactive in real time
- Mesh generation may take hours-days depending on mesh resolution and number/type of joints being repositioned



Stick Man GUI



3D Mesh View


VariPose 1.0
File View Edit Tools Help
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Project
Voxels
sports_man
Base Mesh - AF 'man' Mesh- 10mm
Base Skeleton - AF_Skel
Studies
kickball
Mesh - AF 'man' Mesh- 10mm
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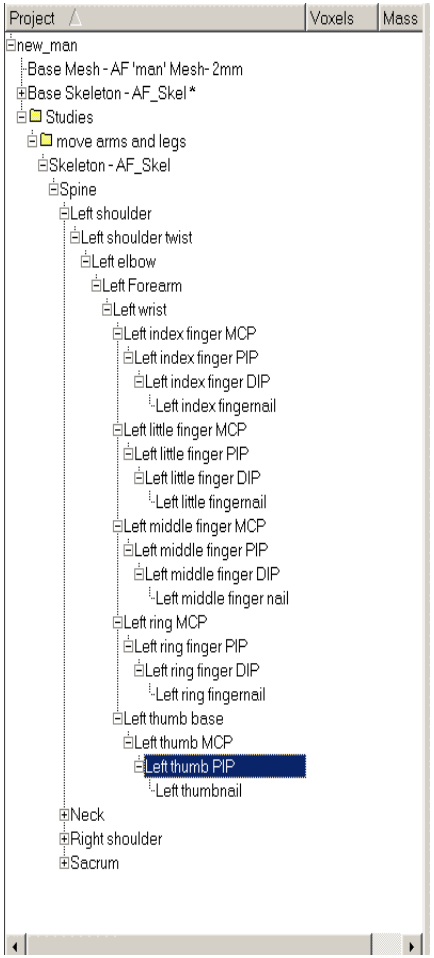
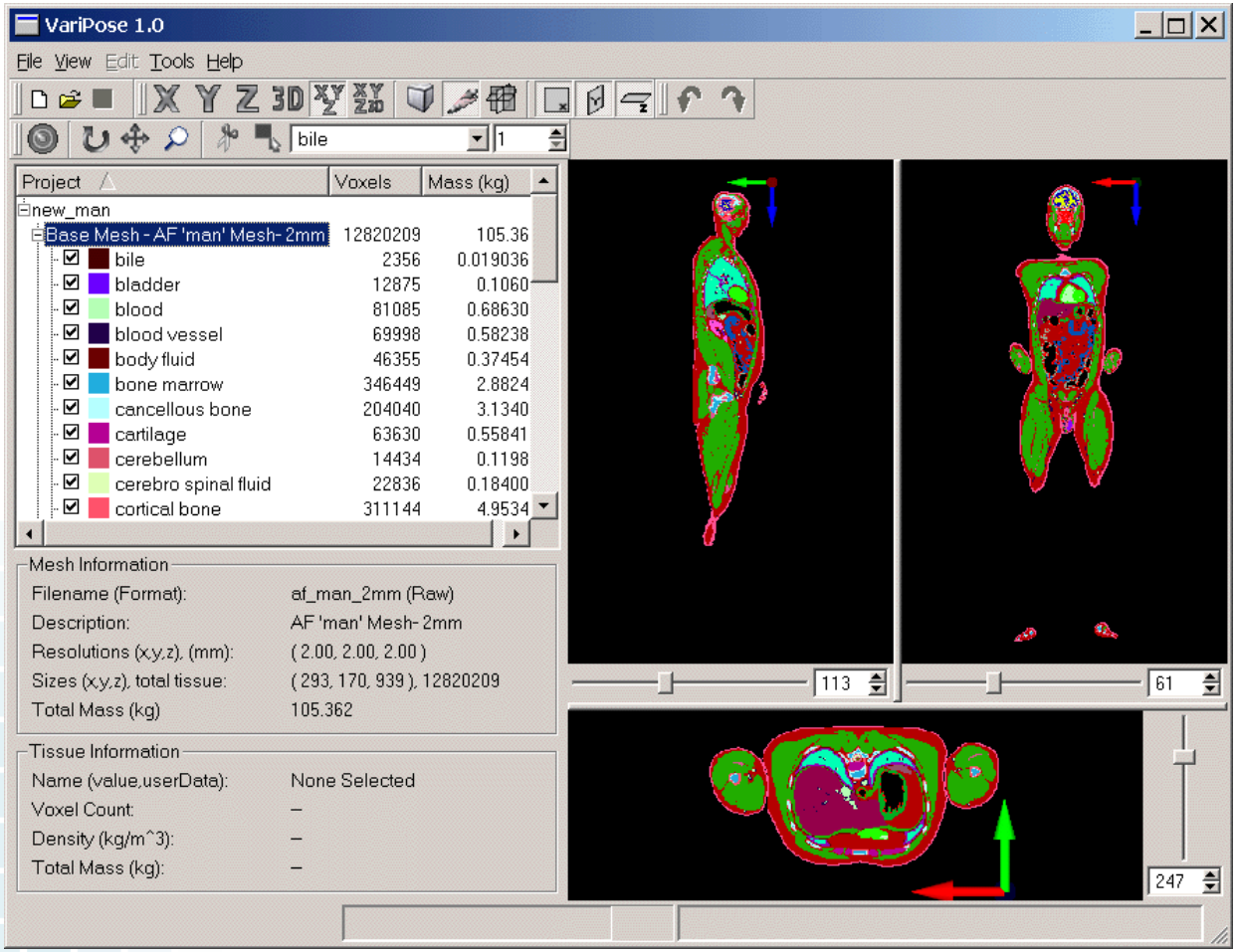
1
Mesh Information
Filename (Format): kickball (Raw)
Description: AF 'man' Mesh- 10mm
Resolutions (x,y,z), (mm): (10.00, 10.00, 10.00)
Sizes (x,y,z), total tissue: (78, 134, 177), 122969
Total Mass (kg) 127.946
Tissue Information
Name (value,userData): None Selected
Voxel Count: –
Density (kg/m^3): –
Total Mass (kg): –

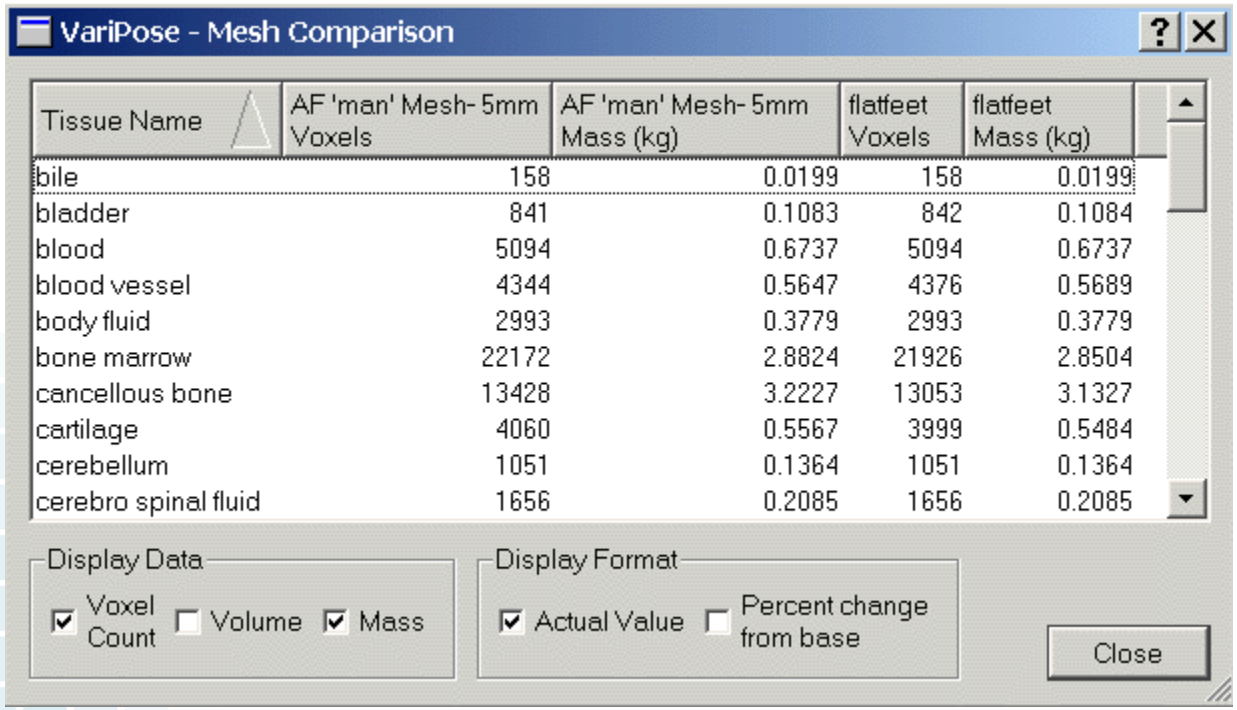
Expanded Skeleton Tree



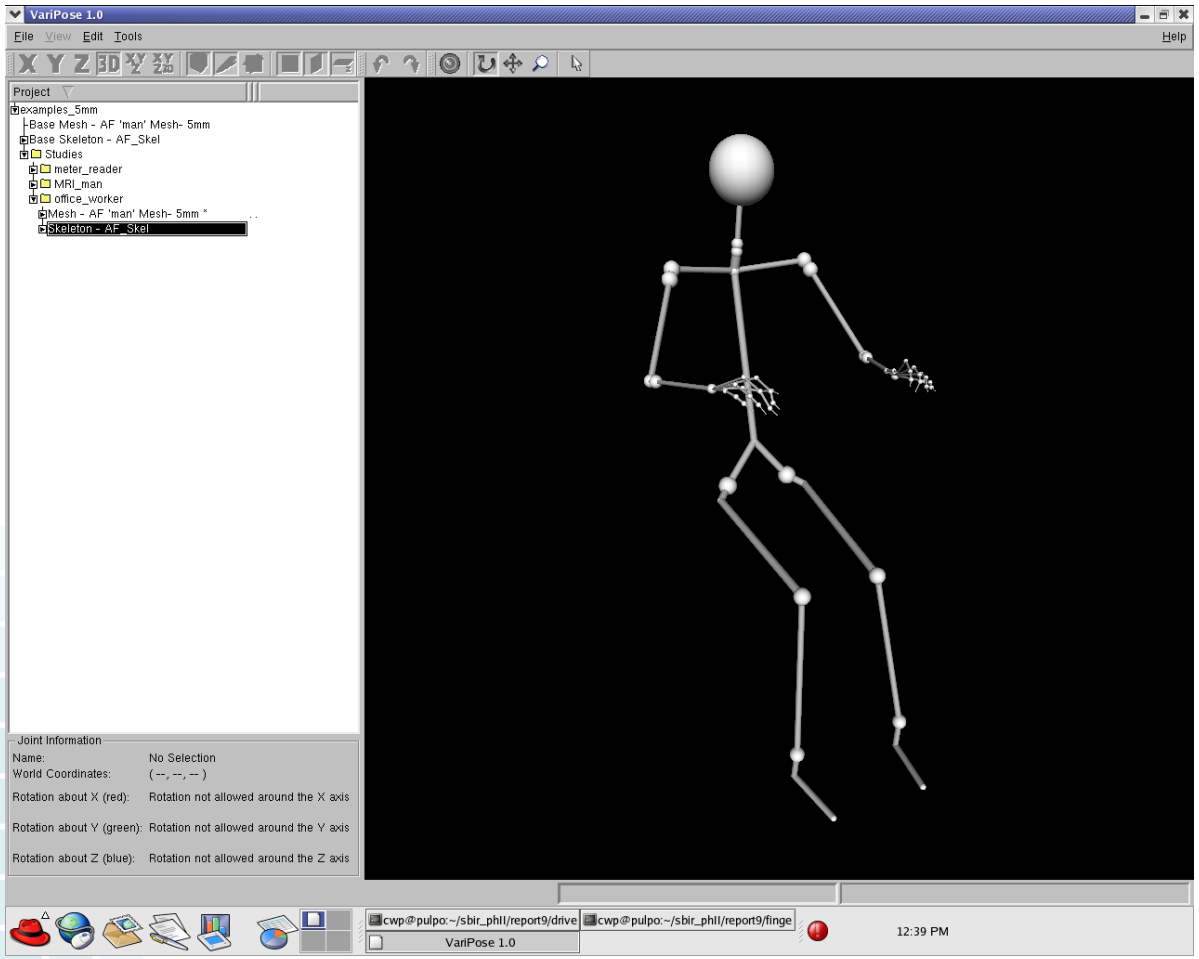
Tissue Summary



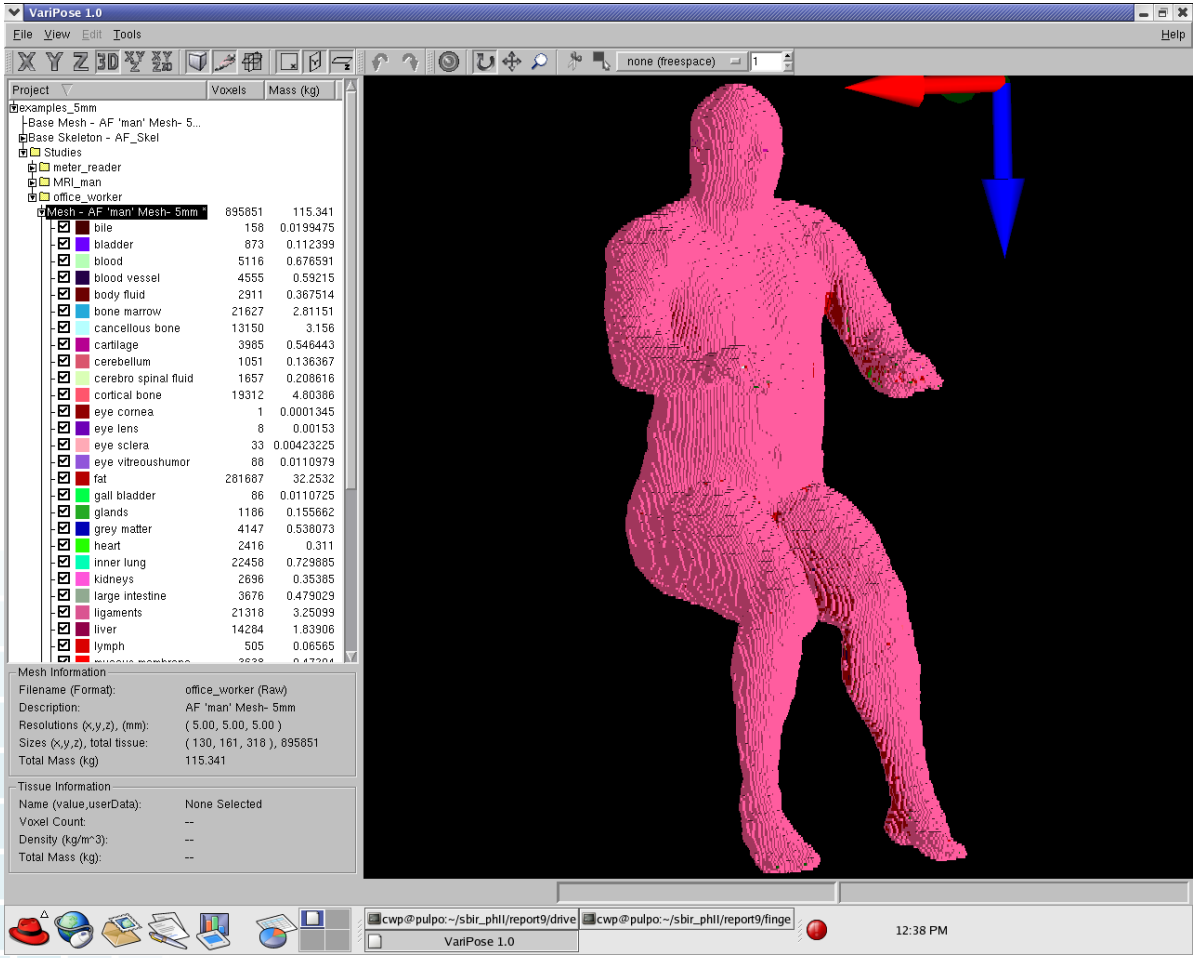
Before/After Tissue Summary



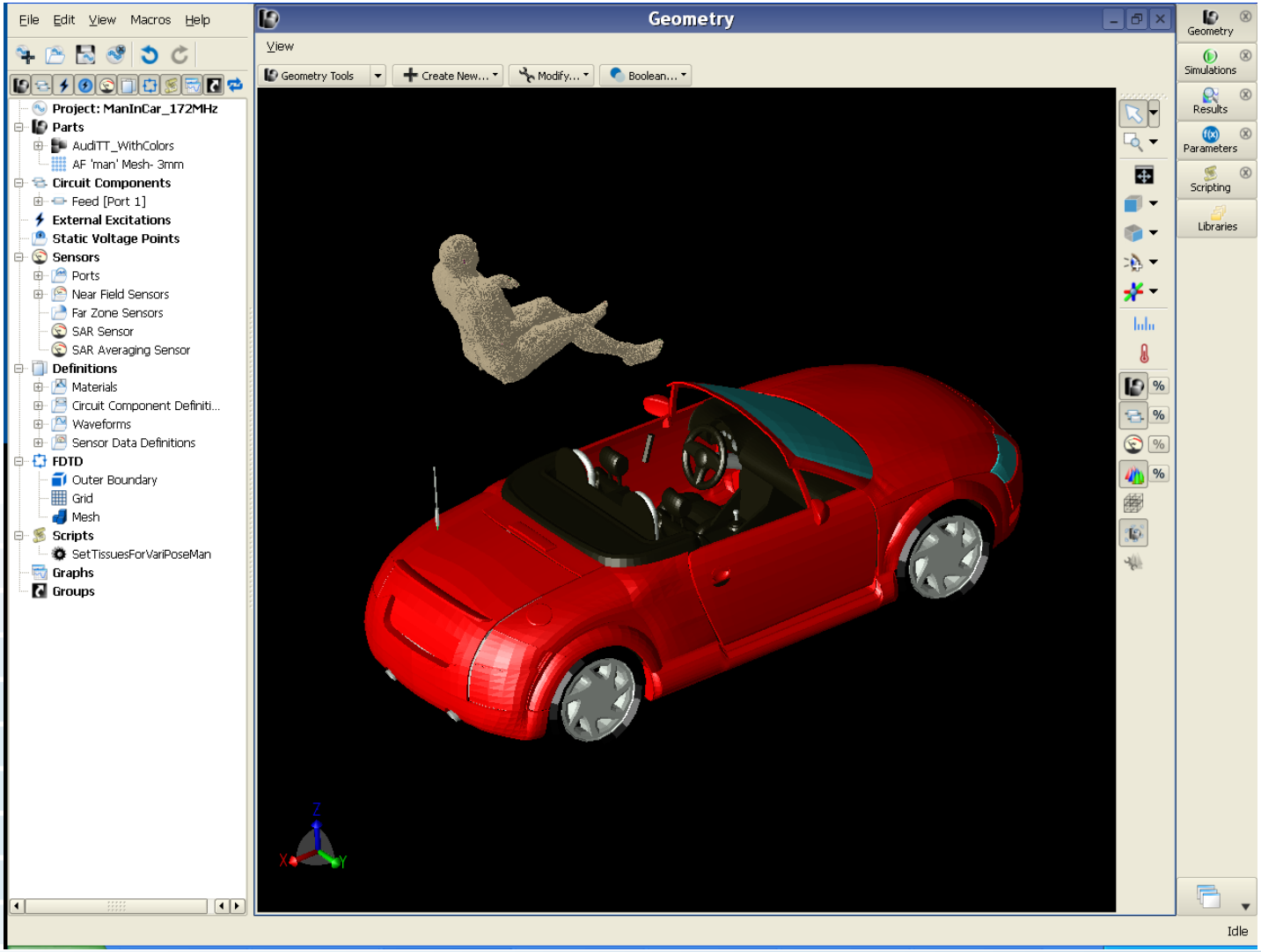
Step 1: Enter Mesh Position



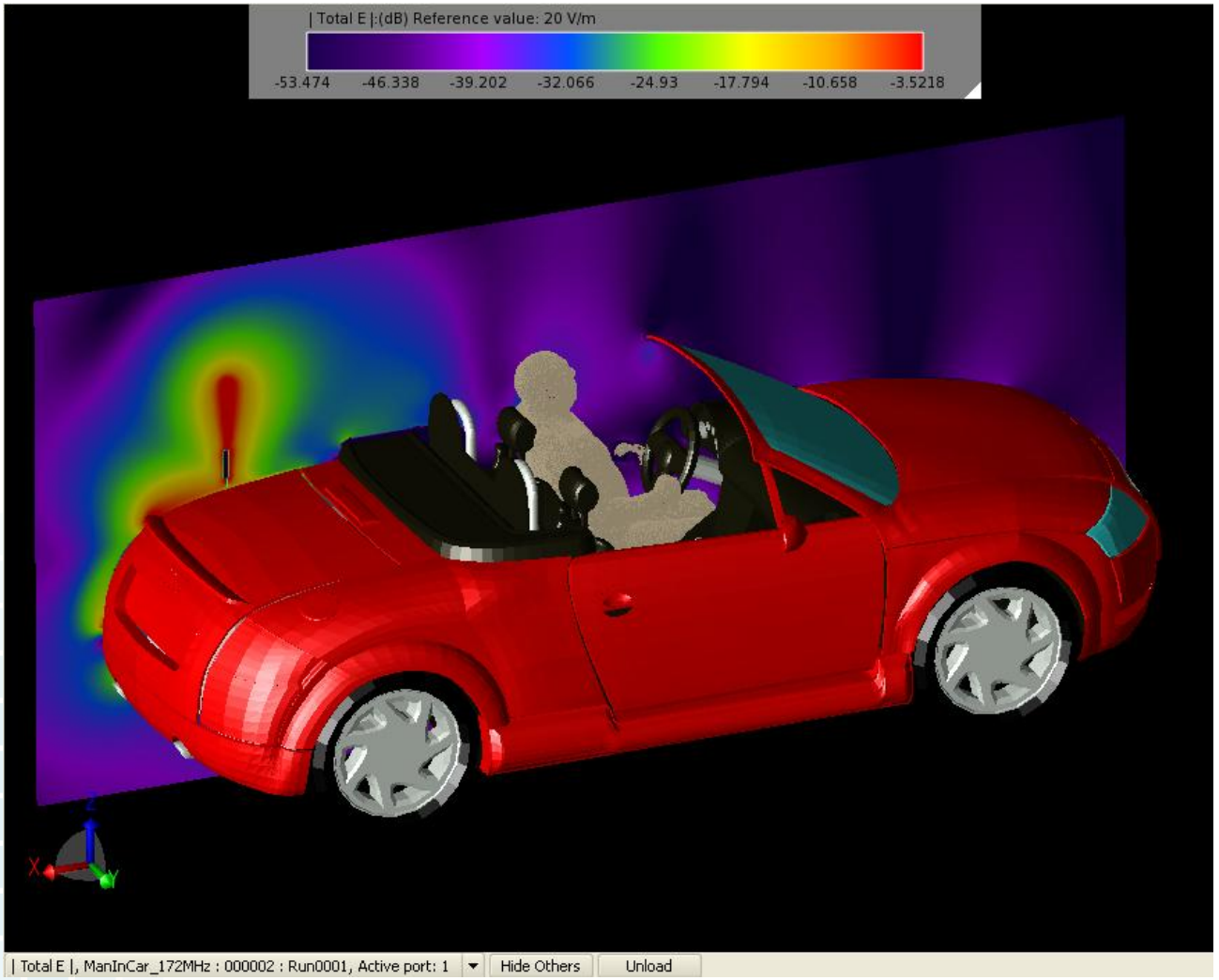
Step 2: Check Position and Tissue Weight/Voxels



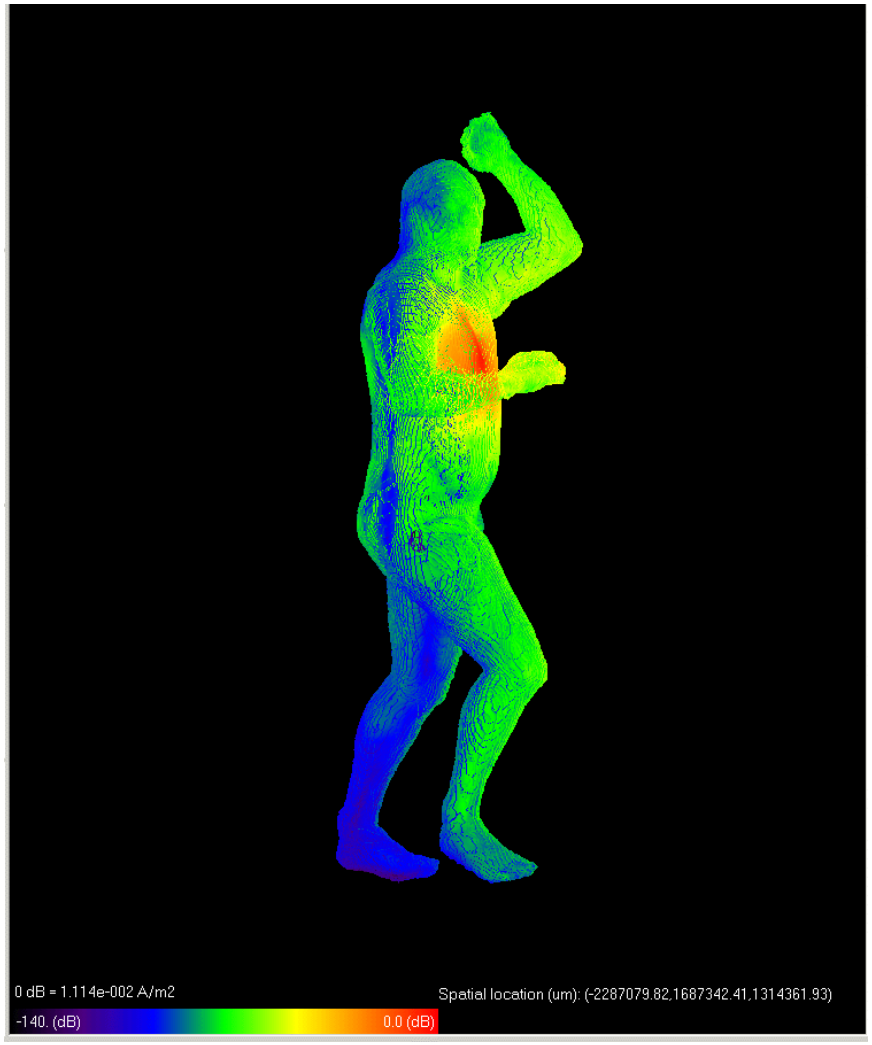
Step 3: Load Mesh into XFdtd



Step 4: Add Excitation and Obtain Results



All XFdtd Functions Including SAR are Available



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