

ImageVis3D

Large Scale Volume Rendering

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ImageVis3D

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Volume
Rendering

Large Data

ImageVis3D

1 Volume Rendering

2 Large Data

3 ImageVis3D

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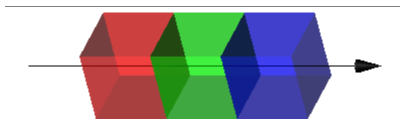
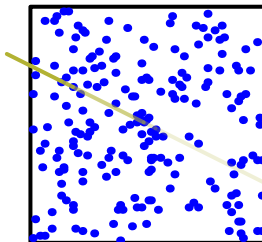
ImageVis3D

1 Volume Rendering

2 Large Data

3 ImageVis3D

- Light transport through a volume
- Pretend volume is partially translucent
- Discern 3D characteristics from 2D projection



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What is “LARGE”?

“Large” may be something that does not fit

- into GPU memory (> 128 MB – 4 GB)
- into main memory (> 2 GB – 64 GB)
- onto the local drive (> 0.5 TB – 10 TB)

- into 32 bit address space (> 4 GB)
- into 64 bit address space (> 16 EB)

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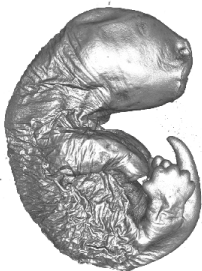


Figure: 12 GB



Figure: 600 GB

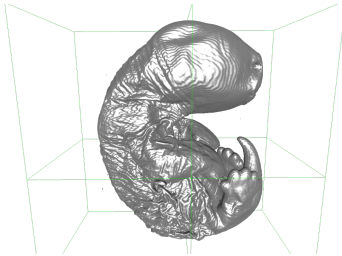
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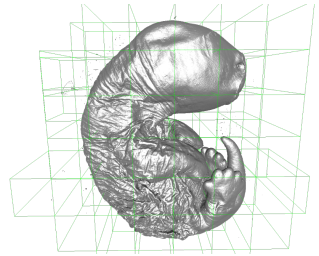
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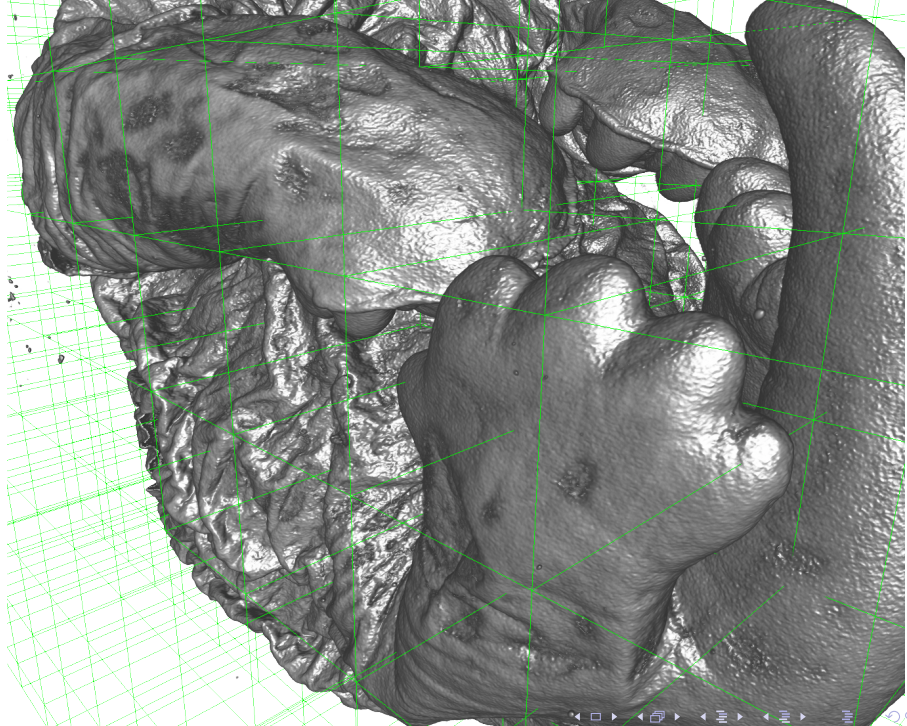
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- Out of core
- Bricking



- LOD
- Culling



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ImageVis3D

- Lightweight application
- Interactive
- Large Dataset Support
- Flexible UI
- Support a wide range of hardware & software
- Foundation for other apps, research projects
- MIT License

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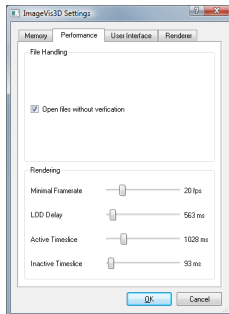
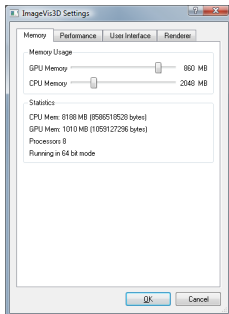
Large Data

ImageVis3D

- ImageVis3D is only about 5 megabytes
- No 3rd party dependencies sans Qt
- (Hopefully) Easy to use
- Easy to compile yourself

```
svn co https://.../svn/imagevis3d
qmake
make
```

- Works on any dataset that fits on a hard disk or in a 64bit address space . . . whichever is less (please let us know when the latter becomes an issue ☺)
- LOD system allows for interactive exploration regardless of the dataset size.
- Implements its own multitasking system, allowing for fine-grained control.



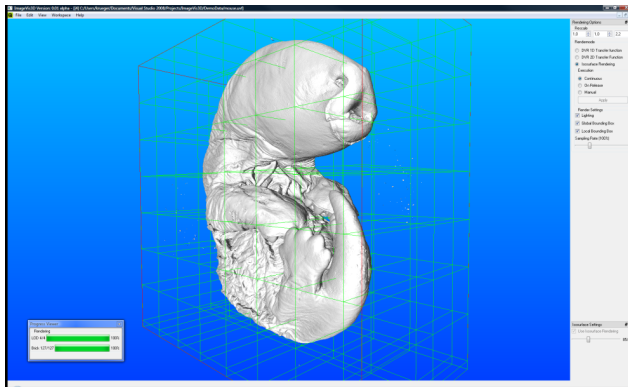
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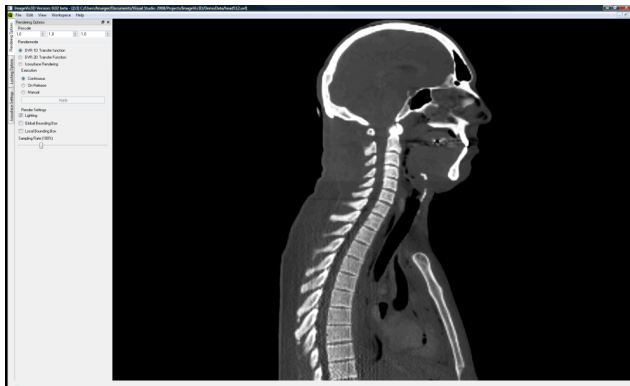
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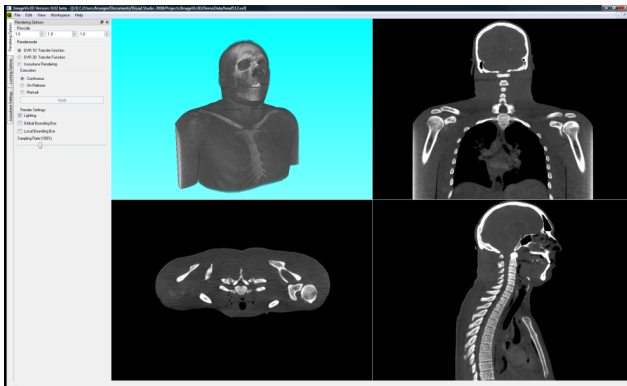
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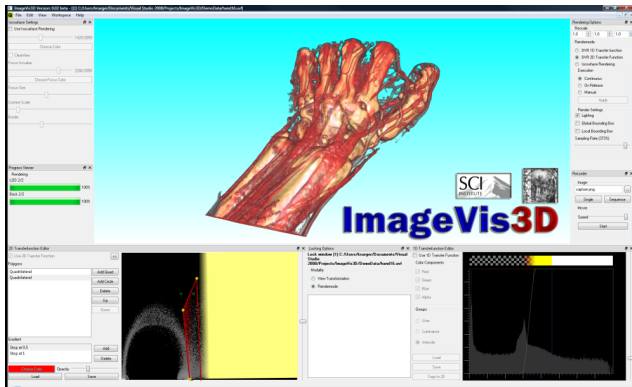
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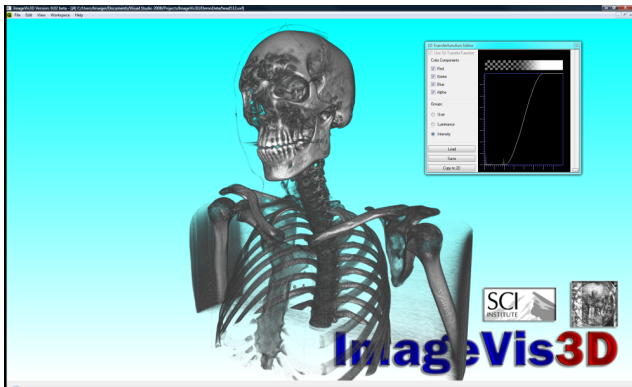
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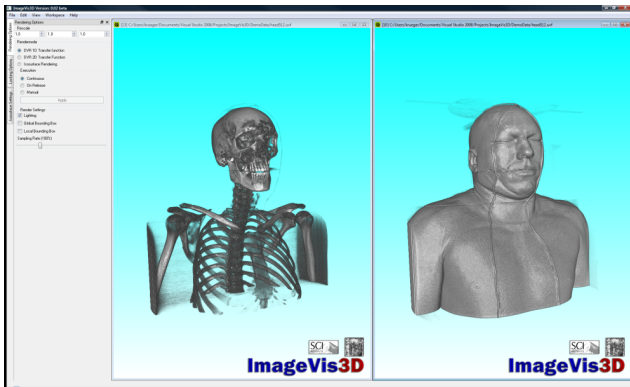
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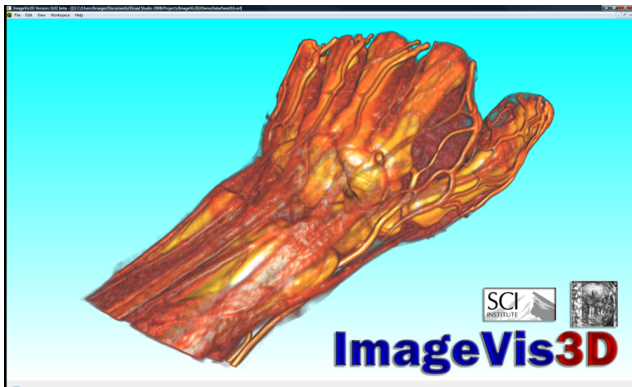
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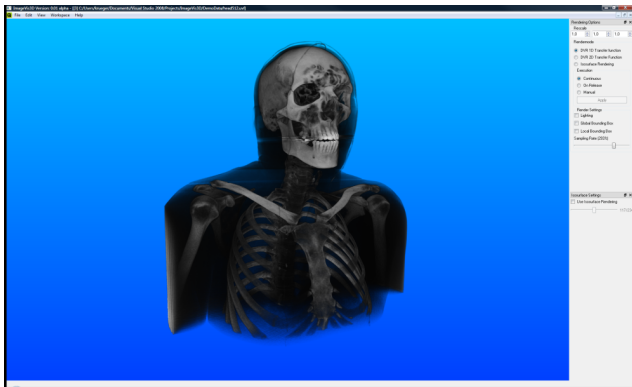
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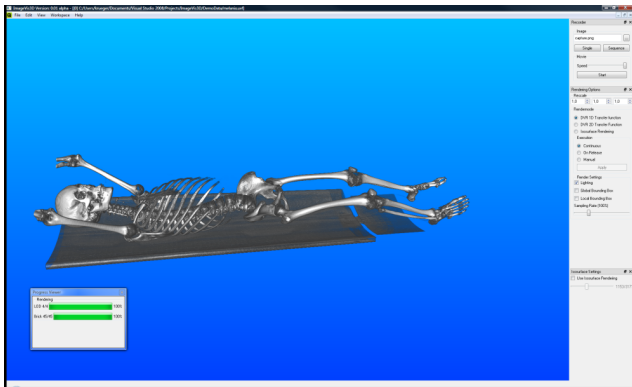
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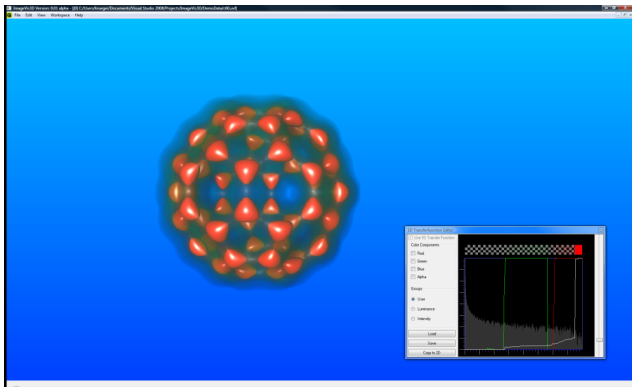
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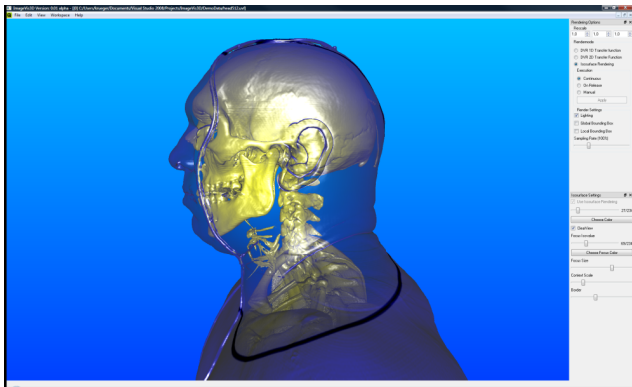
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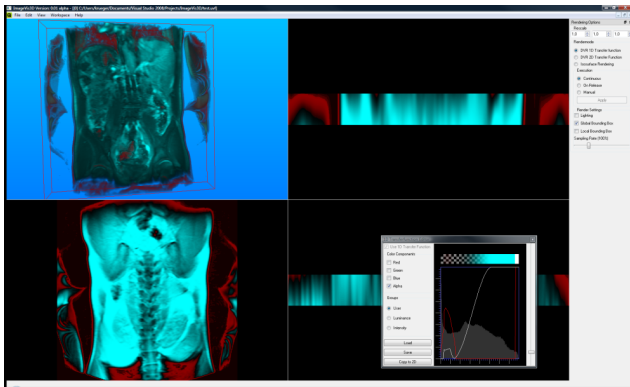
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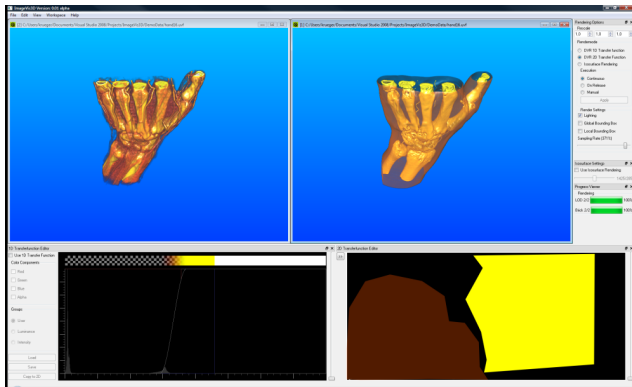
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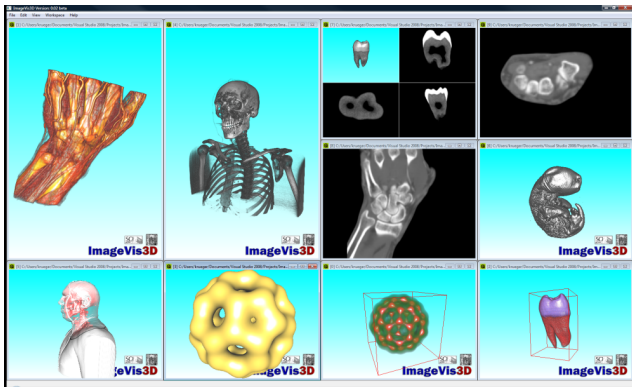
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- Hardware:
 - OpenGL 2.0+ GPUs
 - OpenGL 1.4+ with GLSL extensions
 - (Soon) DirectX 10 GPUs
- Software:
 - Windows XP & Vista (both 32- and 64-bit)
 - Mac OS X 10.4, 10.5
 - Linux



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ImageVis3D

- Clear separation of UI, rendering code
- Renderer designed as an API
- Already being integrated into VisIt
- Soon to make its way into SCIRun

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- Getting ImageVis3D
 - <http://software.sci.utah.edu/>
 - Developer builds:
<http://software.../devbuilds/imagevis3d/>
 - Source: subversion on 'code.sci.utah.edu'
- Support
 - iv3d-users@sci.utah.edu
- Questions?
- Tutorial