



Image-Based Anatomical Modeling

Part II

Check List – Volume Data

DICOM sample image sets

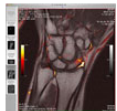
(All these DICOM files are encoded in JPEG2000 transfer syntax)

These images are best viewed with **OsiriX DICOM Viewer** !

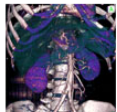


[OsiriX, Advanced Imaging in 3D/4D/5D](http://www.osirix-viewer.com/3D/4D/5D)

(click on the thumbnail images below to download the full set of corresponding DICOM images):



Alias Name: WR1X
Modality: MRI
File Size: 5 MB
Description: Scaphoid fracture. T1 / STIR fusion.



Alias Name: BREBIX
Modality: CT 64
File Size: 60 MB
Description: Hypernephroma, arterial and venous acquisitions.



Alias Name: INCISIX
Modality: CT 64
File Size: 61 MB
Description: Dental Scan.



Alias Name: MAGIX
Modality: CT 64



Alias Name: CETAUTOMATIX
Modality: MRI
File Size: 41 MB
Description: Normal cardiac MRI and MRA study. Mild Aortic and tricuspid valves regurgitation



Alias Name: PHENIX
Modality: CT
File Size: 120 MB
Description: Surgical repair of facial deformity



Alias Name: TOUTATIX
Modality: CT
File Size: 195 MB
Description: SCoronary artery anomaly (emerging from pulmonary artery)



Alias Name: ARTIFIX
Modality: CT

<http://www.osirix-viewer.com/datasets/>

Check List – Volume Data

| Case | Name | Modality | Description | Folder |
|--------|---------------|----------|--|---|
| A | BEAUFIX | MRA | <i>Contrast-enhanced renal MRA acquired on a 3T scanner. Normal study.</i> | ..\SUB_arterial |
| B | CENOVIX | CT | <i>Renal Angio CT with left kidney obstruction.</i> | ..\ARTERIELLE - 6168 |
| C | CETAUTOMATIX | MRI | <i>Normal cardiac MRI and MRA study. Mild Aortic and tricuspid valves regurgitation.</i> | ..\SUB_1st pass |
| D | FELIX | MRI | <i>Cerebral aneurysm.</i> | ..\CEMRA_HIGHRES |
| E1, E2 | FOURDIX | CT | <i>Cardiac CT with 10 steps of the entire cardiac cycle.</i> | ..\CorCTALow 0.75 B25f Diastolic ..\CorCTALow 0.75 B25f Systolic |
| F | PANORAMIX | CT | <i>Abdominal CT angiogram acquired on a 16 detector scanner in a patient with abdominal aortic aneurysm.</i> | ..\Abd-Pel w-c 3.0 B30f |
| G1, G2 | PELVIX | CT | <i>Pelvic fracture.</i> | ..\Bassin Bassin (Adulte)\Bassin 2.0mm std – 2 ..\CT1 pelvis, bassin\BASSIN – 8577 |
| H | QUATREDEUXSIX | MRI | <i>Contrast-enhanced MRA of pulmonary arteries; normal study.</i> | ..\cemra highres |

Check List – Volume Rendering Engine



US | France | Europe | Worldwide

COMPANY

MEDIA

SERVICES

SOLUTIONS

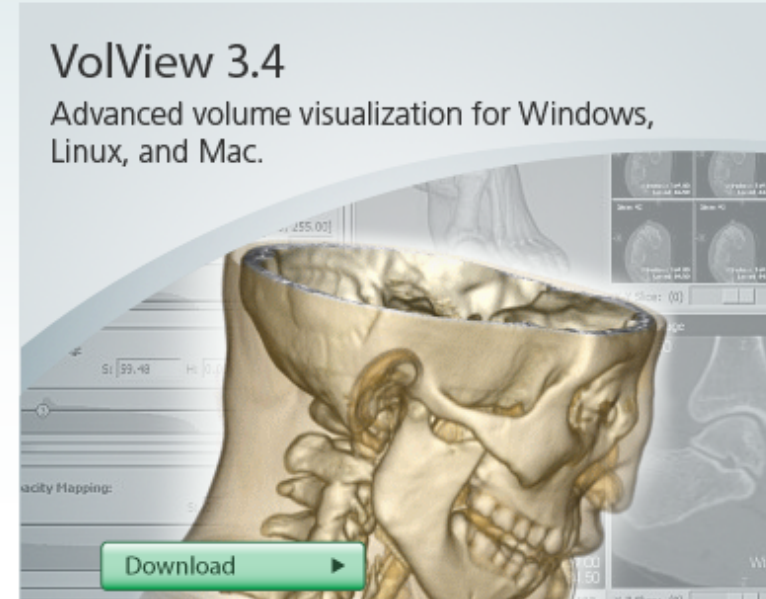
OPEN SOURCE



VolView 3.4 now available

VolView is an open-source, intuitive, interactive system for volume visualization that allows researchers to quickly explore and analyze complex 3D medical or scientific data on Windows, Mac and Linux computers. Users can easily load and interactively explore datasets using 2D and 3D display methods and tools. 3D tools include volume rendering, maximum intensity projections, and oblique reformatting. The ability to save an entire visualization session allows users to easily stop and start sessions. Advanced users can perform custom data processing using a simple plug-in API.

Kitware offers commercial consulting, support, and training services that can help your organization make the most of our tools. We can provide on-site or online training for your team, dedicated support services to help you effectively visualize and process your data, and customized consulting services to extend the VolView functionality or create



<http://www.kitware.com/opensource/volview.html>

Check List – Image Segmentation

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Latest News:

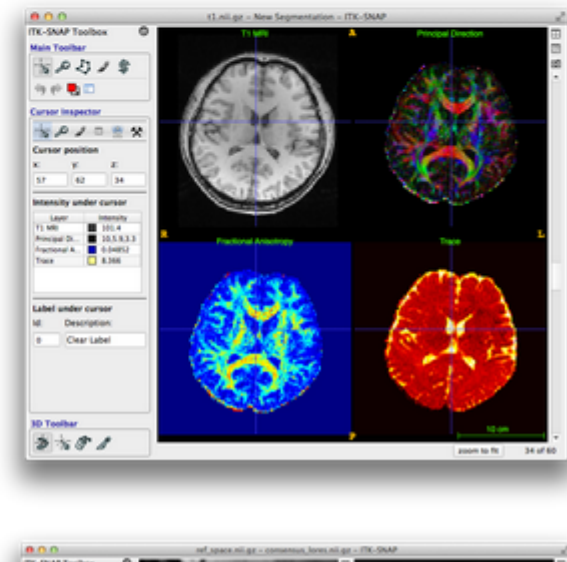
10/23/2014: **ITK-SNAP 3.2** is [released!](#)

10/23/2014: New [video training materials](#) for !

ITK-SNAP is a software application used to segment structures in 3D medical images. It is the product of a decade-long collaboration between Paul Yushkevich, Ph.D., of the [Penn Image Computing and Science Laboratory \(PICS�\)](#) at the University of Pennsylvania, and Guido Gerig, Ph.D., of the [Scientific Computing and Imaging Institute \(SCI\)](#) at the University of Utah, whose vision was to create a tool that would be dedicated to a specific function, segmentation, and would be easy to use and learn. ITK-SNAP is free, open-source, and multi-platform.

ITK-SNAP provides semi-automatic segmentation using active contour methods, as well as manual delineation and image navigation. In addition to these core functions, ITK-SNAP offers many supporting utilities. Some of the core advantages of ITK-SNAP include:


- Linked cursor for seamless 3D navigation
- Manual segmentation in three orthogonal planes at once
- A modern graphical user interface based on Qt



<http://www.itksnap.org/pmwiki/pmwiki.php>

Check List – Mesh Processing



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ParaView Blog Posts

05.14.2015 [New In ParaView: Quartile Chart View](#)

05.13.2015 [Colormaps Constructed with an Artist in the Loop](#)

05.05.2015 [Bulldozer Primer for VTK and ParaView](#)

04.30.2015 [Adding In Logic to a ParaView Catalyst Python Script](#)

03.31.2015 [New In ParaView: Axes Grid Annotation](#)

Kitware offers advanced software R&D solutions and services. Find out how we can help with your next ParaView project

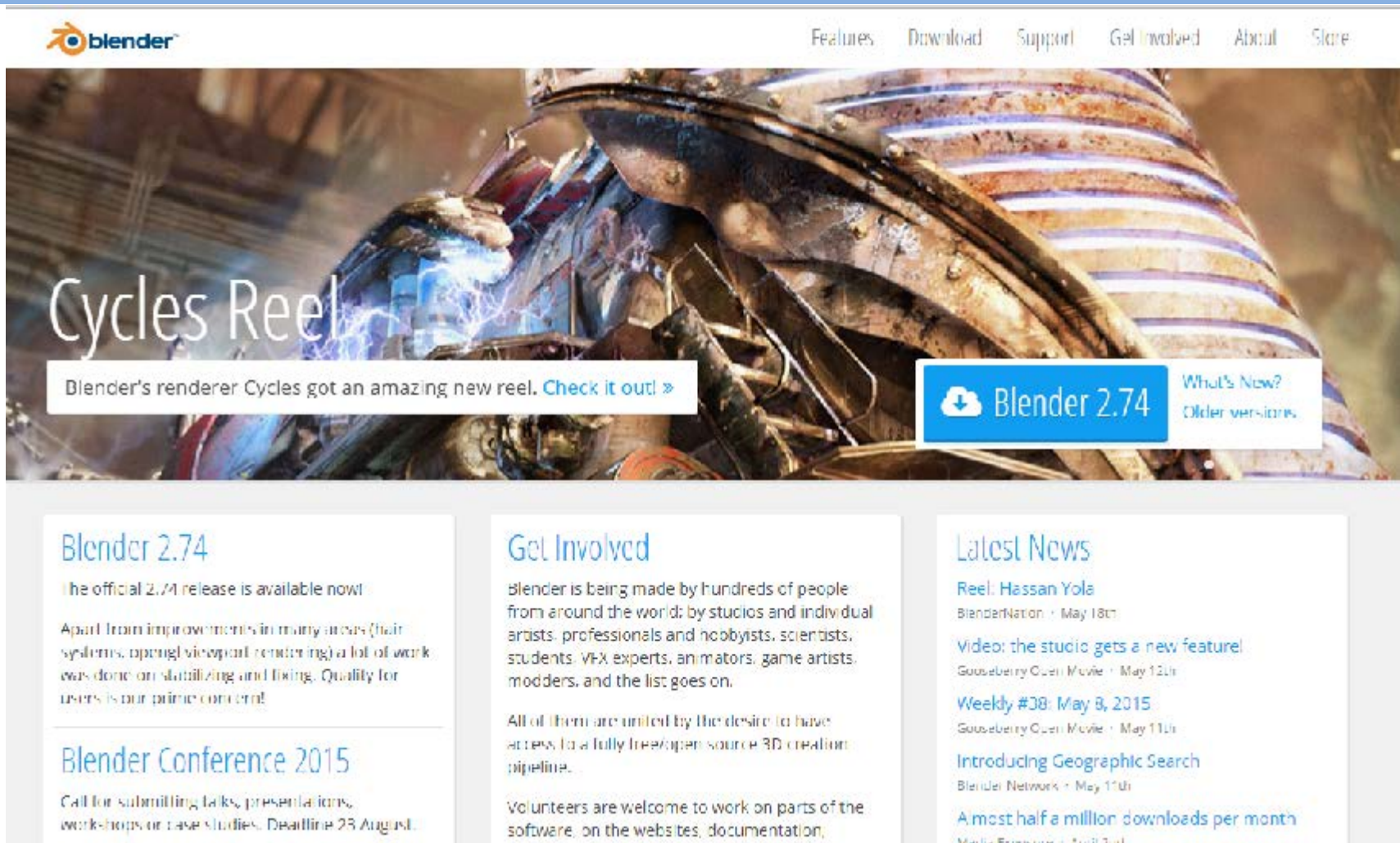
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<http://www.paraview.org/>

Check List – Mesh Adjustments



blender

Features Download Support Get Involved About Store

Cycles Reel

Blender's renderer Cycles got an amazing new reel. [Check it out!](#)

[Blender 2.74](#) [What's New?](#) [Older versions](#)

Blender 2.74

The official 2.74 release is available now!

Apart from improvements in many areas (hair systems, OpenGL viewport rendering) a lot of work was done on stabilizing and fixing. Quality for users is our prime concern!

Blender 2.74

Get Involved

Blender is being made by hundreds of people from around the world: by studios and individual artists, professionals and hobbyists, scientists, students, VFX experts, animators, game artists, modders, and the list goes on.

All of them are united by the desire to have access to a fully free/open source 3D creation pipeline.

Volunteers are welcome to work on parts of the software, on the websites, documentation,

Latest News

Reel: Hassan Yola
BlenderNation • May 18th

Video: the studio gets a new feature!
Gouseberry Open Movie • May 12th

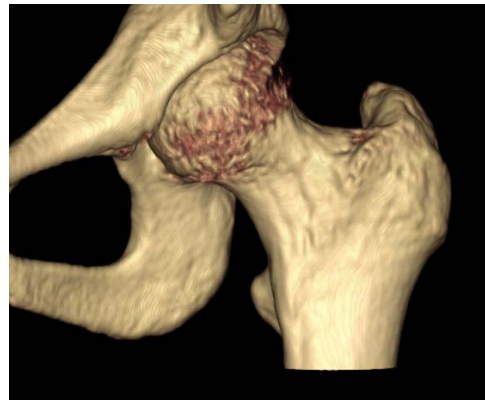
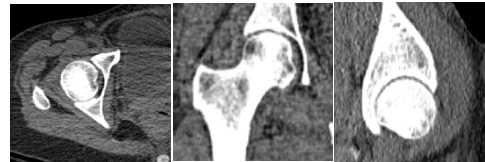
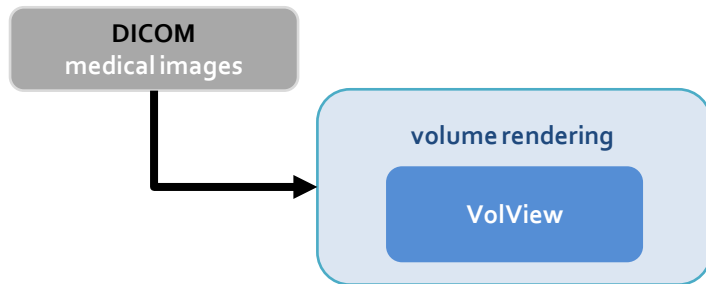
Weekly #38: May 8, 2015
Gouseberry Open Movie • May 11th

Introducing Geographic Search
Blender Network • May 11th

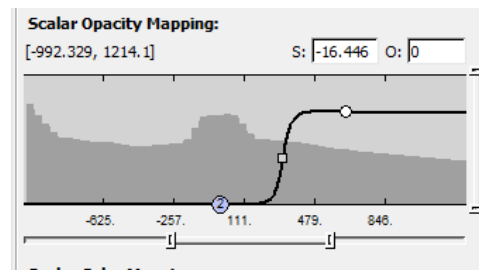
Almost half a million downloads per month
Media Express • April 2nd

<https://www.blender.org/>

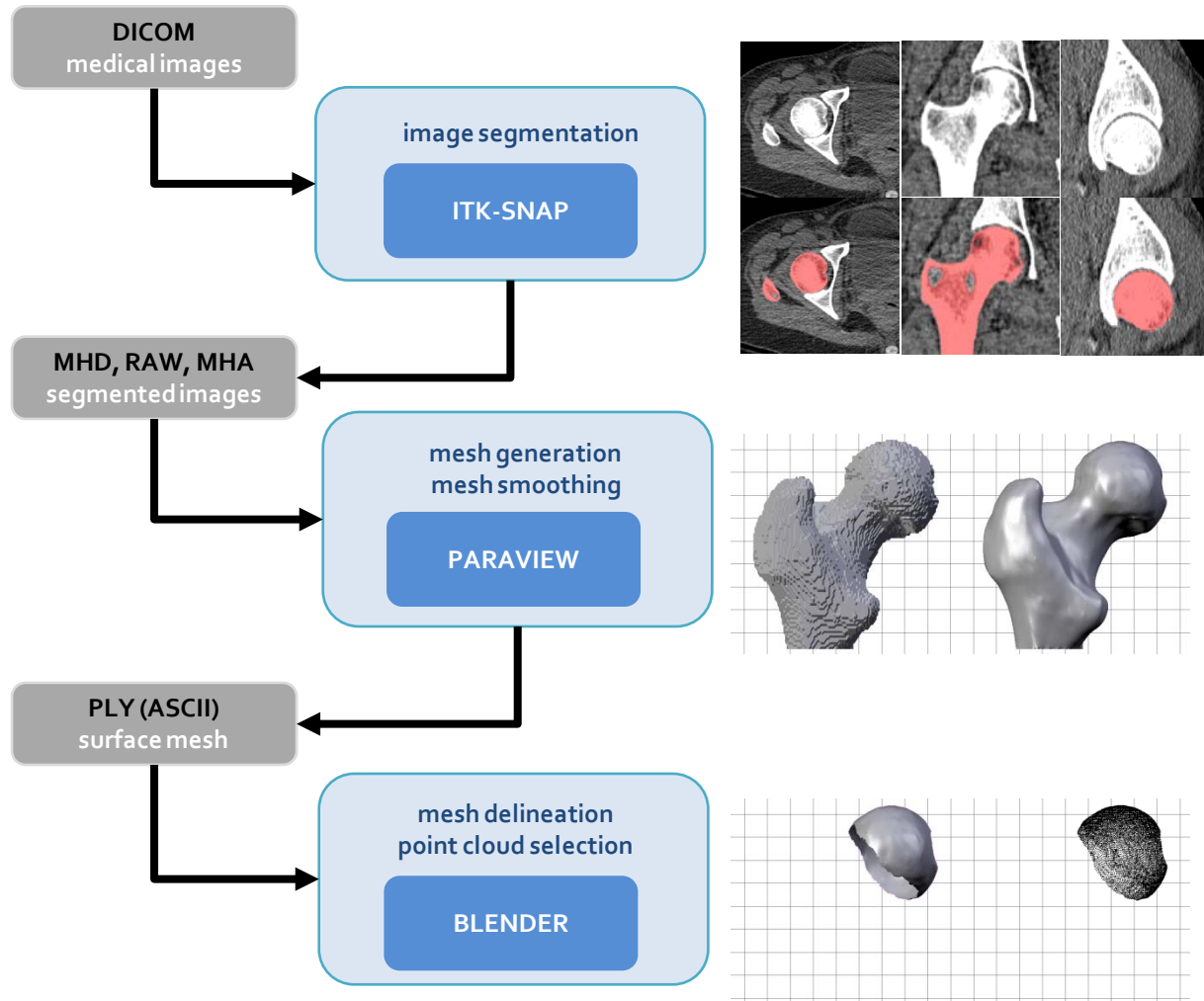
Software Pipeline



- image navigation
- volume rendering
- transfer function design



Software Pipeline



- global threshold (intensity region)
- active contour methods (3D snakes)
- manual segmentation
- surface mesh generation (marching cubes)
- mesh smoothing (Laplacian filter)
- manual mesh delineation
- edge and vertex deletion

Goals

Each one of you must obtain:

1 – volume rendered images (w/ TFs!)

2 – image segmentation file & mesh

3 – smoothed & decimated mesh