Visualization TRD
ImageVis3D
ImageVis3D Progress

ImageVis3D Desktop

• Released new volume rendering algorithm
• Volume manipulation library in development

ImageVis3D Mobile

• OpenGL 3.0 ES under development
  • Take advantage of new hardware
  • Share more desktop/mobile code

Uncertainty Visualization – muView System
Sparse PDFs for Fast Operations

Visualization

sPDF-maps for Non-Linear Multi-Resolution Image Operations
Large-scale volume manipulation

- Insert Jens' library here
Ray-Guided Rendering

Fogal, Schiewe, & Krüger, “An Analysis of Scalable GPU-Based Ray-Guided Volume Rendering” IEEE Vis/LDAV
Hybrid Rendering

Visualization
Novel Methods for *In Situ* Visualization

scp Freeprocessing
Papers Citing ImageVis3D

2014
http://www.hh.um.es/Articles-Proofs/11-467-manuscript.pdf

http://thejns.org/doi/abs/10.3171/2014.1.SPINE13426

http://www.akademiai.com/content/g6k0l24298217003/

2013
http://thejns.org/doi/abs/10.3171/2013.3.SPINE12923

http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6231628

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3900133/

http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6681346

http://link.springer.com/article/10.1007/s00779-012-0596-0
Papers Citing ImageVis3D

Carroll, Sylvia D. "3D image processing and FPGA implementation for optical coherence tomography." (2013).
http://repositories.lib.utexas.edu/handle/2152/21753

http://link.springer.com/chapter/10.1007/978-3-642-38762-3_9

Jan Kuntz, Rajiv Gupta, Stefan O. Schönberg, Wolfhard Semmler, Marc Kachelrieß, Sönke Bartling. "Real-time X-ray-based 4D image guidance of minimally invasive interventions"
European Radiology, January 2013
DOI: 10.1007/s00330-012-2761-2


Christian Noon, Joseph Holub, Eliot Winer. "Real-time volume rendering of digital medical images on an iOS device"
Proc. SPIE 8667, Multimedia Content and Mobile Devices, 86670U (March 7, 2013); doi:10.1117/12.2005335
http://proceedings.spiedigitallibrary.org/proceeding.aspx?articleid=1662472

http://iopscience.iop.org/0957-0233/24/12/125703

http://dl.acm.org/citation.cfm?id=2537981

András Székely, Roland Talanow, Péter Bágyi. "Smartphones, tablets and mobile applications for radiology"
European Journal of Radiology, Volume 82, Issue 5, May 2013, Pages 829–836
DOI: 10.1016/j.ejrad.2012.11.034


The importance and methods of reconstructive and aesthetic breast emlősebészetben the volumetric determination
ImageVis3D Mobile Download Statistics - iTunes

Top Territory: Mar 2013 – Mar 2014

<table>
<thead>
<tr>
<th>Territory</th>
<th>Units</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Asia Pacific</td>
<td>1.51K</td>
<td>-64%</td>
</tr>
<tr>
<td>2 Europe</td>
<td>1.10K</td>
<td>-32%</td>
</tr>
<tr>
<td>3 USA and Canada</td>
<td>497</td>
<td>-47%</td>
</tr>
<tr>
<td>4 Latin America and The Caribbean</td>
<td>156</td>
<td>-79%</td>
</tr>
<tr>
<td>5 Africa, The Middle East, and India</td>
<td>134</td>
<td>-57%</td>
</tr>
</tbody>
</table>
FOR IMMEDIATE RELEASE:

NVIDIA RECOGNIZES UNIVERSITY OF UTAH AS A CUDA CENTER OF EXCELLENCE
University of Utah Latest in a Growing List of Exceptional Schools Demonstrating Pioneering Work in Parallel Computing

SANTA CLARA, CA & SALT LAKE CITY, UT—JULY 31, 2008—NVIDIA Corporation, the worldwide leader in visual computing technologies, and the University of Utah today announced that the university has been recognized as a CUDA Center of Excellence, a milestone that marks the beginning of a significant partnership between the two organizations.
Large-Scale Volume Rendering

Future work
ImageVis3D Future Work (Cont.)

Split ImageVis3D into a research tree and a stable release.

Use Ook (http://tfogal.github.io/ook/) software to dynamically brick raw datasets possibly rebuilding the data on-the-fly. The need to pre-process the data is an issue with ImageVis3D, especially for very large datasets.

Out-of-core multichannel rendering. We’ve gotten requests for this and multichannel rendering would be a large boon for the work with Ray Winslow.

Out-of-core multidataset rendering. Dovetails heavily with multichannel rendering.

An Android port. Refactoring is necessary in order to get Tuvok compiling on the Android NDK and compliant with OpenGL ES 2.0.
muView Visualization System
Interactive Extraction of Neural Structures with User-Guided Morphological Diffusion

BioVis 2012

Yong Wan, Hideo Otsuna, Chi-Bin Chien, and Charles Hansen
FluoRender

A Practical Workflow for Making Anatomical Atlases in Biological Research

Yong Wan, A. Kelsey Lewis, Mary Colasanto, Mark van Langeveld, Gabrielle Kardon, Charles Hansen
Honors

Hideo Otsuna
2nd Place
Nikon Small World Microphotography Contest
2010

Hideo Otsuna
Honorable Mention
Olympus BioScapes Microphotography Contest
2010

Amy Lim
Cover Image Development
Sept-1, 2011; 138(17)

A. Kelsey Lewis
Cell Picture Show, 2012
More Honors

Winner of NICHD 2012 Image Competition

Olfactory projection neuron in the brain of an adult locust

Takaaki Miyazaki
NIH

Winner of FASEB Bio-Art 2012

Hindlimb of a mouse embryo

Alice Kelsey Lewis et al.
University of Utah
NIH BD2K Proposal

NIH BD2K Proposal Submitted in Nov 2013 to create the NIH Center for Biomedical Visualization and Data Analysis

Team: Utah, Harvard, Kitware

Priority Score: 29

Summary Statement and Council – May 2014