

From Images to Knowledge with ImageJ & Friends

virtual conference

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Conferences



Interactive 3D and virtual reality visualization for scientific images with sciview

Tutors: Kyle Harrington (kyle.harrington@mdc-berlin.de)
Ulrik Günther (ulrik.guenther@hzdr.de)

Session 1: 2020-11-30 14:00 UTC – 2020-11-30 17:00 UTC

Session 2: 2020-12-01 08:00 UTC – 2020-12-01 11:00 UTC

Title

Interactive 3D and virtual reality visualization for scientific images with sciview

Tutors

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Abstract

Sciview is an interactive visualization tool for exploring and processing scientific image data that supports 3D visualization, virtual and augmented reality, and integrates with ImageJ/Fiji. This tutorial will focus on using sciview as an ImageJ/Fiji plugin to visualize volumetric image data, geometric data (such as meshes and point clouds), common 3D image processing (e.g. creating meshes from images, creating images from meshes, and non-uniform 3D cropping), and creating scriptable visualizations for generating figures and movies. By the end of the tutorial, attendees will have example scripts and experience for 3D image processing and creating scriptable figures and videos that are compatible with ImageJ/Fiji.

Technical requirements

Sciview works on Windows, Linux, and MacOS. Sciview has been tested and validated on many hardware configurations. The most important requirement is a relatively modern graphics card.

A list of tested graphics cards is available

at: <https://github.com/scenerygraphics/scenery#gpu-compatibility> under the listing "GPU compatibility". We encourage attendees to test sciview on their computer 1-2 days before the workshop by following these instructions: https://github.com/kephale/sciview-i2k/blob/main/i2k_workshop_testing_instructions.md.

If you have trouble, then please reach out to the workshop tutors: Kyle Harrington (kyle.harrington@mdc-berlin.de) and Ulrik Guenther (ulrik.guenther@hzdr.de). We have a strong desire to ensure that sciview works for

as many users as possible and would appreciate any information about troubles that you may have.

In the last 30-60 minutes of the tutorial, we will demonstrate virtual reality (VR) support with an HTC Vive (also tested on Rift S and Windows Mixed Reality headsets). This section is likely to be more of a demonstration due to the time required to setup a VR configuration. Following along with this section requires that you have VR equipment. Background will be provided for working with new VR and AR hardware. If you are interested in following along with this section, then we strongly recommend that you reach out to Ulrik Guenther prior to the workshop about testing your VR setup.

Outline

- Installing sciview in Fiji from update site
- Creating your first scene with basic geometries
- Taking screenshots and recording videos
- Working with volumetric data
- Making your first sciview script
- Loading custom point clouds
- Animating your scene and camera
- Working with complex datasets and YOUR data!
- Virtual and augmented reality