Release notes

Amira–Avizo Software

Version 2019.3

3D data visualization and analysis

The aim of this document is to inform you about the most important new features, improvements and changes in this version of Thermo Scientific™ Amira-Avizo™ Software.

Please read these Release Notes carefully.

We would appreciate your feedback regarding this version. If you encounter any problems or have any suggestions for improvement, please do not hesitate to contact us at FRBOR.3d_hotline@thermofisher.com.

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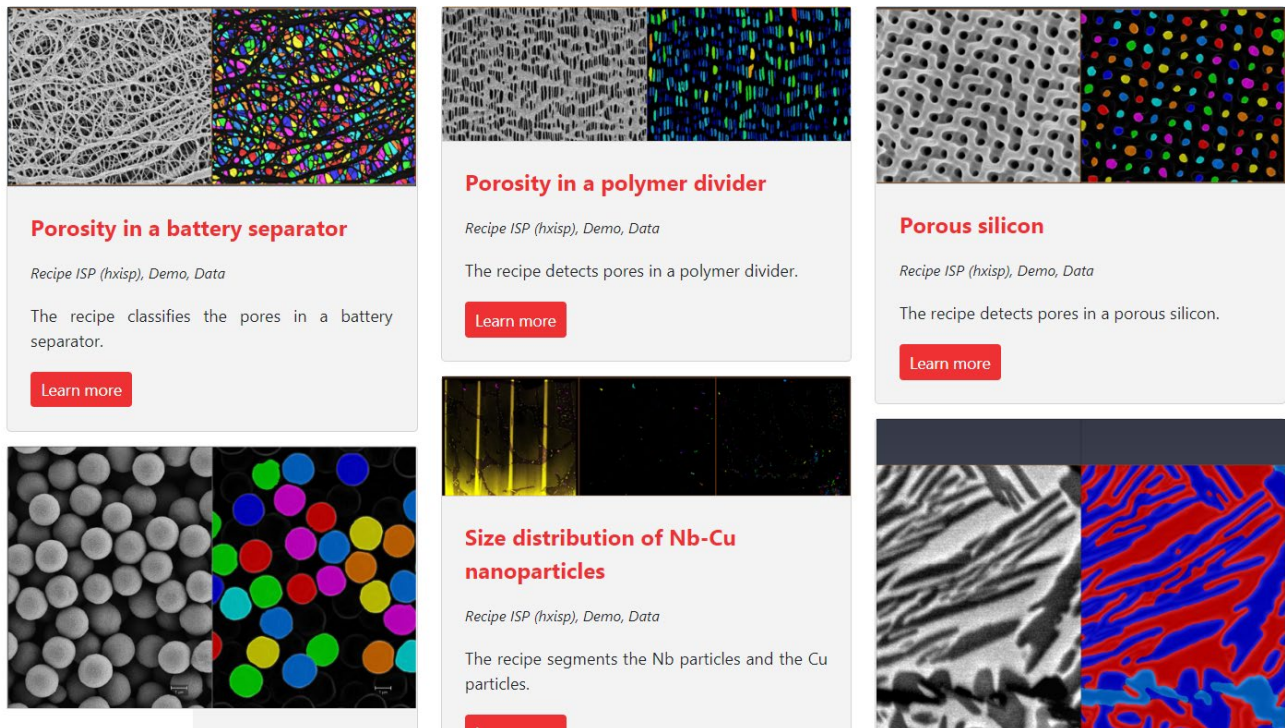
The new Xtra Library website

With the 2019.3 release, a new website is available for sharing a collection of add-ons (recipes, scripts, demos. ..and more) that will help improve day-to-day use of Amira-Avizo Software and gain both time and efficiency. The website is accessible at https://xtras.amira-avizo.com/.

The website will be extended with use cases on a regular basis, independent of the release cycle of the products.

Porosity in a battery separator

Recipe ISP (hxisp), Demo, Data

The recipe classifies the pores in a battery separator.

Learn more

Porosity in a polymer divider

Recipe ISP (hxisp), Demo, Data

The recipe detects pores in a polymer divider.

Learn more

Porous silicon

Recipe ISP (hxisp), Demo, Data

The recipe detects pores in a porous silicon.

Learn more

Size distribution of Nb-Cu nanoparticles

Recipe ISP (hxisp), Demo, Data

The recipe segments the Nb particles and the Cu particles.

Learn more

Avizo Software Lite and Amira Software: Enhancements and new features
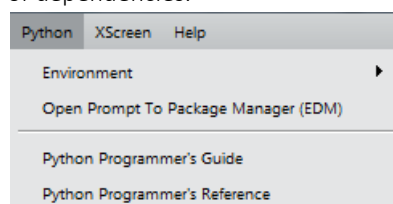
Python

This version introduces significant improvements that enable better management of Python environment creation for Amira-Avizo Software and also enablesetup of environments with Deep Learning support.
These improvements are listed below:

- New Python Menu in the main toolbar to access:
  - Python Environments
  - Enthought Deployment Manager (EDM*)
  - Python documentation

  *EDM creates self-contained environments with their own set of executable Python packages. This allows users to reproduce a colleague or partner's environment for co-development, troubleshooting, testing, or to work on different projects with different sets of dependencies.

- Add the capability to create a new Python environment that Amira-Avizo Software will use for scripting

Create a new Python Environment
with optionally Deep Learning Packages

Enable to switch between embedded
and created Python environments
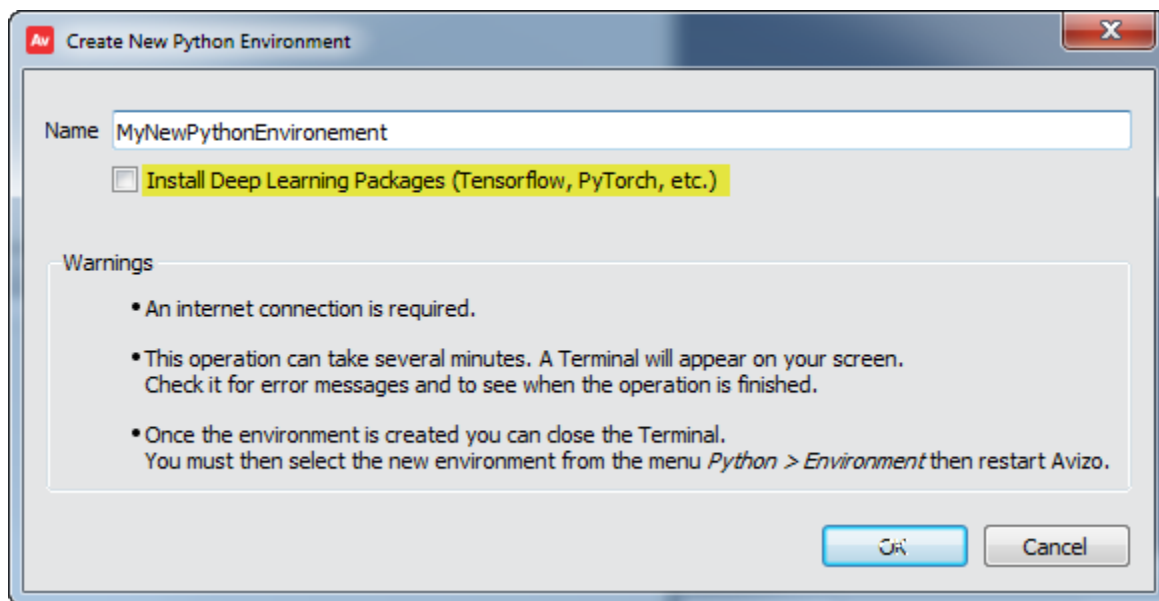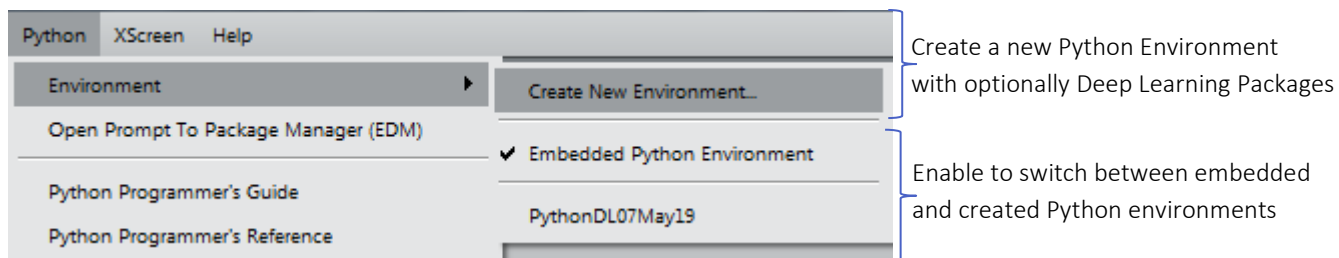
- New ready-to-use Python bundle with Deep Learning packages
  - Most common deep learning packages are accessible:
    - Keras
    - TensorBoard
    - TensorFlow-GPU
    - PyTorch
  - Environment packages are downloaded at the Python environment creation from the Enthought download center
  - No need to install CUDA SDK
  - Deep learning packages only available on Windows for now

- The port on/off (HxPortOnOff) and the progress bar (HxProgress) are now wrapped in Python.

Deep Learning

This version introduces Deep Learning into Amira-Avizo Software, through two new modules and a tutorial explaining and illustrating their usage. Both modules rely on the new python environment and the Deep Learning packages and are thus available only on Windows. A GPU supporting CUDA Compute 3.5 is also required.

The Deep Learning Training module allows training a model for binary segmentation, given a grayscale image and its corresponding segmentation; and the *Deep Learning Prediction* module allows applying a trained model to process a grayscale image.

Resource data sets and examples of trained models for the tutorial are available for download from the new Xtras library at the following web address http://xtras.amira-avizo.com/
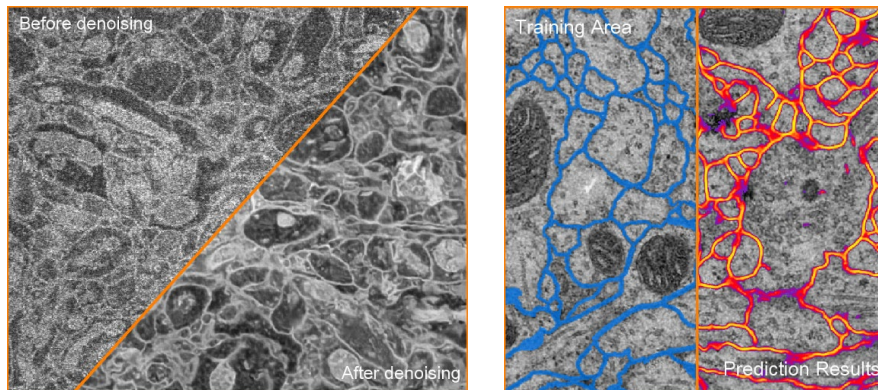
Left: Illustration of the example deep learning model provided for back-scattered image denoising. Right: Membranes segmentation using deep learning – Data courtesy of A. Cardona*

* Cardona A, et al. 2010. An Integrated Micro- and Macro-architectural Analysis of the Drosophila Brain by Computer-Assisted Serial Section Electron Microscopy. PLoS Biol 8(10): e1000502. doi:10.1371/journal.pbio.1000502.

Avizo Software and Amira Software XImagePAQ extension: Enhancements and new features

Structure Enhancement Filter

This new filter enables enhancement of structures such as balls (dots, bubbles, spherical cells), rods (filaments, fibers) and planes (membranes, cracks), relying on either the eigenvalue analysis of the Hessian or the Structure Tensor. The filter can operate at a range of scales and is thus able to highlight structures of different sizes.
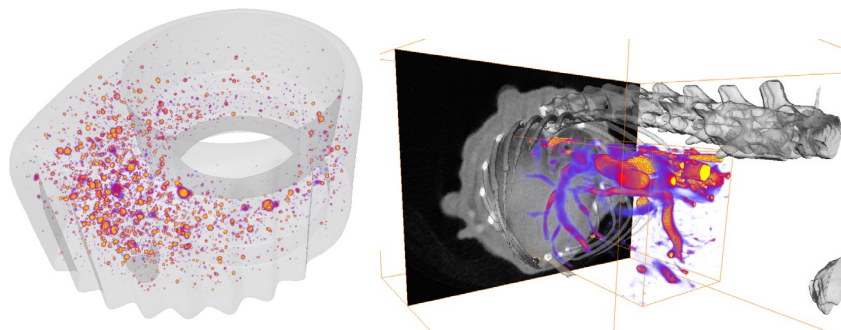

Illustration of Structure Enhancement Filter. Left: highlighting pores of varied sizes in aluminum cast. Right: highlighting blood vessels in small animal µCT.

Compatibility notes

Because of internal changes in the Avizo Inline licensing mechanism, it is not possible to run Avizo Inline 2019.3 at the same time as any previous version of the software.

Since version 2019.2, in the Volume Rendering module, activation of shadows is only possible using the menu *View > Enable Shadows*. The shadows button no longer appears in the property window.

Future deprecations

This section documents the features that will be deprecated or removed from the next Amira-Avizo Software version.

- This version is the last version to support Windows 7 since Microsoft has announced the end of support of this version the 14th January 2020 (see https://www.microsoft.com/en-us/microsoft-365/windows/end-of-windows-7-support for details).
  If you continue to use Amira-Avizo Software on Windows 7 after support has ended, it should still work, but will no longer provide technical support and software update.

Operating systems

Amira-Avizo Software version 2019.3 runs on:

- Microsoft Windows 7/8/10 (64-bit)
- Linux x86 64 (64-bit). Supported 64-bit architecture is Intel64/AMD64 architecture. Supported Linux distribution is Red Hat Enterprise Linux 7.
- macOS High Sierra (10.13) and macOS Mojave (10.14)

Avizo Software 2019.3 for Industrial Inspection and Inline Extension run on:

- Microsoft Windows 7/8/10 (64-bit)

To add custom extensions with Amira-Avizo XPand extension, you will need:

- Microsoft Visual Studio 2013 (VC12) Update 4 on Windows
- gcc 4.8.x on Red Hat Enterprise Linux 7
- XCode7 or greater on macOS

Solved issues

Avizo Inline Designer	AA-21303	Edge 3D option for 3D SubRegion volume rendering display properties can now be enabled/disabled.
Avizo Inline Designer	AA-21304	Quality and Lighting options of 3D SubRegion volume rendering now work correctly.
Avizo Inline Inspector Review	AA-21446	The Test Shot view mode can now be customized.
Camera Path	AA-15264	A smooth option has been added to the Camera Path module. If the camera turns unexpectedly during an animation, it is now possible to smooth its trajectory.
Histogram	AA-21621	The tcl command saveHistogram would save the complete histogram into a csv file, now only the displayed histogram is saved.
Label Analysis	AA-8168	Precision could be lost when Label Analysis results were converted or exported to a spreadsheet. This has been fixed.
Landmark Surface Warp	AA-21113	The Bookstein method of the Landmark Surface Warp module did not return results in some cases. This has been fixed.
LDA	AA-21183	Saving a project containing an LDA data in pack&go mode could generate an error. LDA files are now correctly saved.
Movie Maker	AA-20363	Exporting a movie from the Animation Director is now stable with large data.
	AA-21354	
	AA-17898	
	AA-20911	
Multiplanar Viewer (Amira)	AA-21382	When rotating an image in the Multiplanar Viewer, MaxIP (MIP) render mode erroneously displayed MinIP render mode. This has been fixed.
Save	AA-15001	A warning will now pop up when saving a project/data with special characters which are not supported in its name and/or path.
Snapshot	AA-21277	Snapshot tool width and height parameters are now automatically set by default to the viewer dimension.
Viewers	AA-13254	It is now possible to link the cameras of multiple viewers to one single viewer.

We are focused on solving as many issues as possible to make your experience with Amira-Avizo Software as satisfactory as possible. We would appreciate your feedback regarding this version. If you encounter problems, or if you have suggestions for improvements, please report them to FRBOR.3d_hotline@thermofisher.com.