

Realtime-2D Deconvolution

Populare widefield microscopy is a powerful optical method to visualize cellular and molecular processes involved in cells. Although fluorescent blurring from out-of-focus light is an limiting factor, but image deconvolution algorithms can reverse this out-of-focus light artifact.

The 2D realtime deconvolution technology, helps to improve cellular image's resolution and contrast by mathematical deblurring of the image. As a result, images and fine detail become sharper while maintaining quantitative information.

VisiView

Realtime 2D-Deconvolution

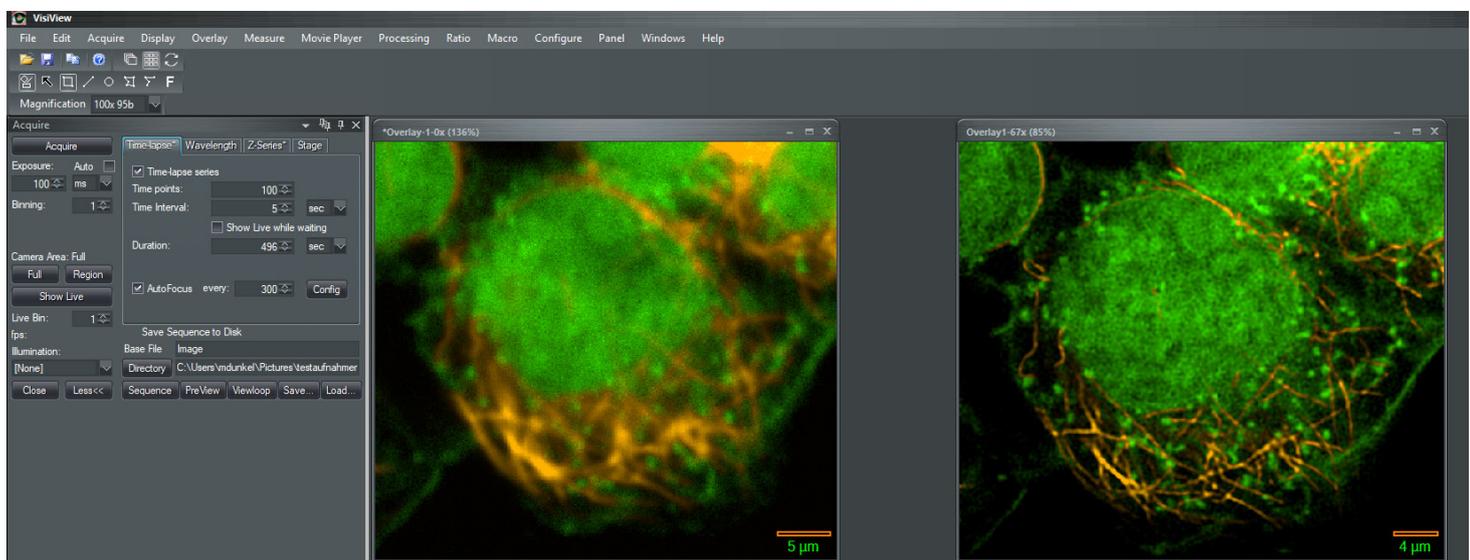


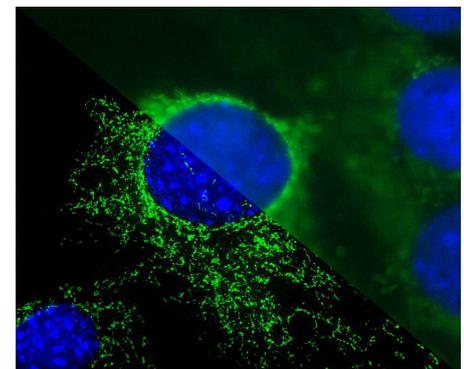
Image overlay shows DNA staining green and Microtubuli staining orange.

VisiView Realtime 2D Deconvolution

The 2D deconvolution can be applied on a live image or an already acquired and stored dataset. There are several 2D algorithm available, the VisiBoostEnhance, Tikhonov and the Richardson.

Live Preview without limits

To more than just previewing! The new Live Preview mode is a part of the "Realtime Processing" option which allows to switch by single click between the raw data and the deconvolved data during the image acquisition. The high speed processing are done in the GPU graphics processor. The raw images are always stored at full speed e.g. 100 frame/sec without modification.



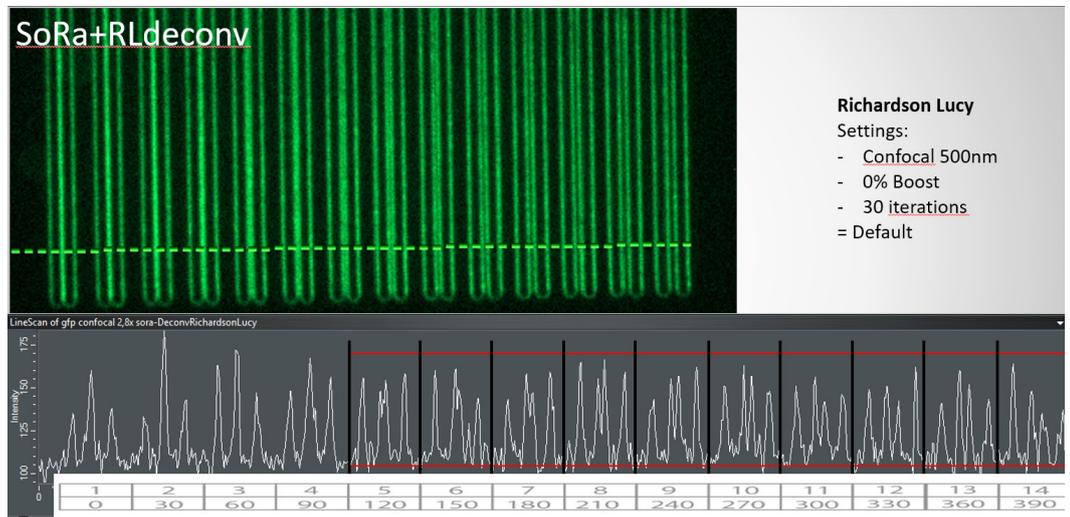
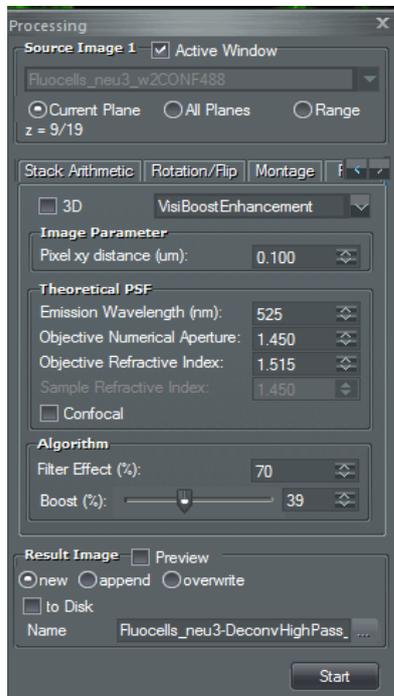
Overlay of Nucleus Dapi stained and Mitochondria GFP staining

VisiView

Realtime 2D-Deconvolution

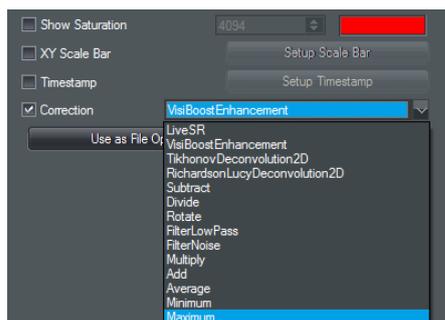
Spinning Disk Confocal Image improvement by Realtime-2D Deconvolution

The CSU-W1 Spinning Disk SoRa is an easy-to-use super-resolution microscopy solution using the well know Yokogawa dual disk technology. The resulting raw images show a 1.4x resolution improvement and with deconvolution one can achieve twice the resolution of raw spinning disk data down to approximately 120nm. This technique is ideal for super-resolution live cell imaging application.



Richardson Lucy
Settings:
- Confocal 500nm
- 0% Boost
- 30 iterations
= Default

Image collected with Argolight test slide, CSU-W1 SoRa and calculated with VisiView Richardson Lucy 2D-Deconvolution



Realtime Processing Option

Real-time correction of image data

The VisiView Realtime Processing option enables a preview mode in the Processing menu and the correction of image data in real-time! It supports various arithmetics, filters and 2D deconvolution algorithms known from the VisiView Processing menu. Whatever filter is applied neither the frame rate of the acquisition drops nor the raw-data are modified. It can be activated in the Image Display menu as it, like any setting of the Image Display menu, solely modifies the data visualisation.