

## What's New in Holo Batch v3.0?

Version 3.0 of Holo Batch and Holo Detail have recently been released on Sequoia's website. We have made several changes in order to improve hologram processing. This release includes several improvements to the user interface, as well as improvements under the hood.

In Holo Batch we have added additional methods to remove noise in the reconstructed images. The first method is removal of noise from the Fourier transform image before reconstruction even occurs. This greatly reduces the low frequency noise in the images (commonly seen around the edges of reconstructed images). The second method is to removing pixels who's gray scale value fall below a certain percent of the maximum gray scale value. This is a handy tool because unlike a global thresholding of the images, the gray scale values to remove are calculated based on the intensity profile of each hologram. This value (listed as 'Clean Stack' in the advanced tab), is a user defined value. This allows you to apply as much or as little filtering as you would like. This feature is also available in Holo Detail.

Another featured added to Holo Batch is an option to see a visual output of the data while the images are being processed (Fig. 1). A checkbox labeled 'Show data visualization' is now present on the Holo Batch initialization page. This will bring up a page that show the particle size distribution, particles per hologram, temperature, and depth. These plot are updated in real time during the image processing. Therefore, this option provides the fastest way to visualize your data.

The new software also provides more control over the output parameters. You now have the option to suppress depth and montage images (composite images that display all in focus particles). Therefore, if these composite images are not desired, disk space can be conserved.

In this new release we have improved the speed at which holograms are processed. The '+Speed, +Memory' option will now execute a partially vectorized form of the Holo Batch code. This option is only available in the 64 bit version of Holo Batch because it is recommend for computers with at least 6 GB of RAM. However, if your computer fits these criteria you should expect much faster reconstruction times (Fig 2).

Lastly, we are rolling out versions of Holo Batch and Holo Detail for Mac OS X.

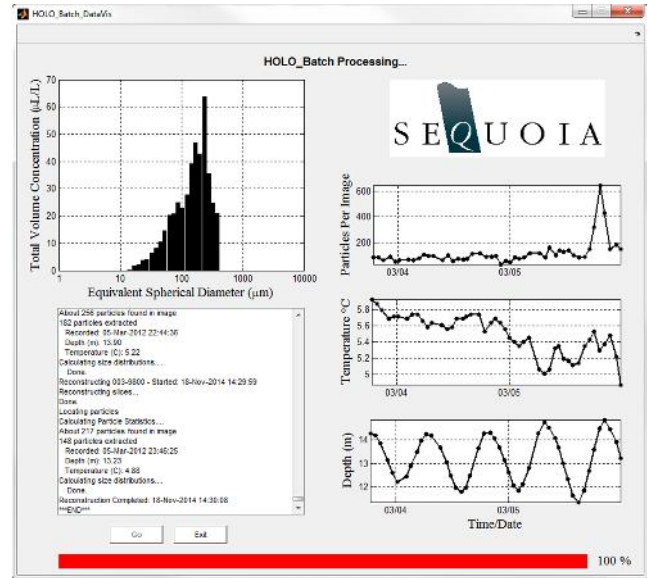


Fig 1. New data visualization option in Holo Batch

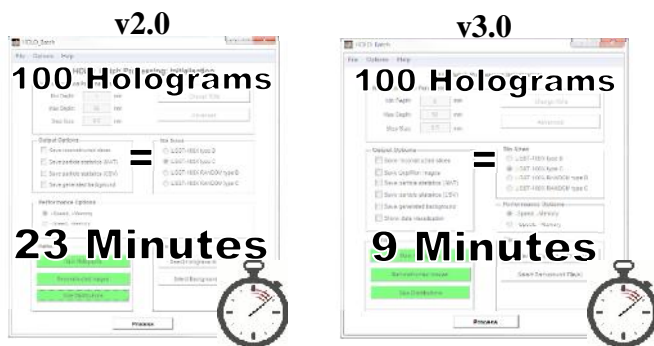


Fig 2. Example of improved processing speed in Holo Batch v3.0. Depending on the requested output, processing time can be reduced by a factor of two. The figure shows the amount of time required to calculate the volume size distribution for 100 holograms (one 1024x1024 ROI, 0.5 mm step size). Holo Batch versions were run on a Dell Precision T1700, Intel Xeon E3-1226 @ 3.3GHz, with 8 GB of RAM.