DigitalMontage Module
Model 700.80P

The DigitalMontage® module, model 700.80P, is an optional plug-in to DigitalMicrograph® software. By controlling the microscope stage or imaging optics it enables an array of images to be acquired and stitched seamlessly together. The resulting montage shows specimen structure at a resolution that would be impossible to collect even with cameras possessing tens of times more pixels.

Sometimes the interesting structure in a specimen extends over several fields of view of the camera. Of course you can always reduce the magnification to capture more structure but that sacrifices resolution and may not be acceptable. With the DigitalMontage module you can acquire a grid of images covering the structure of interest at a resolution that is potentially several times higher than can be achieved by lowering the magnification. You specify the grid size in X and Y, the overlap as a percentage of the image size, and whether to change the field of view using the microscope image shift/beam shift deflector coils, or the microscope stage.

DigitalMontage module acquires the images and stitches them together, automatically adjusting the intensities of the images so as to minimize or eliminate the presence of seams in the result. If you should encounter a case that is difficult to automatically stitch, you can choose to refine the positions of the images after the automatic determination or to completely manually position them. The software will then stitch the images together and adjust the intensities as in the fully automatic case.

Building upon experience gained from the past this version of the DigitalMontage module has been completely rewritten and integrates seamlessly with the rest of the Gatan Microscopy Suite® (GMS) software.

Benefits

- **Field of view changed by means of image shift, image shift/ beam shift, or stage:** Use image shift for microscopes with enough range; use the stage to cover large areas

- **Automatic stitching:** Quickly and easily generate a montage

- **Manual stitching:** For odd situations where you might have to help

- **Configurable image filter for use in overlap calculations:** For cases with, for example, strong periodic structure
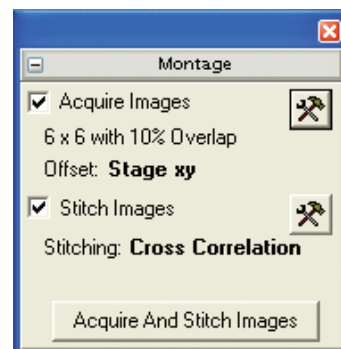
Figure 1. The field of view can be offset using the stage or the microscope image shift/beam shift deflectors.
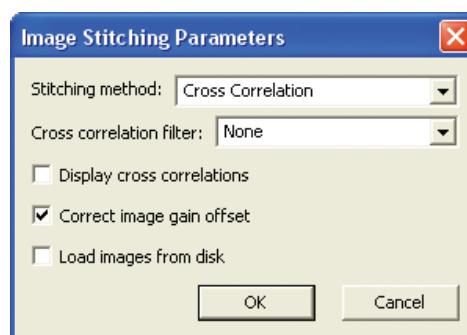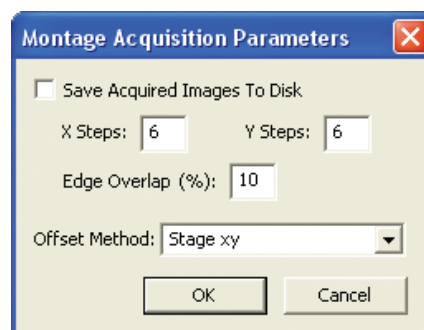
Figure 2. Acquired images can be stitched automatically, manually, automatically with manual refinement, or simply laid out as if the applied offsets were flawless. For images with some unusual characteristics, for example containing a subject on a periodic grid, image filters can be applied to facilitate the alignment.

- **Automatic intensity matching:** Reduces or eliminates the appearance of seams in the montage

Applications
- Digital imaging
- Biological sciences
- Material science

Requirements

In order to use the DigitalMontage module, you must already have a Gatan CCD camera installed on your microscope. Most modern microscopes are supported in addition to some older ones. Please contact Gatan to determine compatibility with a particular microscope model

Requirements are subject to change.
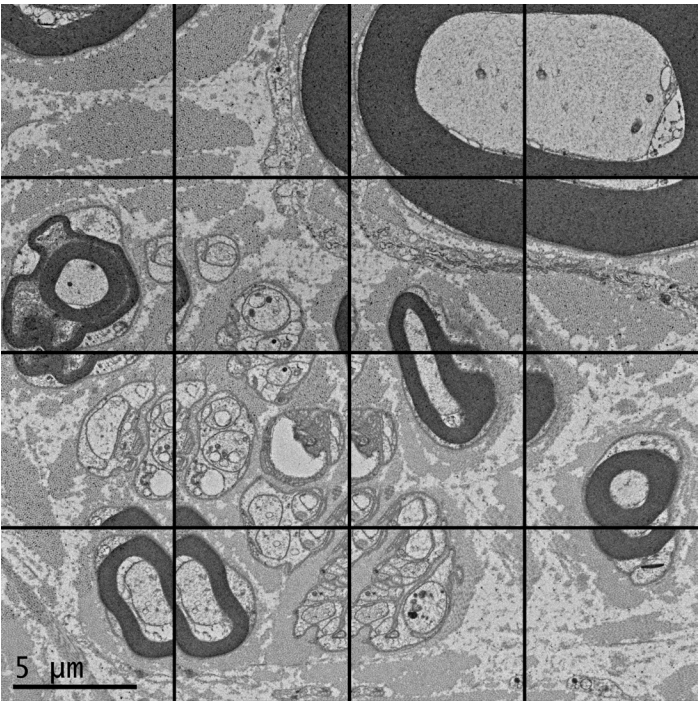
Ordering

Model	Description
If you already have a Gatan CCD camera or Gatan imaging filter, the simplest way to purchase the DigitalMontage module is to order:	
700.80P	DigitalMontage software
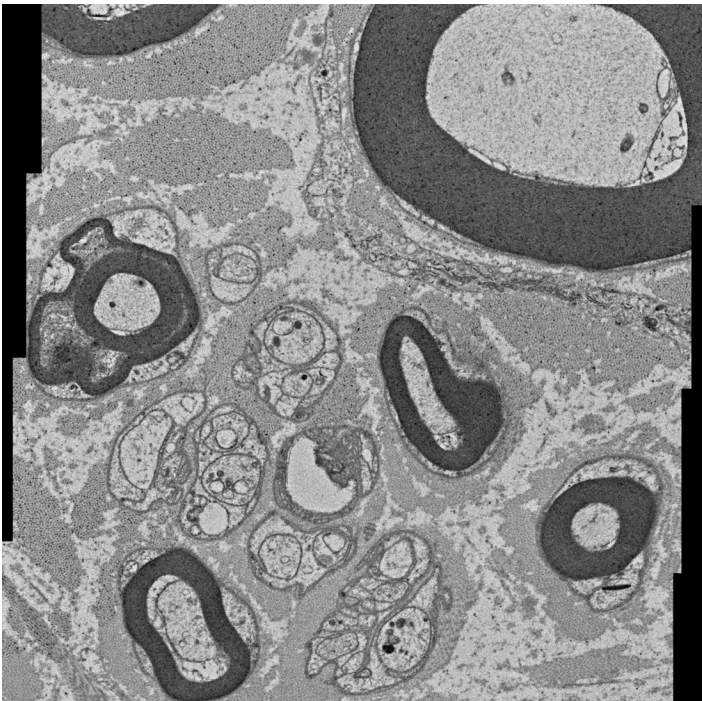
Figure 3. The image on the left shows a 4 x 4 grid of images, each of size 2048 x 2048 pixels taken with an Orius® SC200 camera using the DigitalMontage module. The microscope stage was used to shift the field of view from one image to the next and an overlap of 20% was maintained. The image on the right shows the result of stitching these images with the DigitalMontage module. In this ~50 million pixel image the seams are not noticeable as either spatial discontinuities or intensity steps.

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