# What's new in CT-Analyser 1.13?

1. CTAn can import DICOM datasets directly;

2. CTAn can import ISQ (Scanco) datasets directly;

3. Adaptive thresholding has been improved so that there is now both an upper and a lower pre-threshold. For instance – in pre-threshold I set the grayscale range 50-150. This means that all pixels below 50 in grayscale are set to black and all pixels above 150 are set to white. Thus the adaptive algorithm will act on only the "marginal" pixels within the 50-150 range. This avoids the "Swiss cheese" problem of holes appearing in adaptive thresholded images of thick structures where the structure thickness exceeds twice the selected adaptive threshold radius.

4. In place of just "Bitwise operations" in custom processing there are now three plugins:
   a. Bitwise operation (boolean operations as before)
   b. Arithmetic operations (ADD, SUB, MUL, DIV, MIN, MAX)
   c. Geometric operations (translate X,Y, flip horizontal / vertical, rotate 180 degrees)
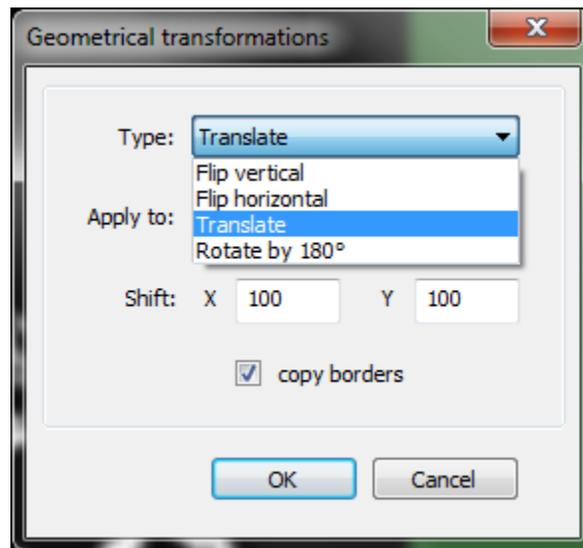

5. Regions of interest can be set as "image format" and then rotated and translated;

6. External binary images can be imported as a region of interest (ROI) allowing, among other things, ROIs with multiple disconnected parts;

7. Sharpening can be applied to images as well as smoothing, using the "unsharp mask" method, in the "filtering" plugin in custom processing;

8. Otsu multi-level thresholding in custom processing: there is now more flexible control of grayscale output by use of the arithmetic operation multiply "MUL" applied to "class id".

9. In the custom processing plugin "despeckle", you can now either remove or select objects within a specified range:
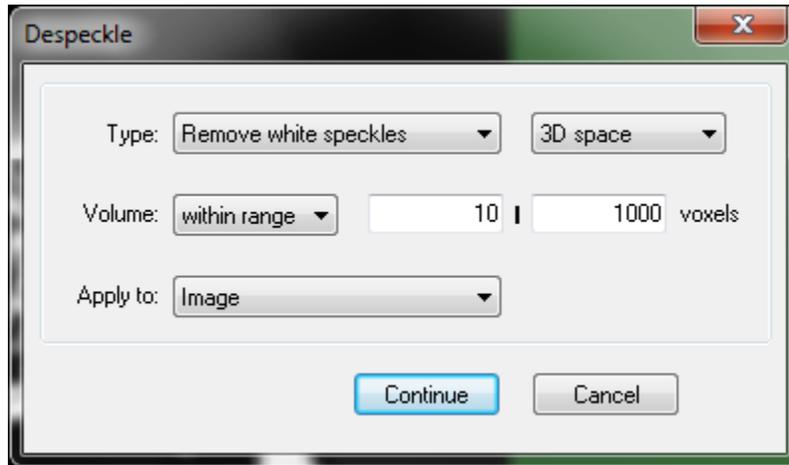
10. The **pause** function: In custom processing you can now pause and restart a task list at one or more places in the task list. This is useful for analysis and trouble-shooting of a task list. The task will stop before carrying out the item marked for pausing by the blue symbol as shown:
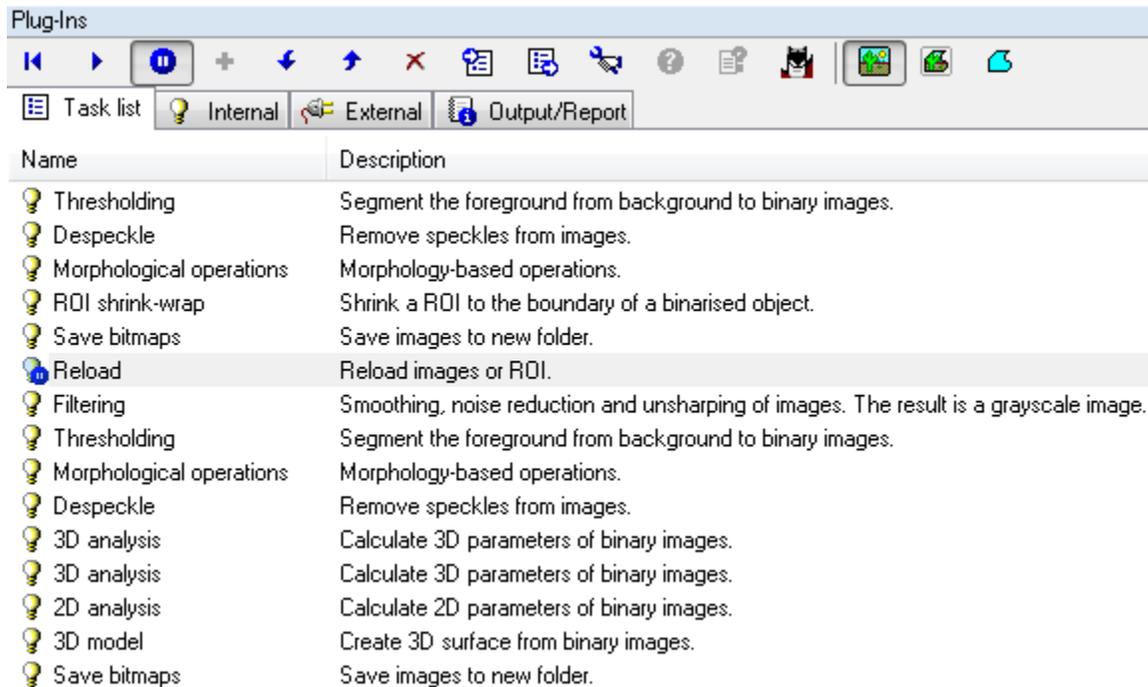
11. 3D models can be exported in the I3M format for use in the Apple iphone / ipad application ImageVis3D Mobile;

12. A range of new 2D and 3D morphometric parameters for individual objects have been added; also, in 2D line-by-line analysis you can customise which parameters to report (and not to report);

13. In the projection window (SPR image) there is more flexible control of the displayed image range and highlighting options.

14. If your dataset has lost its SPR file for projection view, for instance after 3D stereoangle rotation and resaving in Dataviewer, you can generate a new SPR file from any longitudinally resampled image (cut, MIP or projection);

15. There are editing tools for the ROI shape at the ROI page (click on the ROI dimensions display on the status bar below) allowing exact setting of ROI size and XY position; the position and angle of the profile line can also be adjusted by right-click at the bead at the start of the profile line;

16. In the Volume model 3D real-time viewing window, the option of a "volume plot" has been added;

17. In the Volume model 3D real-time viewing there is a new option of translational movement of the displayed model by control key with left mouse drag-and-drop; also in volume preferences, you can select between perspective and parallel 3D projection view geometry.

18. Improved the handling of ATI/AMD graphics cards as well as NVidia cards;

19. Added the custom processing plugin "comment" so you can annotate a complex task list .

20. A few bug fixes.