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I. INTRODUCTION

Intensive users of Argolight products may have a lot of images to analyze in one go. A batch analysis feature has been designed to help them reduce the processing time.

Please note that, in order to have access to the “batch analysis” feature, a license for Daybook Data Manager is required. Please contact Argolight if you want to have a license for Daybook Data Manager.

The batch analysis is carried out in Daybook Analysis and the results are displayed in Daybook Data Manager.

There must be at least one system, one acquisition profile and one channel created within Daybook Data Manager to be able to save the results obtained from the batch analysis.

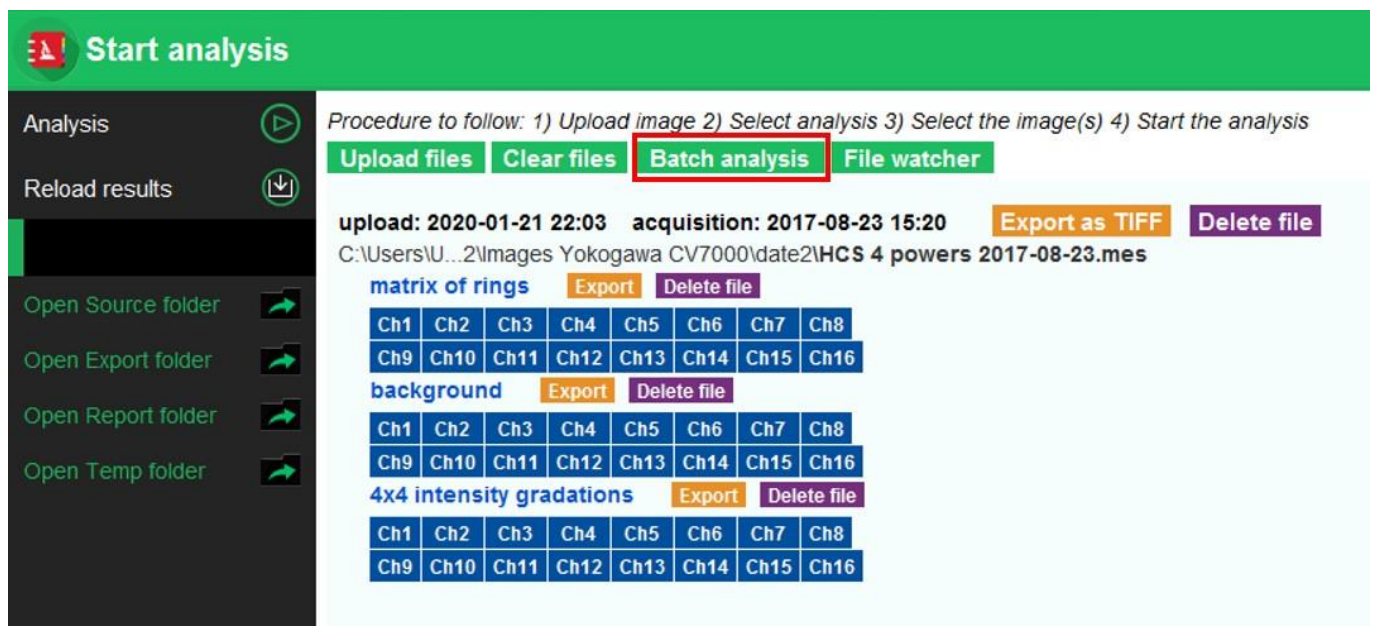


Figure 1: “Batch analysis” feature.



II. HOW TO LAUNCH A BATCH ANALYSIS?

- a) Upload your image files using the “Upload file” button.
Note: the batch analysis will analyze all the images listed in the upload history, so you may want to clear the history and only upload relevant image files to prevent from any unnecessary processing time.
- b) Click on “Batch analysis” (cf. Figure 1).
- c) Configure the batch analysis in the settings panel (cf. Figure 2).
Note: The batch analysis uses the same parameters (Best focus selection, Intensity projection, etc.) than the ones you have selected for unit (one at a time) analyses.

BATCH ANALYSIS SETTINGS

1- Under which system and acquisition profile would you like to save the results?

Select your system:

Select your acquisition profile:

2- Match the channel of the images series with the one of the acquisition profile.

Select the acquisition profile channel:

Select the reference channel (only for the lateral co registration accuracy):

3- Tick the boxes to choose the patterns to analyze.
 Associate a pattern to an image series: enter a part of the name of your series (see documentation for detailed info).

| Pattern to be analyzed | Series name | ROI X (px) | ROI Y (px) | ROI width (px) | ROI height (px) |
|---|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> Sphere | <input type="text" value="Sphere"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> Field of rings | <input type="text" value="Field of rings"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> Cross | <input type="text" value="Cross"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> Ring | <input type="text" value="Ring"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> Gradually spaced lines | <input type="text" value="Gradually spaced lines"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> 4x4 Intensity gradation | <input type="text" value="4x4 intensity gradation"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> 2x16 Intensity gradation | <input type="text" value="2x16 intensity gradation"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> 3D crossing stairs | <input type="text" value="3D crossing stairs"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="checkbox"/> Matrix of crosses | <input type="text" value="Matrix of crosses"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |

Apply background subtraction

4- Select the analysis to be processed:

| | |
|--|--|
| <input type="checkbox"/> Field uniformity | <input type="checkbox"/> Field distortion |
| <input type="checkbox"/> Lateral co registration accuracy | <input type="checkbox"/> Lateral resolution |
| <input type="checkbox"/> Intensity response 4x4 | <input type="checkbox"/> Intensity response 2x16 |
| <input type="checkbox"/> Stage repositioning repeatability | <input type="checkbox"/> Stage drift during timelapse |
| <input type="checkbox"/> Stage drift during z stacking | <input type="checkbox"/> Line spread function |
| <input type="checkbox"/> Ring spread function | <input type="checkbox"/> Accuracy of 3D reconstruction |
| <input type="checkbox"/> Optical sectioning strength | |

5- Advanced settings:
 Number of analyses processed at the same time

Figure 2: Batch analysis settings panel.



- **Series name:** The software needs help to figure out which pattern can be found in each of your images. It will ask you to match your image name to the type of pattern. In “Serie name”, type the name of your image (or at least a part of its name). Note it is case-sensitive.

matrix of rings

Note: The series name is written in blue in the list of uploaded files.

| | | |
|-----|-----|-----|
| Ch1 | Ch2 | Ch3 |
|-----|-----|-----|

- **Crop options:** “ROI X”, “ROI Y”, “ROI width” and “ROI height”: Fill in the info in pixel to define the area you would like to crop.
 - **Select analysis to be processed:** Select which type of analysis you would like to carry out on the image files.
 - **Apply background subtraction:** Tick this box if you would like to apply a background subtraction for all the images. It allows to perform the analysis even for images with low signal-to-background ratio, by subtracting a background image to the image to be analyzed. It requires a series of images with the word “Background” in the file name.
 - **Number of each analyses processed at the same time:** It sizes the number of analyses performed in parallel by the software. The more images to be analyzed, the more time the analysis will take, and the more powerful computer (CPU) you need.
This option is designed to optimize the processing time, by dividing a series of images in a smaller batch of images. By default, it is set to “2”. This means the software will process the images 2 by 2.
If your CPU is powerful, you can increase this value to reduce the processing time. Enter 1 to analyze images 1 by 1. Enter 0 to analyze all the images in one go.
- d) Click on “Run”. The software starts by finding images that matches the available acquisition profile (created in Daybook Data Manager); then it processes these images.
When the analysis is finished, the log shows you how many results/analyses will be saved in the database (*cf.* Figure 3). If this number seems low, it may be that the system form is not correctly filled out in Daybook Data Manager, resulting in insufficient matching.



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BATCH ANALYSIS
The batch analysis has started (4 analyses are being processed).
Number of analyses processed at the same time: 2
num 0 : field_non_uniformity has started ...
num 1 : field_distortion has started ...
num 1 : HCS 4 powers 2017-09-14[C 0][T 0] : field_distortion is analyzed!
num 0 : HCS 4 powers 2017-09-14[C 0][T 0] : field_non_uniformity is analyzed!
num 2 : field_non_uniformity has started ...
num 3 : field_distortion has started ...
num 3 : HCS 4 powers 2017-10-12[C 0][T 0] : field_distortion is analyzed!
num 2 : HCS 4 powers 2017-10-12[C 0][T 0] : field_non_uniformity is analyzed!

The batch analysis is achieved.
Processing time: 08.0 s

HCS 4 powers 2017-09-14[C 8][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 9][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 10][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 11][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 12][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 13][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 14][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-09-14[C 15][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 1][T 0] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 2][T 0] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 3][T 0] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 4][T 1] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 5][T 1] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 6][T 1] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 7][T 1] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 8][T 2] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 9][T 2] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 10][T 2] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 11][T 2] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 12][T 3] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 13][T 3] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 14][T 3] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 15][T 3] : matrix of rings: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 1][T 0] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 2][T 0] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 3][T 0] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 4][T 1] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 5][T 1] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 6][T 1] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 7][T 1] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 8][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 9][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 10][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 11][T 2] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 12][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 13][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 14][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.
HCS 4 powers 2017-10-12[C 15][T 3] : 4x4 intensity gradations: No channel/configuration matches with the source meta details.

Analyzed images - associated with a Data Manager system configuration:
num 1 : HCS 4 powers 2017-09-14[C 0][T 0] ; System configuration: Channel 1 ; Ch. Ch1

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Figure 3: Processing log.

- e) Click on “Save results in Data Manager”. As this generates a high amount of results, they are not displayed in Daybook Analysis, but available in Daybook Data Manager.
- If the acquisition date is within the image metadata, then the batch analysis saves the results with the date at which the images were acquired, *i.e.* the “acquisition date”.
 - If the acquisition date is not within the image metadata, then the batch analysis saves the results at the upload date in Daybook Analysis, *i.e.* the “upload date”.

Note that if there are missing or incorrect parameters within the metadata, specially the lateral and axial pixel sizes, part or the totality of the analyses may fail.



III. WHAT CAN I ANALYSE BY BATCH?

The table below lists the patterns and their associated analysis in the batch analysis feature.

| Pattern name | Associated analysis in the batch analysis feature |
|--------------------------|---|
| Field of rings | Field uniformity Field distortion Lateral co-registration accuracy |
| Cross | Line spread function Stage repositioning repeatability Stage drift during timelapse |
| Ring | Ring spread function Stage repositioning repeatability Stage drift during timelapse |
| Gradually spaced lines | Lateral resolution |
| Matrix of crosses | Optical sectioning strength |
| 3D crossing stairs | Stage drift during Z-stacking |
| Sphere | Accuracy of 3D reconstruction |
| 4x4 intensity gradation | Intensity response 4x4 |
| 2x16 intensity gradation | Intensity response 2x16 |
| Point-like object | Point spread function |

Table 1: Patterns and their associated analysis in the batch analysis feature.





**Encountered an issue or a question when using Daybook Analysis?
Please send a screenshot and your problem description to:
customer@argolight.com**