Digital Humanities Lab, University of Exeter

RTI Processing with Relightlab – Info and Workflow

Download

Download RelightLab: https://github.com/cnr-isti-vclab/relight/releases

Download RTIViewer: https://culturalheritageimaging.org/What_We_Offer/Downloads/View/

Documentation

About RelightLab: https://vcg.isti.cnr.it/relight/

Basic instruction video: https://vimeo.com/752733616

Github: https://github.com/cnr-isti-vclab/relight

Overview of the software

- Replaces earlier RTIBuilder
- Supports PTM and HSH (legacy formats)
- Can convert existing RTI files to Relight format
- Can create new RTI files directly in RelightLab
- Can create .relight files with Openlime for web viewing (also supports other tiled image formats like maps, IIIF and deepzoom). These can immediately be viewed in your local host through a web browser, without needing to be live on the web anywhere or needing additional viewer software
- Can work with multiple spheres at once

Before you start

- Ensure you have your images in jpg/jpeg format (if converting from another file format, be aware of the reduction in quality when saving as .jpg)
- Do any photo editing required, including:
    - Rotating
    - Colour balancing
    - Adjust exposure/brightness if needed (this can do odd things to the normals view, so try to get the exposure right in the original photos if possible)
- It's best to edit photos using a batch process in Photoshop to ensure consistency, then exporting as .jpg (being aware of the reduction in quality if saving as .jpg)
- Note that you can crop the final RTI in RelightLab, so you don't need to crop the images beforehand
- Recent updates have added the ability to rotate, colour balance and add measurements, however the software can still struggle with these so it may still be easier to do them in Photoshop in advance.

Workflow

Using RelightLab to create a new RTI

1. Log into one of the DH workstations (they should all have RelightLab installed), or download onto your own computer from https://github.com/cnr-isti-vclab/relight/releases (you will need to download the files, unzip them and copy them to a sensible place on your computer)
2. Find relight.exe in the downloaded files (you may need to do a search in your files), and double click to open it
3. Click File > New to start a new project.
4. Navigate to the folder that contains the images you want to use, click on the folder (don't open it) and click Select Folder.
    a. All the images should appear on the left side of the screen. You can click on them to open them in the main window, or use the arrow keys to flick through them.

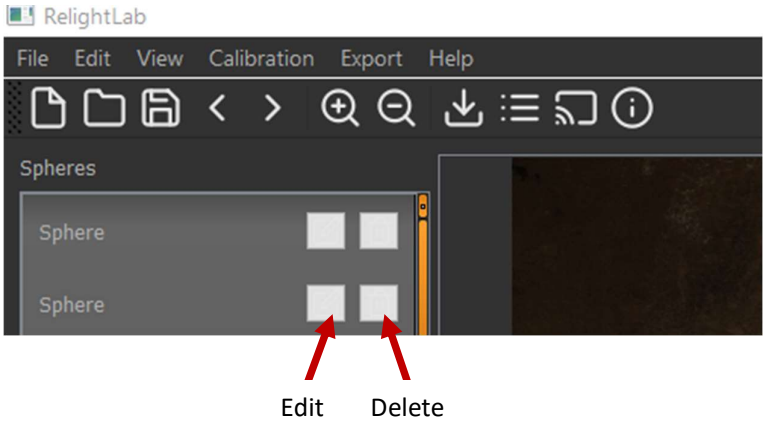
5. Optional: editing images in RelightLab
    a. To remove an image from the set of photos used to create the RTI, uncheck the box next to the file name so it no longer has an X in the box. The photo will not be deleted, but won't be included in later processing steps
    b. To rotate images in RelightLab:
        - Before starting, note that rotating in RelightLab will rotate your source images, with potential for reducing the image quality – it's best to make a copy of your original images, and work on the copy, so you don't accidentally lose data.
        - In RelightLab, go to Edit, then choose 'rotate right/left all images'

6. Add sphere(s)
    a. Click on an image with a clear view of the sphere (it's often easiest if you use an image that was taken when the light was right above the sphere).
    b. Zoom in to the sphere in your image using your mouse scroll wheel
    c. Click Edit > Add a sphere.
    d. Click on the edge of the sphere to place a marker on it.
    e. Repeat on another two places along the edge of the sphere. Once done, a yellow circle will appear around the sphere, with a red X in the centre.
    f. You can adjust the size of the yellow circle by clicking and dragging the white markers.
    g. You can select other images on the left to check the sphere position looks right in other photos
    h. If you have multiple spheres, repeat this process for each sphere – go to Edit>Add sphere again
7. Detecting highlights
    a. Click Edit > Find highlights.
    b. Once it has found a highlight, a green X will appear in the centre of the highlight in each photo. The X will stay red if it hasn't found a highlight.
    c. Click through each image individually to check the X is in the correct place.
    d. If the X is in the wrong place or is still red, you can click and drag the X to the right place. Images where you have moved the highlight will turn green in the left-hand panel.

    e. Once the highlights have been detected, you can save and export your RTI model.
8. Save your project so you can reopen your project later without having to go through the highlight detection process again:
    a. Go to File > Save as
    b. Choose a name and location and click save to save it as a .relight file
    c. As you make further changes, go to File > Save
9. Exporting as an RTI file
    a. Click Export > Export RTI
    b. In the pop-up window, set:
        - Basis to HSH 27
        - format to RTI
    c. You can change the quality – for best results set Jpeg quality to 100
    d. You can also set a crop around the subject
    e. Then click Build, and choose a name and location for your model.
10. Viewing
    a. Download the RTI Viewer software https://culturalheritageimaging.org/What_We_Offer/Downloads/View/
    b. Open a .rti file in the software to view it
    c. Note that the software doesn't always work over a remote desktop connection

Processing tips

- Remember to save your project as you go
- If a process doesn't show a progress bar, click the button that looks like a list of bullet points to open the queue window (or use 'Export> Show queue) – this should show the process of anything it's running. Processes will be green while running and blue once finished.
- Reopen a previous relight project by clicking 'open project' (the folder icon), then going to the folder and clicking the .relight file you created last time
- The top left panel lists the spheres and other tools you have added. Each item in the list has two buttons to Edit and Delete, but they are not very easy to read:
    - Left button – edit – toggle this on and off to adjust position of the sphere
    - Right button – delete – click to delete the sphere



Converting an existing RTI file

You can use RelightLab to convert an existing RTI (eg. so you can then create a web version)

1. Open RelightLab
2. Click ‘Export’, then ‘convert .rti’
3. Select your RTI file
4. Choose the output options you want
5. Click ‘Convert’

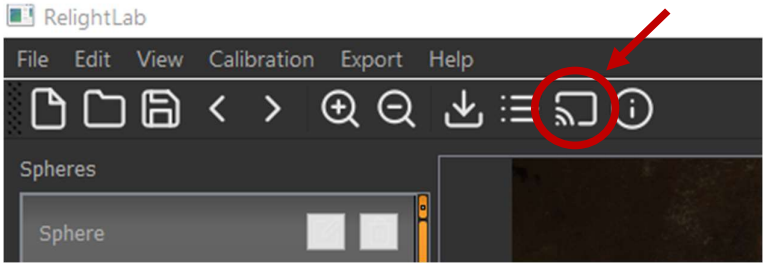
Creating a Web Viewer version

Go through the process of importing images and detecting highlights as above (or convert an existing RTI file) until you get to the export stage:

1. Click ‘Export’ then ‘Export RTI’
2. In the pop-up window, set:
    a. Basis to HSH 27
    b. Format to Relight + Deepzoom
    c. Tick ‘Add Openlime Viewer’
3. You can also set a crop around the subject
4. Then click Build
5. Choose a name and location to save the web files in (it will create a subfolder with the Openlime files in)

You can now view a preview of your web RTI in a browser, although it won’t yet be live online for others to view. There are several ways to open the web preview:

- When the processing has just finished, you can open the queue window (click the button that looks like a list of bullet points to open the queue window or click ‘Export’ then ‘Show queue’). The finished process will have a ‘view in browser’ icon to the right. Click on this to view the RTI in your browser. This only works if you’ve just generated the web files, so doesn’t work if you’ve closed and reopened the project.
- Click the ‘View RTI in the browser’ menu icon, then choose the folder of web files. This takes you to the web version displayed in a browser through your local host.
- Click ‘View’ then ‘View RTI’, then choose the folder of web files. This takes you to the web version displayed in a browser through your local host.



Note that viewing the web RTI in your local host can cause conflicts with other applications that use the same port (8080).

You can upload the folder straight to a web server as-is, or edit the files to customise the page. If uploading to Digital Humanities Lab servers, see separate documentation for changes to make and how to upload.

About this guide

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Find out more at www.exeter.ac.uk/research/digitalhumanities/