Glare Analysis Page

Here, with importing a HDR image created by the software itself or Radianc

e, we can detect glare sources of a scene and calculate its glare indexes. Its main engines for this calculation is evalglare that is a Radiance based tool being developed by Jan Wienold at the Fraunhofer Institute, in Germany or findglare that is Radiance command.
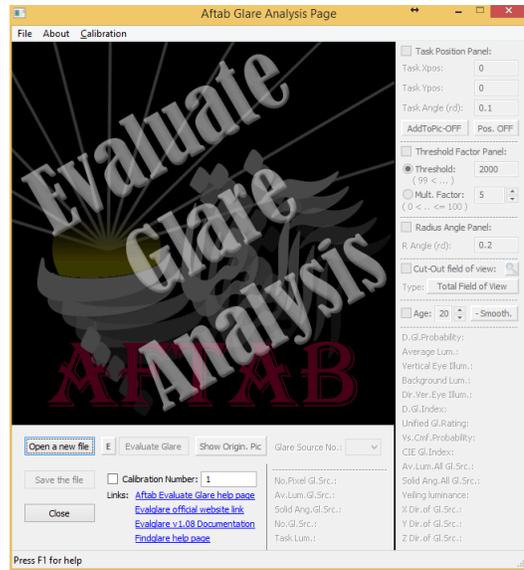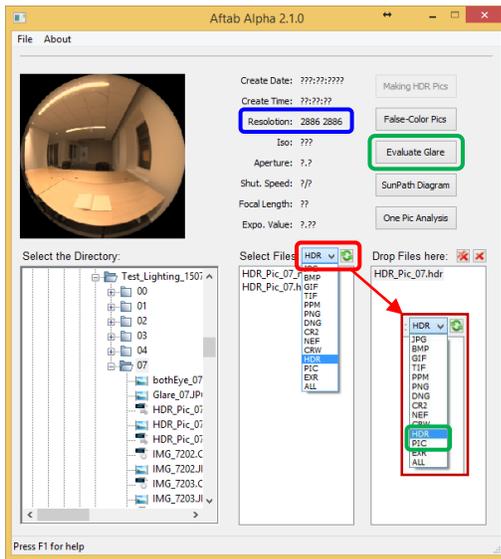
Starting the software:

In the Aftab main page, select a *HDR*, or *PIC* image created by Radiance or assembled in the software and put it in the selection panel. In case of importing HDR or PIC files that created with other software, an error message appears on the screen.
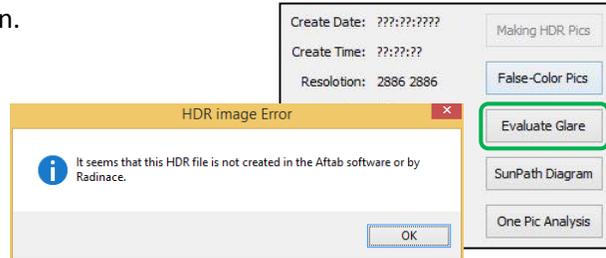
If the HDR or PIC file has needed information to open the file in the "Evaluate Glare" page, then we proceed to that page.

Glare Analysis Input Page:

Here in this page, we can check or define the view needed by *evalglare* or *findglare* (two dos commands that measure and calculate glare). Here we can also define the vertical illuminance level on the camera point.

Here we can define if the lens that the image is taken by is a 180° fisheye lens or not.
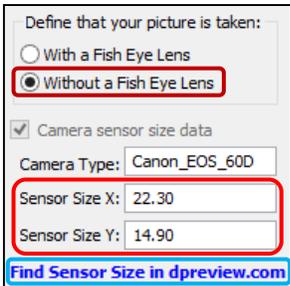
If we select "Without a Fish Eye Lens", then it asked us to fill the "Sensor Size X" and "Sensor Size Y". If we do not know the sizes, we can click the link (highlighted with blue color) and find the camera and then find its relevant sensor size.
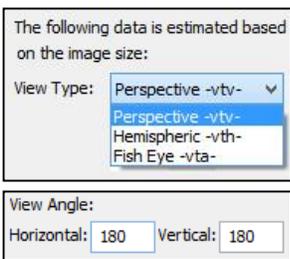
Here we can define the view type (Perspective, Hemispheric, or angular fisheye). Generally the most of the comon lenses used for photography are belonged to Perspective (vtv). While for the 180° degree fisheye lens, lenses like "Sigma 4.5mm f/2.8 EX DC" are belonged to angular (vta). Here we define the horizontal and vertical angle of the view. However, if you do not crop or unproportionally resize the image, usually the software itself calculates it based on the camera sensor size.
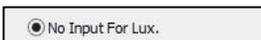
By selecting '*No Input For Lux.*', we allow the software to calculate the vertical illuminance measured in the camera position and its target point direction. However, by choosing '*Measured Lux*', we set the vertical illuminance measured externally for further glare analysis.

In case of importing a non 180° fish eye image, below y_min and above y_max, the picture is filled up by the last known value. This option should be used, when the provided picture is cut horizontally. (For more information please check http://www.aftabsoft.net/help/documentation_v1.08.pdf)

By clicking on the '**Cancel**' Button, we cancel doing any glare analysis for the selected HDR file and go back to the *Glare Analysis Page.*

By pressing this button, at first, the software re-checks the x and Y resolution of the image and if they are the same, it import that HDR image file to the software for further glare analysis. Otherwise, the error message appears on the screen.
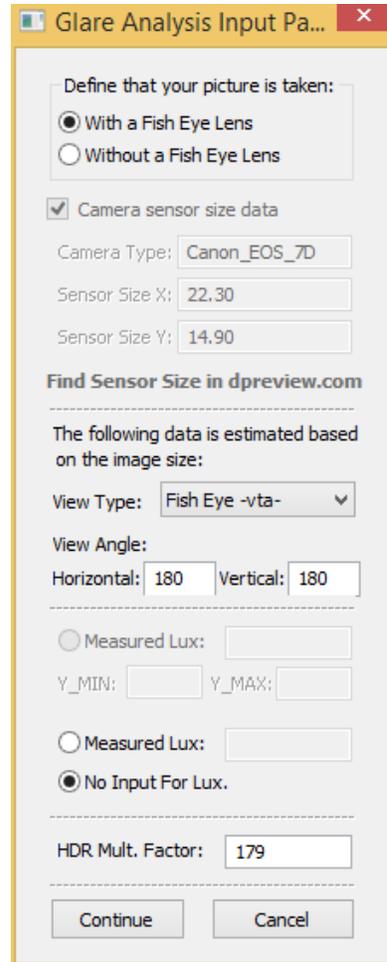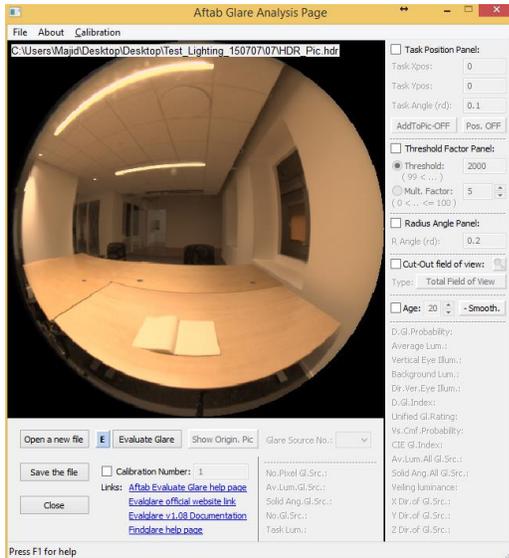
Glare analysis main page:

This is a graphical user interface for doing all the glare analysis being in the **evalglare** tool.

C:\Users\Majid\Desktop\Desktop\Test_Lighting_150707\07\HDR_Pic.hdr

Here, the address of the HDR file in the computer is specified.

With pressing this button, we can open the browsing file page. In this new page, we can open and import fish-eye Radiance image file.
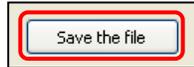
This button open the browsing page to save the image output as different types of picture files like JPG, BMP, GIF, TIF, and PNG.

With pressing this button, based on options chosen for glare analysis, the software starts to detect glare sources and calculate glare indices.

E means using *evalglare* to calculate glare indices while **F** means using *findglare* instead.
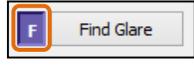
This button switch the image shown in the panel between the original image and the gray-scale image that highlight the glare sources.
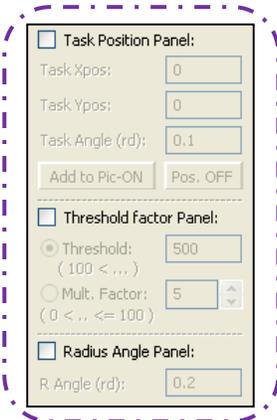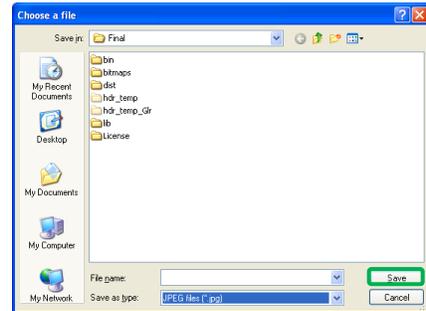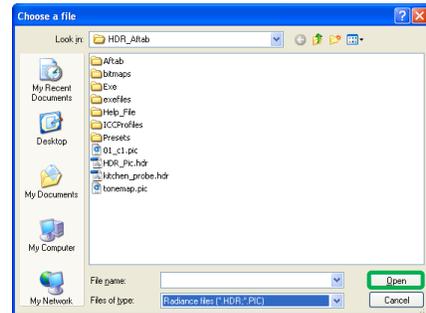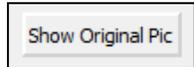
Here, in this part, we can adjust the input data and specify how the evalglare program detect glare sources and calculate glare indexes.
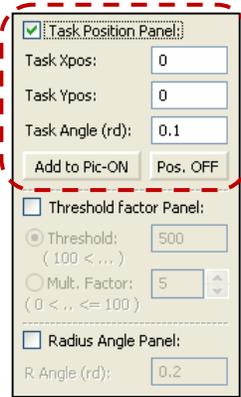
With checking this part, the Task Position Panel will be enable. Enabling this part means that the software starts to calculate *task luminance* and treat all pixels higher than x-times of the task luminance as glare source depending on the *size* of the task. In this calculation, the adaptation level is taken into account.

Its disadvantage is that knowledge of task location is needed.

Definition of task position in x and y coordinates, and its opening angle in radiant can be specified in this panel.

With pressing this button, it previews the task position in the image.

Show the task area with a bluish color in the final glare evaluated image after finishing evaluation. (usually it takes a few minutes more than other options.)
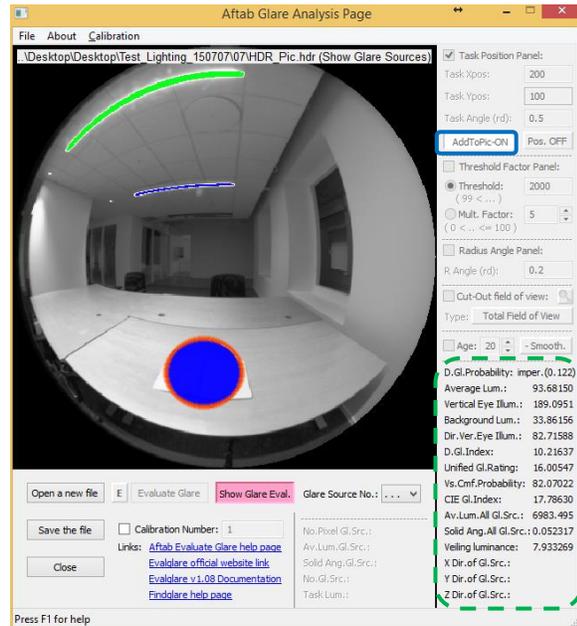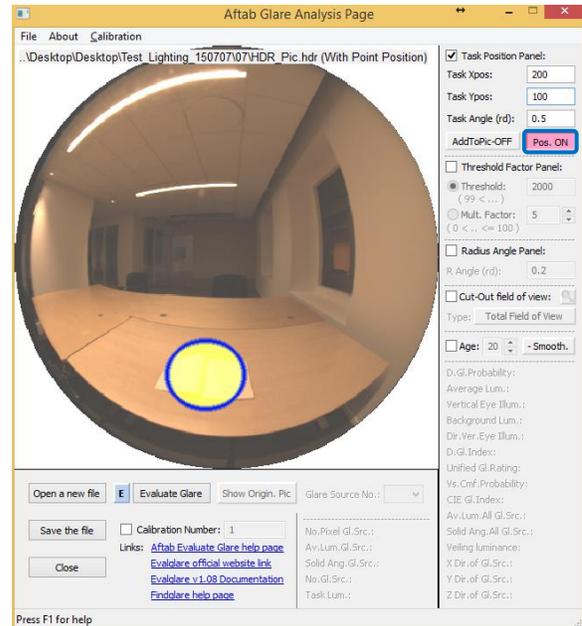
D.Gl.Probability:	0.296614
Average Lum.:	201.0556
Vertical Eye Illum.:	115.0709
Background Lum.:	17.56538
Dir.Ver.Eye Illum.:	59.88768
D.Gl.Index:	22.77715
Unified Gl.Rating:	27.30347
Vs.Cmf.Probability:	64.35132
CIE Gl.Index:	28.39077
Av.Lum.All Gl.Src.:	2424.396
Solid Ang.All Gl.Src.:	0.024995

D.Gl.Probability: Daylight Glare Probability

Average Lum.:   Average Luminance of the image

Vertical Eye Illum.:   Vertical Eye Illuminance

Background Lum.:   Background Luminance

Dir.Ver.Eye Illum.:	Direct Vertical Eye Illuminance
D.Gl.Index:	Daylight Glare Index
Unified Gl.Rating:	Unified Glare Rating
Vs.Cmf.Probability:	Visual Comfort Probability
CIE Gl.Index:	CIE Glare Index
Av.Lum.All Gl.Src.:	Average Luminance of All Glare Source
Solid Ang.All Gl.Src.:	Solid Angles Of All Glare Source
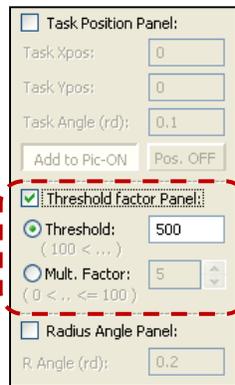
Here, with enabling this part, we face two options. In the former option, we can adjust the software for analysing glare based on *fixed value threshold* (e.g. 2000 cd/m^2). Its disadvantage is that it does not take into account adaptation level and also only works in limited scenes properly.

In the latter one, instead of a fixed value, for analysing glare in the software it uses *average luminance* of the whole scene. Here, every pixel larger than x-times of the average luminance is treated as glare source (default=5)
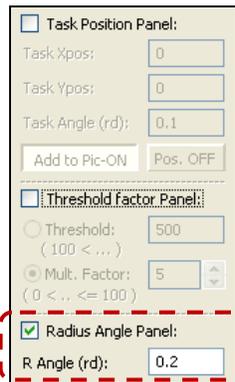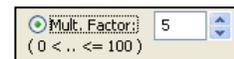
We enabling this option we can adjust search radius (angle in radiant) between pixels, where evalglare tries to merge glare source pixels to the same glare source (default value: 0.2 radiant).

After finishing the analysis, the software marked on the image glare sources with different color. The *greenish* highlighted area is the glare analysis result for *whole the scene*. While, after finishing all calculations, the reddish highlighted are will become enable. In this part, we can select each glare sources to get informations specifically about that.
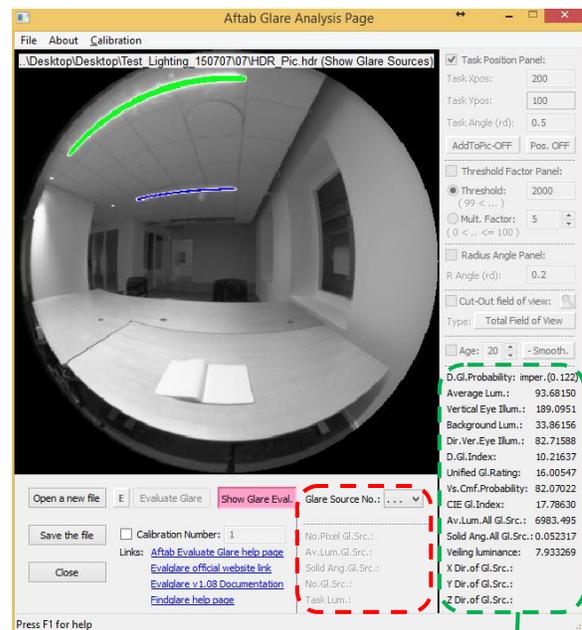
The whole scene analysis
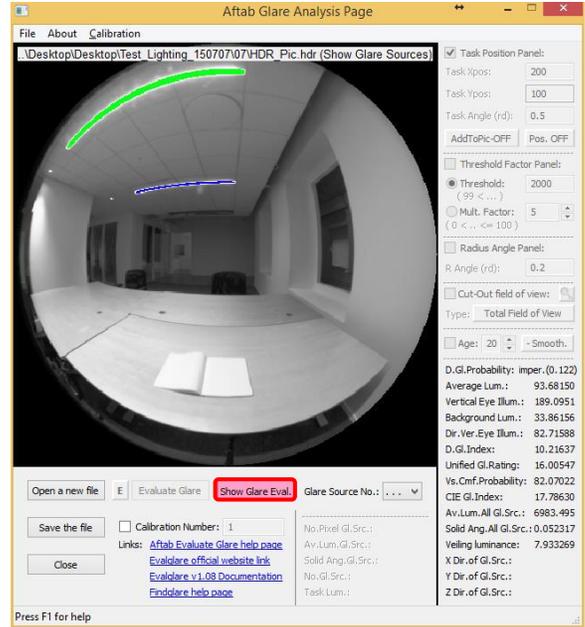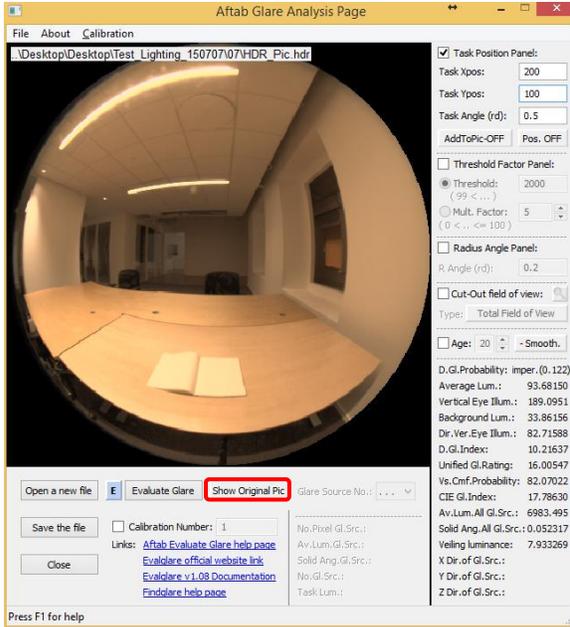
Switch between "*Show Original Pic*" and "*Show Glare Eval.*"

In case of selecting '*Show Glare Eval.*' button, the glare source selection box ('*Gl. Src.*') become available.
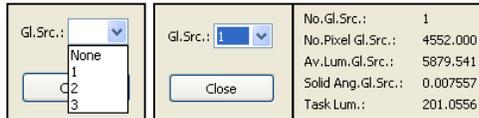
Depending the number of glare sources, we can choose each of them to see its sepcific information in the front panel.

Specifying one of the glare sources in the glare source selection box, we can check their position on the image display panel.

The number of the glare source

Number of pixels in the glare source

Average luminance of glare source

Solid angle of the glare source

Task luminance
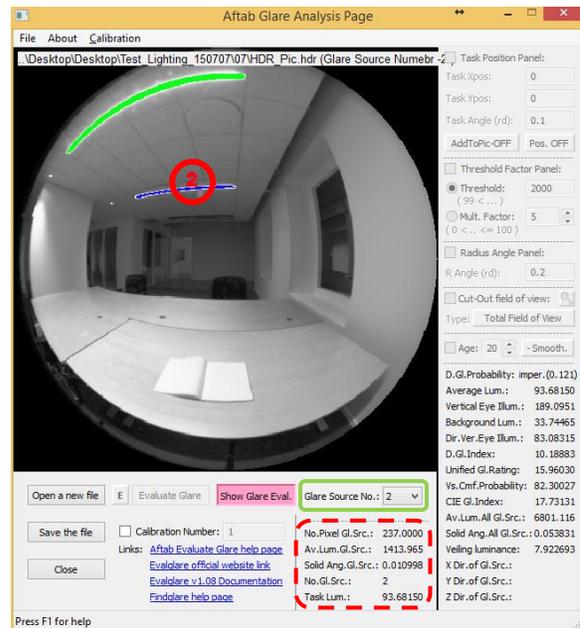
With pressing close button, we exit the evalglare page and go back to Aftab main page.