

ACE – Demo Manual

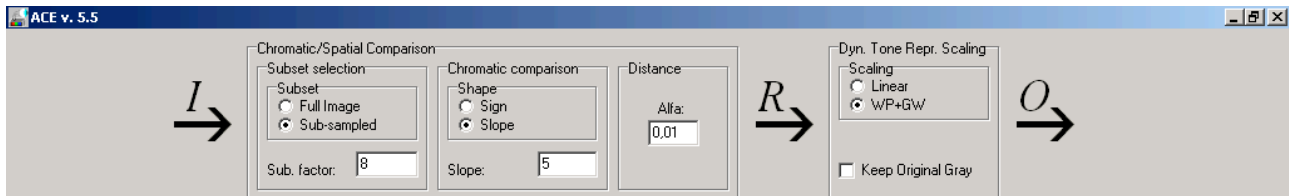
Introduction:

To facilitate ACE use, the interface shows three different areas:

1. the model-like scheme of ACE where the user can visualize and modify its parameters.
2. three action buttons with progress bar and complete list of file to be processed.
3. a status window in which messages are shown.

N.B: ACE is able to load only 24bits bitmap (.BMP) files!

Model-like scheme:



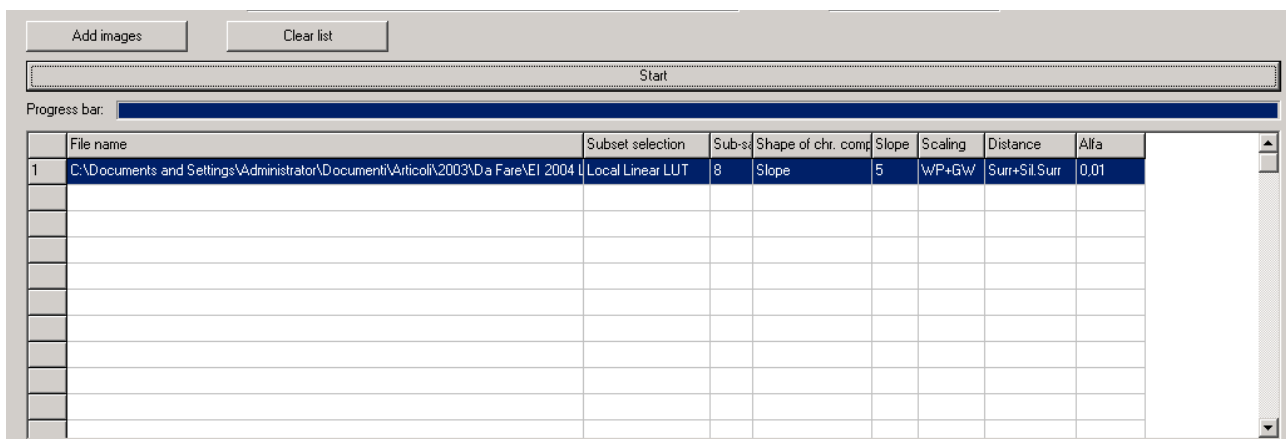
At the top of the interface the user can set ACE parameters. Here follows a brief description:

- **Subset selection:** this parameter sets the subset used in pixel to pixel comparison. There are 2 choices:
 - o Full Image: every pixel is compared to each other. This choice is the basic implementation of the model and has very high computational time. Try this option with small images (e.g. about 100x100 pixels). N.B.: The computational time is proportional to N^2 .
 - o Sub-sampled: The filtering is applied to a sub-sampled version of the input image and then recomputed onto the full size input image using the Local Linear LUT method. The Sub. Factor sets the resizing of the sub-sampled image; every axes of the input image is divided by Sub. Factor (e.g. with Sub. Factor=2 every axes is subdivided 2 times and thus the sub-sampled image is 4 times smaller than the input). This option is faster than Full Image (e.g. try it with Sub. Factor=4, the obtained speed-up factor is 256 time faster).
- **Chromatic comparison:** This parameter tunes the contrast. The higher the slope the higher is the contrast and the filtering effect. Sign is the choice for $slope=\infty$. $Slope=5$ is a good preset.
- **Distance:** This parameter set the locality of the method; the pre-set 0.01 value is usually a good choice. If the user want to change this parameter has to

consider that values greater than 0.1 lead to un-desiderate generation of artifacts (the method is too local!).

- **Scaling:** The choices are:
 - **Linear:** This option fills the available dynamic range linearly using the computed values.
 - **WP+GW:** This option uses the estimated mean gray value and maps it in the middle value of dynamic range.
 - **Keep Original Gray:** The KOG option disables the estimate of the mean gray and uses the three RGB mean values of the input instead. Use this option to preserve global mean lightness values of the original input image.

Action buttons, progress bar and file list:

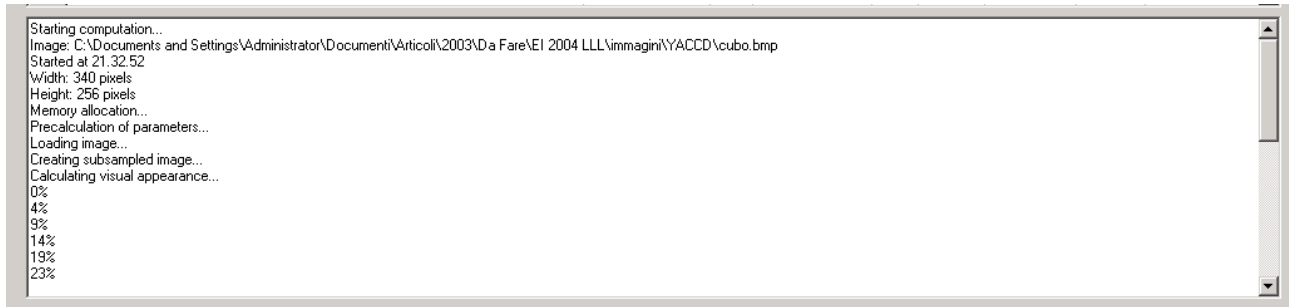


The screenshot shows the ACE software interface. At the top, there are two buttons: "Add images" and "Clear list". Below them is a "Start" button. A progress bar is located below the "Start" button, with the label "Progress bar:" to its left. Below the progress bar is a table with the following columns: File name, Subset selection, Sub-s, Shape of chr. comp, Slope, Scaling, Distance, and Alfa. The first row of the table is highlighted in blue and contains the following data: 1, C:\Documents and Settings\Administrator\Document\Articoli\2003\Da Fare\EI 2004, Local Linear LUT, 8, Slope, 5, WP+GW, Surr+Sil.Surr, 0.01. The table has 10 rows in total, with the first row being the header and the remaining 9 rows being data rows.

	File name	Subset selection	Sub-s	Shape of chr. comp	Slope	Scaling	Distance	Alfa
1	C:\Documents and Settings\Administrator\Document\Articoli\2003\Da Fare\EI 2004	Local Linear LUT	8	Slope	5	WP+GW	Surr+Sil.Surr	0.01

Once set preferred options, clicking on “Add images” the user can load one or more images to be processed with the selected options. These files will be added in the file list area indicating every parameter setting. Clicking on “Start”, ACE runs the batch processing list; the progress bar indicates the number of pictures processed. The output files are saved in the same directory of the input files. The output files have the same filename of the input with added some codes that indicate the parameter choice (see A appendix).

Status window:



The status window shows the progress of each image processing. It shows the filename of the input image, timestamp, width and height and the steps the algorithm is running. A percentage value indicates the progress.

Appendix A:

The code used in the output file name follows these rules:

Code	Meaning
FI	Full image computation
LLL_ x	Local Linear LUT speed-up method with sub-sampling value x
SIGN	Sign function as chromatic comparison
SLOPE_ y	Saturated function as chromatic comparison whit slope y
LIN	Linear scaling in final stage
WPGW	White Patch / Gray World scaling in the final stage
KOG	Keep Original Gray feature selected
SS_ z	z indicates the alpha value set in the distance function