Pre-editing Python programs

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Overview

i-crop-batch – run in a batch mode over a folder with images and create images resized to a definite side size or images re-scaled to percents of the original images. Place the resulting images into another folder.

i-crop-list-roi – process sequence of images in a folder and create one or two sets of images cut from each original image. It can be used to cut features form images or to cut couples of features and labels from images. Command line**:** -c <config_file>

i-select - for GAN model data: run in a main folder and leave or move files to another folders, I.e. take a file and possibly move all the files with this name from parallel folders to parallel folders in another directory:
a/f/pic1.jpg -> b/f/pic1.jpg
a/l/pic1.jpg -> b/l/pic1.jpg
a/fl/pic1.jpg -> b/fl/pic1.jpg
and so on for each selected file.
The purpose is to clean image set of low quality images. The best way is to run on the folder with appended feature/label images, which is set as a leading sub-folder.
This sub-folder of the appended images can be created by running i-list-append2.py over feature folder and label folder.

i-select-cat - to split image set into categories data sets: run in a main folder and leave or move files to a group of another folders take a file and possibly move all the files with this name from parallel folders to parallel folders in another directory:
a/f/pic1.jpg -> b/f/pic1.jpg
a/l/pic1.jpg -> b/l/pic1.jpg
a/fl/pic1.jpg -> b/fl/pic1.jpg
and so on for each selected file.
The purpose is to divide image set into several categories of images. The best way is to run on the folder with appended feature/label images, which is set as a leading sub-folder.
This folder of appended images can be created by running i-list-append2.py over feature folder and label folder.
Command line: -c <config_file>

i-list-append2 – take images with the same name from 2 folders and append them into one image, horizontally or vertically. Take an image and split it into two halves, horizontally or vertically. The folder containing the input images MUST NOT contain any subfolder before the run starts !!!

i-list-appendN – take images with the same name from N folders listed in the configuration file (default configuration file is: conf_append_n.txt) and append them into one image, horizontally or vertically.

i-list-append_next - append pairs of consecutive images in a folder into a larger image and place the resulting images into another folder. It is useful when the first image has the feature and the next image has the label (or vice versa). A program named “counters.exe” copies a pair of images with appending a running number to them so that they remain consecutive in the folder. It is possible to append more that 2 consecutive files with this utility.

i-compare-folders – compare two folder to verify that they contain the same file names for all the files in both folders, feature and label. It is for the GAN models.

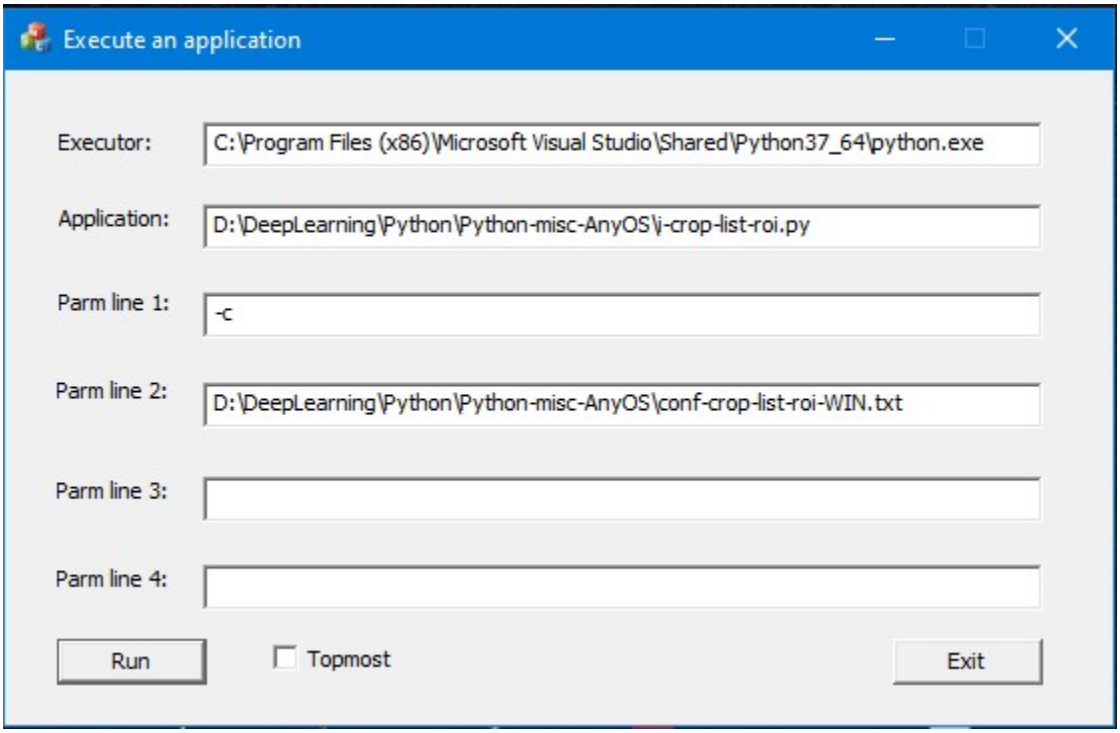
i-folder-files – remove a number of files from all the subfolders or copy or move a number of files into the corresponding subfolder in another folder. It is for the GAN models to help to maintain files in folders with feature and label subfolders. Command line**:** -c <config_file>
The selections of from line “I” to line “j” will process the I-th line, the j-th line and all the lines between them: it processes **j-i+1** images.

Taftaf-class-u – run classification deep learning models.

i-find-image – find image with same name in another folder and show it. Good for feature/label sets of folders.

i-make-list - append a sequence of images into one file.

i-make-rename - remove ‘ll’ or ‘ff’ from the file names.



Detailed description

i-crop-list-roi

Command line: [-c <config_file>]

Initialize – the 1st button to use when the command line is empty: select the folder with the images and create subfolders for the results.

Skip – skip q-ty of images as stated in the following edit control.

Config button – if configuration file name was passed to the program via the command line, press this button to load the configuration.

After that, if 'Skip' edit value is not 0, press **Skip** button to jump to the last processed file.

Save as - save as .jpg or .png

Prefix and **Class** edits – append theses strings to the filenames. It is good for a later separation of the files into groups.

INTR_LINEAR combo – select algorithm for image resizing
Resize checkbox – resize result images to the size below
256 edit - size of a side of the result images (default is 256)

Force to square form checkbox – force cropped picture to be square of any size, unscaled (not to be checked together with 'Force to this size')

Force to this size checkbox - force cropped picture to be square of preset size, when an unscaled square of the given size must be cropped from the image

Output to the same name checkbox – give the same file name to result images

Feature and Label order checkbox – ensure that Add F and Add L buttons are called in the correct order: 'Add F' is the 1st. It should be unchecked if no Label images are needed.

Append 2 results checkbox – create a subfolder to store appended resulting feature and labels

Horizontally combo – when 'Append 2 results' is checked, append either horizontally or vertically the resulting ROI feature/label images.

IrfanView checkbox – preview with IrfanView (not in active use).

Preview check box – preview with the internal viewer. The previewed image is closed by 'space' key.

X, Y, W, H – enter the ROI selected in the IrfanView, when 'IrfanView' is checked. Otherwise, they contain the selected ROI data.

Close on timeout checkbox – causes the preview and approval widows to be closed after several seconds.

Fill Pattern combo: "Constant" means the image is cropped and then rotated if needed with the outlying areas being filled with a constant color (black by default, determined by the next three input controls), "Transparent" mode does not work correctly, "Crop then rotate" means the image first is cropped and then is rotated if needed and the result is the same as for "Constant" with possible black outlying margins, "Rotate then crop" means the original image is rotated if needed to and only then is cropped, causing no outlying black regions – this is the default option.

Next – go to the next image and show it.

One Back – return one image back (also many times)

Again – discard already selected result images and allow using Add F and Add L again.

Delete last – delete the last set of results.

Add Full – take the entire image as result. If this button is used, "Resize", "Force to Square form", "Features and Labels Order", "Append 2 results" should be unchecked. The image may be rotated using rotate buttons or the assumed vertical axis line created with the middle mouse button.

In-place checkbox – when checked, the 'Add Full' button stores the modified image (typically rotated) in the source folder under the same name (replacement).

Add F – show image to select the feature and rotate it by the angle in Rotate edit control

Add L – show image to select the label and rotate it by the angle in Rotate edit control

Rotate CW edit – angle to which the image is rotated clockwise

Rotate CCW edit - angle to which image is rotated counterclockwise

Rotate F - rotate the feature image by the angle in Rotate edit controls and display the result

Rotate L - rotate the label image by the angle in Rotate edit controls and display the result

RButton combo-box – "Commit/up" causes right button up to serve as "space" key to proceed with the image, "Re-center/dbl" causes the place of right button double click to become the center of the selected image region. Re-center is very useful when working with large images fitted to the screen size.

Fit Big Image checkbox – fit big image view into the screen size (view is distorted). The Checkbox is reset when the image is fully processed, unless always checkbox is set. It is highly recommended to set the selected ROI center using the right button double click.

Always checkbox - do not reset the Fit Big Image checkbox on image processing completion. It may be useful when most of the images in the set are very large.

Fit Auto checkbox - fit big image view into the screen size (view is distorted) if one of image's dimensions is greater than the corresponding screen dimension. This checkbox overrides "Fit Big Image" value and it is an improvement of the "Always" check-box logic. It is convenient to use when images are wider than the screen width or bigger than the screen in both dimensions.

Beside the 'Fit Auto' there is an edit box with the default value of 1.05 (1.2 is a more practical value because it ignores image margins). When the 'Fit Auto' is active, the image size is scaled by this number and compared to the screen size to decide about auto fitting of the image to the screen size.

Rotate Tall checkbox – images with the height far bigger than the screen height will be rotated 90 degrees to fit image height to the screen width. Sometimes it is useful for 16:9 displays.

Beside the 'Rotate Tall' there is an edit box with the default value of 1.05. When the 'Rotate Tall' is active, the image height is scaled by this number and compared to the screen height to decide about auto rotating of the image to 90 degrees. It is convenient to use when images are mostly only bigger than screen's height and lesser then the screen width. In some cases the image is large enough so that "Fit Big" should be turned on too to see the entire image within the screen.

"Rotate Tall" checkbox causes the internal image to be actually rotated by 90 degrees. And then "Fit Big" checkboxes may cause the image to be only fitted to the screen size during the display time, but internally the image is not changed.

Center Marker checkbox enables display that marks the geometrical center of the selected region.

Category selection buttons (5 buttons) – copy/move the derived images into a category folder.

Move checkbox – move to category folder if checked, otherwise – copy.

Move to Init – set the target folder into which to move with the 'Move To' button.

Move to – move the result files to the subfolder in the target folder in the edict control at the right as Source (source file), Sniplets (result files), All (both of them)

UnMove Last button - return the last set of images from a category folder to the results folder.

Actions with *mouse* and *keyboard* keys while in an image window:

The preview image window is exited with a 'space' key.

The mouse can select a region over the feature/label image by clicking the left mouse button and dragging the mouse until the button release. Any rectangle corner may be started at. It is marked by a small red cross.

The assumed vertical axis of the image is selected by clicking the middle mouse button and dragging it until the button release. The drawn assumed pivot axis will cause the image of the selected region to be rotated with the angle between the assumed vertical axis and the real vertical axis of the screen. The arrow head of the pivot axis indicates where the top will be.

If the Alt key is kept pressed and the middle mouse button is clicked, drugged and released, then the horizontal pivot axis will be selected and the head of the pivot axis indicates where the left will be.

Instead for drawing the axis to rotate at 90 degrees a short-key may be used. Pressing **'r'** key causes the cropped image to be rotated clockwise 90 degrees, pressing **'l'** (el) causes the cropped image to be rotated *counter*clockwise 90 degrees, pressing **'u'** causes the image to be rotated 180 degrees. If such a

key is pressed *n* times the image will be rotated to 90**n* degrees in the appropriate direction. The rotation is performed upon exit from the window.

If the displayed image is resized to fit the screen, it is better to set the desired ROI center with the double click of right button.

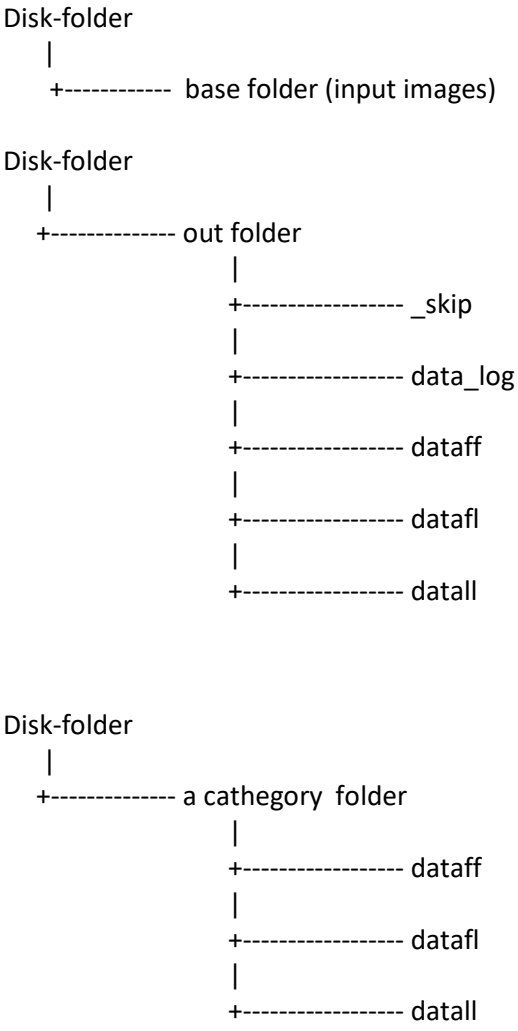
The region and the axis are discarded by Esc. The confirmation of selection is done by **'space'** key.

The selected feature ROI is displayed as a distinct image result window. These images may be rotated in-place with 'r', 'l' and 'u' keys. The image may be flipped around the Y axis with the 'y" key. A sequence of 'u' and 'y' keys may produce the flip around the X axis.

The feature result window with the selected image is also exited with the 'space' key.

A 1 to 5 key for the label result window moves it and its feature image to the 1^{st} to 5^{th} category appropriate folders. If exited with the 'space key', the selected images stay in the results folder.

Folder trees:



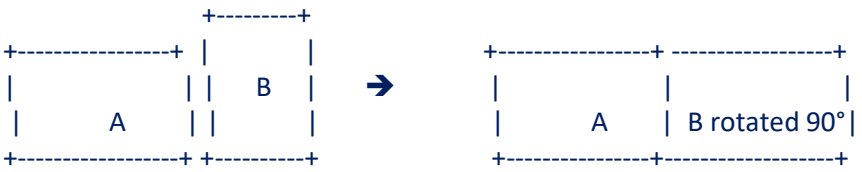
i-list-append_next

Takes the 2 consecutive (or more) images from a folder and append them into one image, horizontally or vertically, naming it after the 1st image, adding a suffix to the output file names, default is "_d".
Each pair of images must have at least one of their dimensions to be the same and in accordance with the "orientation" selection.
If "Q-ty of files" field value is more than 2, then the number of consecutive files which is equal to the number in the field will be appended. In this case the "Auto Resize" control has no effect.
Orientation – append images horizontally or vertically. "Long" orientation causes images to be appended along their longest dimension. "Short" orientation: along the smaller one.
Initialize for Append – set folder to hold the results and the folder from which to append the couples of consecutive images.

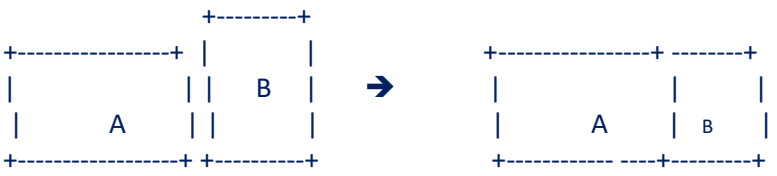
Auto Resize – if checked, the application corrects the cases when there is a different size along the appending axis dimension.

Auto rotate – if checked causes the program to see whether the other images has one of the sizes which is equal to a one of the sizes of the first image ad to rotate the second image so that the images can be appended along the equal size. If unchecked, one of the images is resized so that it has one of the sizes equal to the other image.

"Auto resize" V , "Auto rotate" V:



"Auto resize" V, "Auto rotate" X:



Long->tall – it checked it causes an image that is wider than half of the screen to be rotated to 90° to render tall. This prevents creation of images that are too long for the screen width.

For using **i-crop-list-roi** processing: It looks that the optimal setup is to turn on all these 3 check-boxes: "Auto Resize", "Auto rotate" and "Long->tall", and, while in **i-crop-list-roi** , using the mouse right button double click ("Rbutton" is set to "re-center/dbl") to center the selected ROI during the editing.
For archiving of the images it is better to set 'Auto rotate' and 'Long->tall' check-boxes to false.

Initialize to Append – select folders for input and output.
Append – start batch run.

i-select-best-folders

The program asks for 2 folders with the same set of images, displays interactively the images side-by-side and waits for '1' or '2' being pressed to copy the image into the results folder.
The program may be used on the folders created by the **i-list-append_next** program running with different option and creating different set of appended images.
A version of the program which gets the folders from the command line is **i-select-best** .

i-crop-batch

Run in a batch mode over a folder with images and create images resized to a definite side size or images rescaled to percents of the original images in another folder.

Initialize – the 1st button: select folder with images and create subfolders with results in it.
INTR_LINEAR combo – select algorithm for image resizing
Resize checkbox – resize result images to the size below or to percentage below
256 edit - size of result images or percentage of original image
Output to the same name checkbox – give the same file name to result images

Reset – clear all previous settings. Good before another batch.

Skip – skip q-ty of images in the following edit control

Class – append this string to the filenames. Good to separate the files into groups later.

Go - start the batch processing.

X, Y, W, H – show size of the current image

Rotate CW edit – angle to which the image is rotated clockwise

Rotate CCW edit - angle to which the image is rotated counterclockwise

i-list-append2
Takes the images with the same name from 2 folders and append them into one image, horizontally or vertically. Take an image and split it into two halves, horizontally or vertically.

Orientation – append images horizontally or vertically
Initialize for Append – set folders of files to be appended and result files folder. The 1st image is called feature, the 2nd is called label.
Init for next Append – takes the output folder and allows to append to it from another folder.
Append – start batch run.

Automatic orientation check-box – determine automatically how the files should be splitter: vertically or horizontally. If not check, Orientation combo defines the split line.

For the 1st part combo and edit – the first image in 1/n part of the entire image, or the first pat has p pixels.
Split – set folders and run split batch.

i-select
For GAN model data: run in a main folder and leave or move files to another folders take a file and possibly move all the files with this name from parallel folders to parallel folders in another directory:
a/f/pic1.jpg -> b/f/pic1.jpg
a/l/pic1.jpg -> b/l/pic1.jpg
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and so on for each selected file.
The purpose is to clean image set of low quality images. The best way is to run on the folder with appended feature/label images.
This folder of appended images can be created by running i-append.py over feature folder and label folder.
Init - set folders.

Skip – skip q-ty of images in the following edit control.

Next - Select next image and show it. Space bar closes the image view.

Move – move this image to the other folder.

One back – return back to the previous image.

Fit big image checkbox – resize big image display to fit he screen.

i-compare-folders
Compares two folder to verify that they contain the same file names for all the files in both folders. It is for the GAN models.
Go –select the two folders to compare and run the comparison. The result is displayed on console window or the output window.

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Windows programs

Copyxn.exe

The program allows to copy/move/delete file(s) with the same name that are in multiple folders. See copyxn.doc for details. It is similar to **i-copy-files** Python program described above, but is easier to use.

Counters.exe

The program allows moving couple (on any number) of files nto another folder with appending a running number to their filenames. The next program to use these files is i-list-append2.py .

Runapp.exe

The program invokes a Python program with command line parameters in a graphic GUI with drag and drop actions.