



Algolab Photo Vector

Introduction: *What Customers use Photo Vector for?*

Photo Vector (PV) is a handy tool for designers to create, cleanup, make fast corrections, edit designs with or without further conversion to vector formats. It may be especially useful for designs on fabric, textile, jacquard, carpets, mats, vinyl and other materials. Photo Vector is your best choice to cleanup scanned designs and edit colors.

PV helps to create quality vector graphics from raster images. It's vector output is in use as input to vector image editors, CAD software to cut signs, generate CNC code etc.

PV provides unique capabilities in Color Reduction creating Photo Impressionist color effects.

Get special photo effects with PV increasing and/or changing impression created by photos converting them into vector pictures that look like impressionist art! Visit our WEB site to see such special effects.

PV creates outlines: it converts 2D raster shapes into vector ones and it's output vector files consist of closed color paths.

To create black and white center lines and recognize arcs, lines and curves one may want to try our other product Algolab Raster to Vector Conversion Toolkit which converts scanned architectural, mechanical drawings and designs, maps and more to vector format for use in CAD and drawing programs. It also incorporates a new advanced Fine Line Technology and creates perfectly looking shapes and figures. Visit our WEB site to see what does it mean:

http://www.algolab.com/Fine_Line/Fine_Lines.htm

What Customers use Photo Vector for

AlgoLab Photo Vector is a raster to vector conversion, image editing, and image processing software for Windows. PV can be used as a stand along application or with Jasc Paint Shop Pro, Adobe Photo Shop, Adobe Illustrator, Corel Draw, Zonner and other image editors and CAD software extending their functionality. Vector output formats include Adobe Illustrator, Windows Metafile, AutoCAD dxf and Jasc Paint Shop Pro.

PV is especially useful for Jasc Paint Shop Pro users as it provides vector output in psp format. If you use or consider to use PSP vector capabilities then PV is just made for you.

With a single mouse click one can convert a color raster image to scalable vector artwork with any desirable accuracy depending on chosen settings.

There is an option to use a single copy of this software for free in big networks.

Any feedback is very welcome! If you would like to see more features or an enhancement of existing ones just let us know and we will do our best to make these features available.

How PV works

The image processing includes a new unique shaping operation converting blur shapes into distinct ones, flexible color reduction and cleaning as well as a precise vectorizing. Bitmap and palette editing tools enable one to enhance processed images manually. Visit our WEB site at <http://www.algolab.com> to find details and to view processed image galleries.

There are two steps in conversion of raster into vector format. The first step is a preparation or preprocessing the image before conversion. This preprocessing includes the following operations: Shaping, Color Reduction and Cleaning. The second step is the conversion operation Vectorizing itself.

Shaping (optional) provides an image to get better defined boundaries of color shapes and more homogeneous colors inside the shapes.

Color Reduction creates an appropriate reduced palette for an image and replaces original colors with the colors of the palette.

Cleaning removes small spots and merge small details into bigger shapes that have close colors.

PV is in use not only for raster to vector conversion but for raster image processing as well when one needs a raster image to be composed of clean solid color shapes with smooth well defined boundaries and to have few or selected number of colors. In this respect the preprocessing may be considered as a Color Reduction in a broad sense that includes the above mentioned three operations. Raster preprocessed image files may serve as a final output in such case.

Installation

Download the file PtVector.exe file. Run it and follow prompts. It will install the application for an evaluation period of 10 days. After that period the “save” file operation is disabled.

Registered users receive the registration key via e-mail shortly after the purchase. To register open About dialog box from Help menu item, press Register button and fill the registration fields.

Test

Open the supplied test image butterfly.jpg and press the toolbar button “Sequence of Operation”. The following operations Shaping, Color Reduction, Cleaning and Vectorizing will be applied to the image.

One should see the processed raster image covered with outlines. Save the result as a vector file in emf, wmf or other vector format using the “save as” menu item.

Open the saved emf or wmf file using Photo Vector to ensure that the result is correct. Then one may want to open the saved vector file with an application able to edit vector images.

Registration

One may want to buy a license for Algotab Photo Vector in our online store. We will send the registration key by e-mail normally within 12 hours. Then from Help menu item open About dialog and press Register button. Copy and past registration information in appropriate fields of the registration dialog.

There is an option to register a single copy of this software for free in big network.

Overview of Basic Operations with Images

Open-Save file operations. The application can open raster and vector image files of several formats. An open vector image is converted into bitmap and displayed on the screen. Then it may be processed and/or vectorized.

One can save a processed image in a raster format before the last vectorizing operation takes place. After vectorizing operation the raster output is disabled

and the vector output is enabled. To save image in a raster format in this case one can first use undo operation that enables raster output again.

Zoom tool can be activated with + or - key or from View menu item. Click left and right mouse buttons to zoom in and zoom out.

Move image tool can be activated with H key or from View menu item.

To switch between original and processed images use Ctrl-Tab hot key or View=>Switch menu item.

Attention! When switched to the original bitmap the toolbar buttons become disabled. To enable them switch back to the preprocessed image.

File Formats

Photo Vector saves vector files in “ai” (Adobe Illustrator), “emf”, “wmf” ,”dxf” (AutoCAD) and “psp”(Jasc Paint Shop Pro) formats.

AlgoLab Photo Vector supports read and write operations for raster “bmp” (Windows bitmap), “jpeg”, “png” (Portable network graphics), and vector “wmf” (Windows metafile format),“emf” (Enhanced metafile format) file formats. When loaded “wmf” and “emf” files are converted into an internal bitmap format.

With the help of External Bitmap Editor one can load and save raster files in any other formats.

See also **Output File Options**.

Output File Options

The output file settings can be reached from the menu item File=>Settings=>Advanced. To activate selected options press “OK” button in the Settings dialog. The below options may be available for some of the file formats.

Color – switches between color shapes and black/white outlines.

Background – turns background On/Off. To select the background color make sure that the image is not vectorized yet. Otherwise press Undo button. Then open Edit=> Bitmap and Palette menu item. For more information see Edit Bitmap and Palette Toolbox.

File by Color – when selected provides output into the number of automatically created files. Each file contains all shapes of one color. Additionally a text file is created with the list of output files and colors. The names of output files are derived from the name defined in the “Save as” dialog. For example if the palette of the image contains 3 colors, the name is “Fname” and the output format is dxf then the following files will be created: Fname.txt, Fname1.dxf, Fname2.dxf, Fname3.dxf.

Line Width – selects line width in output files.




Automatic Raster to Vector Conversion

Load a raster image. To ensure that the default settings are set select menu item File => Settings, click Default and OK buttons. Then press Sequence of Operations toolbar button. The application will run consequently Shaping, Color Reduction, Cleaning and Vectorizing engines. One should see processed image with outlines.

To evaluate the quality of conversion switch between the resulting image and the original one from menu item View => Switch or with the hot keys Ctrl-Tab.

If the quality is suitable save the vector file using the menu item File => Save As.

Otherwise there are several options to improve quality:

-  to load or select new settings and repeat computations. For more information see Settings;
-  to use Undo affecting the last operation. Then the image after Cleaning will be seen on the screen. Activate Palette and Bitmap Edit Dialog with the help of Edit => Bitmap and Palette menu item. Edit the processed image. Switching between processed and original images with the menu item View => Switch or with the hot key Ctrl-Tab may be useful. When an appropriate quality of the processed image will be reached convert it into vector format pressing Vectorizing toolbar button;
-  to reload image with Reload Image toolbar button and go step by step over operations using Undo and changing settings when necessary.

Automatic Color Reduction

Load a raster image. To ensure that the default settings are set select menu item File => Settings, click Default, then uncheck Vectorizing check box and press OK button. The Sequence of Operations is now defined to consist of Shaping, Color

Reduction and Cleaning without Vectorizing. Then press Sequence of Operations toolbar button. One should see processed image without outlines.

To evaluate the quality of color reduction switch between the resulting image and the original one from the menu item View => Switch or with the hot keys Ctrl-Tab.

If the quality is suitable save the raster file using the menu item File => Save As in an appropriate raster format. Otherwise there are several options to improve quality that are described in the section Automatic Raster to Vector Conversion.

Attention: When the image is vectorized the raster output is disabled. Use Undo to return one step back and enable raster output.

Automatic Raster to Vector Conversion

Skipping Preprocessing

There is an automatic analysis of every loaded image if it is simple enough to be vectorized without preprocessing. If so Cleaning and Vectorizing toolbar buttons become enabled from the very beginning.

Preprocessed images are normally simple enough to pass this test. So one may want to save a preprocessed image in bmp or png format to be able to work with the same image later.

Settings

To load or save settings press "Load" or "Save" button respectively. Use "Advanced" button to set output parameters for various file formats. Settings are saved on exit.

Conversion of a raster image into a vector one may be done in two steps: preprocessing and vectorizing.

Preprocessing prepares an image for conversion simplifying it: makes a shape to have a solid color with better defined boundary, reduces number of colors and cleans the image removing small spots.

Vectorizing converts a preprocessed image one to one into a tree of outlines so that each detail which is composed of pixels of exactly the same color is represented by an outline even if this detail consists of one pixel.

Preprocessing consists of the following operations: Shaping (optional), Color Reduction and Cleaning that can be run by pressing the toolbar buttons with the same names on the front panel of the application.

Shaping is intended to make shapes more distinct by supplying them with a better defined boundary and homogenized interior.

Border Sensitivity changes an inner threshold that defines what pixel to be considered as belonging to boundary or to interior of some shape. Less is border sensitivity less is number of boundaries formed with this operation and simpler the processed image becomes.

Color Reduction reduces the number of colors used in an image. It consists of Palette Creation and Replacement of Bitmap Colors with closest ones found in the palette. Additional options are available from the manually controlled color reduction that may be activated from Edit =>Bitmap and Palette menu item.

Tolerance of Color Reduction is related to Palette Creation. Larger tolerance is less is the number of colors in the palette as more of them are merged into one color of the resulting palette.

The checkbox "Optimal" provides switch between determined by the engine optimal number of colors in the palette and the number predefined by user that is set in the "Max Number of Colors" edit box.

Cleaning is intended to clean up an image removing small spots and merging adjacent details of close colors.

Spot Tolerance defines the size of spots to be removed. Less tolerance is more spots remain.

Color Tolerance defines the color difference of details to be merged into one shape. Less tolerance is more details remain.

Vectorizing converts preprocessed bitmap into a tree of outlines composed of bezier curves. It includes a step of conversion of outlines composed of straight segments (bitmap outlines) into bezier curves.

Tolerance of Bezier Converter defines the precision with which bezier curves approximate bitmap outlines. Less tolerance is more close bezier curves are to the bitmap outlines and less smooth these bezier curves are.

Sequence of Operations is related to the toolbar button with the same name that runs consequently the operations defined in this setting box.

Preferences

Here Preferences are such parameters of the package that normally may be chosen the same for all images.

Use Browse button to select External Bitmap Editor

Edit Bitmap

The Vectorizing is an exact operation that constructs outlines of shapes composed of pixels of exactly the same color. Pixels of different colors are considered as belonging to different shapes. So in the most the quality of the conversion is defined by preprocessing and the best way to improve quality is to improve the quality of preprocessing. One of the way to do this is to provide manual editing of preprocessed image when necessary.

There are simple tools to edit processed raster images. These tools are available after the Cleaning operation takes place. The dialog with toolbox can be activated from Edit => Bitmap and Palette menu item.

To switch between current processed image and the original one use View=>Switch menu item or Ctrl-Tab hot key.

To select a color just click with the right or left mouse button on the image or the palette. It may be done as well with the color selection dialog box. To activate this box click the color button located in the middle of Edit Bitmap and Palette dialog. The selected color is shown in the top left color box of the dialog Edit Palette and Bitmap. One can see the closest color of the palette in the top right color box.

Attention! The tools Pencil and Flood use the color of the palette which is the closest one to the selected color, not the selected one. This closest color is shown in the top right color box of the dialog. It can coincide or not with the selected color. To use the selected color first add it to the palette.

The following steps may be used to make corrections to the processed image:

- ***Find missing detail.*** Switching between the original and processed image with Ctrl-Tab hot key one can find a missing detail in the processed image that should be restored.
- ***Select the tool. Select the Pencil tool***
- Select a color for of the missing detail. Switch to the original image and right mouse click on that detail to select it's color. Take a look at the top right

color box containing a color which is the closest to the selected one. Drawing will be done using this closest color, not the selected one. If the closest color is not suitable then select an appropriate color from the palette. If the palette does not contain an appropriate color add a new one to the palette.

- **Redraw missing detail.** The missing detail may be redrawn on the processed or original image. In the both cases only the processed image is affected. The original image remains unchanged. Let us shortly discuss redrawing using the original image. Make sure that the original image is shown on the screen. Redraw the missing detail with the Pencil tool on the original image simply covering this detail with the Pencil scratches. The drawn pixels are stored in a special temporary layer and do not affect the original image. Then switch images with Ctrl-Tab hot key so that the processed image to be shown on the screen. The contents of the temporary layer will be applied to the processed image that gives the missing detail.

Attention! One may draw with the Pencil tool on processed or original image. In any case original image remains unchanged. When drawing on the original image the drawn scratches will be projected down on the processed image next time the original image is switched to the processed one.

In contrast to the Pencil tool the Flood tool may be applied to the processed image only.

Edit Bitmap and Palette Toolbox

There are tools to edit palette and raster image (bitmap). These tools can be activated from Edit => Bitmap and Palette menu item.

Edit Palette

The palette editing is enabled before vectorizing. If vectorizing is done and black outlines over image are visible then just press Undo to enable palette editing.

During the palette editing process all other options are disabled. When editing is finished press the button "Replace Bitmap Colors" to apply the edited palette to the bitmap or press "Undo" to return to the state before editing.

When one presses "Color reduction" toolbar button two operations Palette Creation and Replace Bitmap Colors take place automatically. The Edit Bitmap and Palette dialog enables one to do these operations manually with more flexibility.

The palette is a set of colors used in a bitmap. One can create a palette with the help of the engine pressing the "Create" button with chosen tolerance or compose palette manually. The palette will be shown by numbered color

rectangles. Then this palette can be edited. To delete a color from the palette select this color by mouse click on the color rectangle and press “Del” button. To delete all colors from the palette starting from the selected one press “Del tail”.

To select a color just click with the left or right mouse button on the image or palette. The selected color appears in the top left color box. The closest color of the palette appears in the right top color box. If a color coincides with some color of the palette it has an appropriate number.

To add selected color to the palette press “Add” button.

To replace bitmap colors with colors of the palette press “Replace Bitmap Colors” button. Each pixel of the bitmap will be replaced with the closest color of the palette.

This toolbox provides unique Special Color Reduction Capabilities. Colors in the palette are ordered not by popularity but by representatively. This means that if one wish for instance the image to consist from only 5 colors then the first 5 colors in the palette represent an optimal choice for such 5 color palette. All that remains is to remove the tail from the palette starting from color #6 with the help of “Del tail” button.

To provide better results of the color reduction it can be done in several iterations. If after creation of the palette there are too many colors, remove a half of them with “Del tail” button, then press “Replace bitmap colors” button, and after that press “Cleaning” button on the main toolbar. Then press “Create” button on the editing toolbar and repeat the operations with “Del tail” and so on. At the end when the number of colors are reduced almost to the desirable small number remove too close colors from the palette with “Del” button and apply the palette with “Replace bitmap colors” button to finish reduced palette creation.

Select Background Color

To set background color press “Set” button. The selected color shown in the top left color box will be set as the background color.

Edit Bitmap

The options to edit bitmap are enabled when the cleaning is done but vectorizing is not applied yet. To edit bitmap after vectorizing (when black outlines are visible on the screen) just press Undo.

The tools Pencil and Flood are enabled after Cleaning operation or if the image is simple enough. The checks of image simplicity are done when image has been loaded and after color replacement operation.

These tools can be activated from the keyboard as well with the keys P and F respectively when the toolbox is visible. One can select a color without change of the tool with the help of the right mouse click.

One can switch between current processed image and the original one from View->Switch menu item or Ctrl-Tab hot key. What is more one can draw with the pencil over the original image: the resulting pixels are stored in a special layer that will be applied to the processed bitmap next time it is switched on. The original image does not change. It may be useful to correct processed image if previous processing provided undesirable changes in comparison with the original image.

Attention! When switched to the original bitmap the toolbar buttons become disabled. To enable them switch back to the preprocessed image.

External Bitmap Editor

External bitmap editor may be used to extend the functionality of the package. It can be reached from Edit menu. MS Paint is used by default. With the help of Browse button from File =>Preferences menu one may want to select another editor like Adobe PhotoShop.

If the external editor has been called when an image was loaded to Photo Vector then the editor displays the image. To return back to Photo Vector with edited externally image it is sufficient to close the image window in the editor or the editor itself and reply "yes" when prompted "save changes?"

Attention: If one saves changes in the external editor using "save as" option then he or she defines a new path and/or name of the saved image. In this case Photo Vector does not know that name or path and one has browse over directories to open that file manually from PV.

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