

## 72 - FaceSnap

**Applies to:** Cardfive, Deskfive

**Refers to:** Image

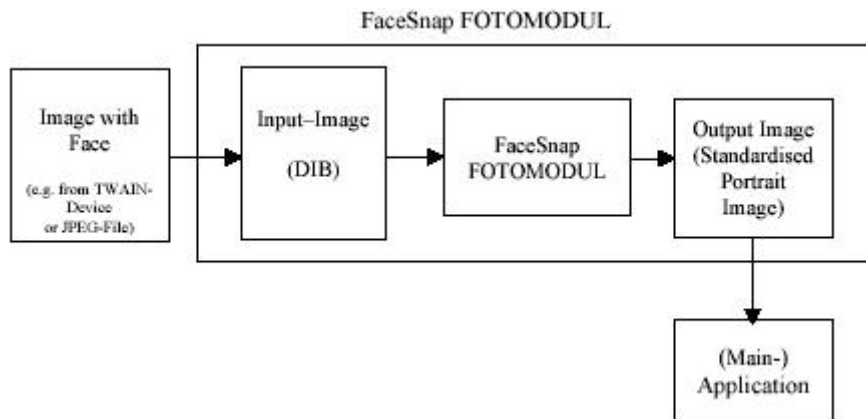
**Created:** March 2008 by Nfive Tech. Support

**Last Revision:** 2009/10/29

---

### This is an explanation about FaceSnap Plug In.

The FaceSnap Plug-In automates the production of portrait images of persons by using the FaceSnap technology. It facilitates the production and preprocessing of portrait photos e.g. for passports or identification cards. An input image can be acquired e.g. from a standard-TWAIN-device or from a file and then be checked for an available face with the FaceSnap. If a face has been detected successfully, the module generates an output image that is standardized in size and luminance.



### Product Features:

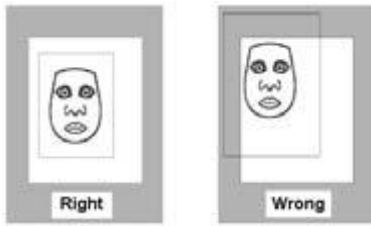
- Detection and capturing of person's face in images (FaceSnap technology)
- Extraction of faces to portrait images that are standardized in size, resolution and brightness.
- Quality Control: Filtering images without face, margin of faces, and sharpness.
- Interactive mode: Individual correction of the result image by changing zoom, brightness and contrast etc.; user supported face extraction; manual face extraction...
- Setup of different parameters for the face detection (margins, detection threshold...) and for the standardization of the result image (e.g. zoom, contrast and brightness...)
- Face color correction

### Useful Notes on Acquiring Images

The following points or quality characteristics for the acquisition of images should be taken into consideration in order to succeed in the face detection and to achieve a high quality output image:

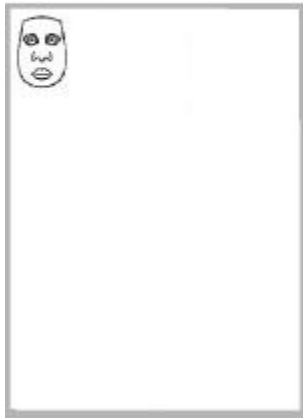
- The input image is an image of a person.
- Quality of the acquired photo (no coarse-grained or patterned photo)

- Sufficient contrast in the input image/ no contrast over modulation e.g. caused by a digital image source
- Sufficient margin to crop the face from the input image.



- The image is focused and not blurred.
- An extreme small face on the photo or a small face in proportion to the scanned area should be avoided:

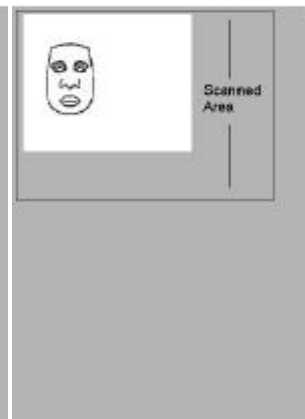
**Wrong:**




**Wrong:**



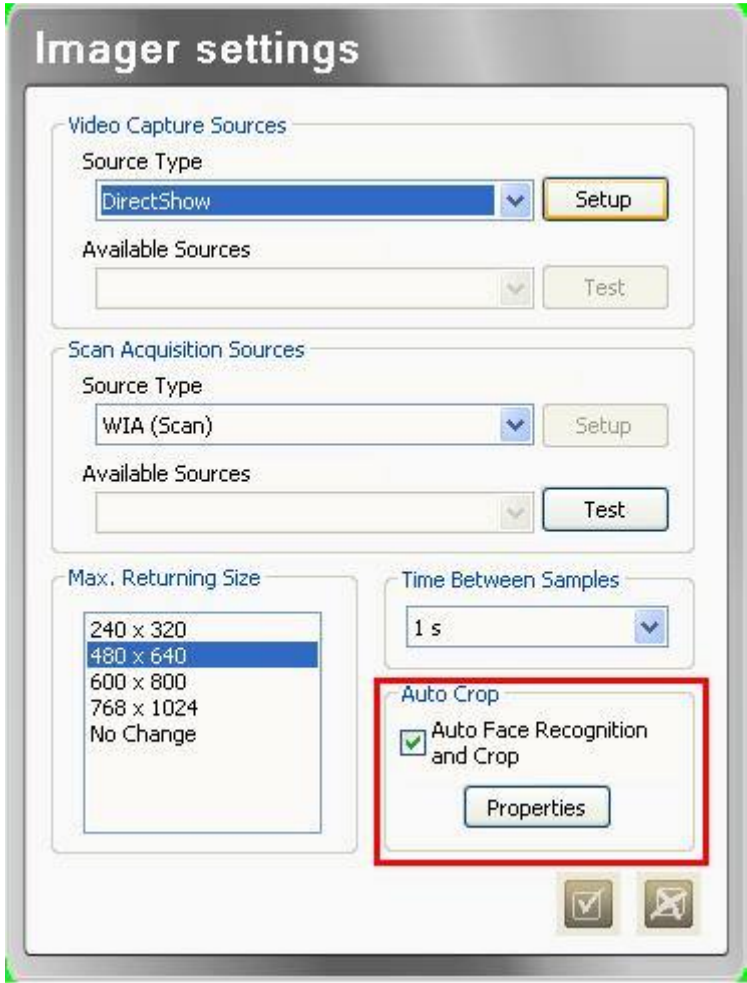
**Right:**



- Frontal face (max. 15 % turned) or both eyes visible

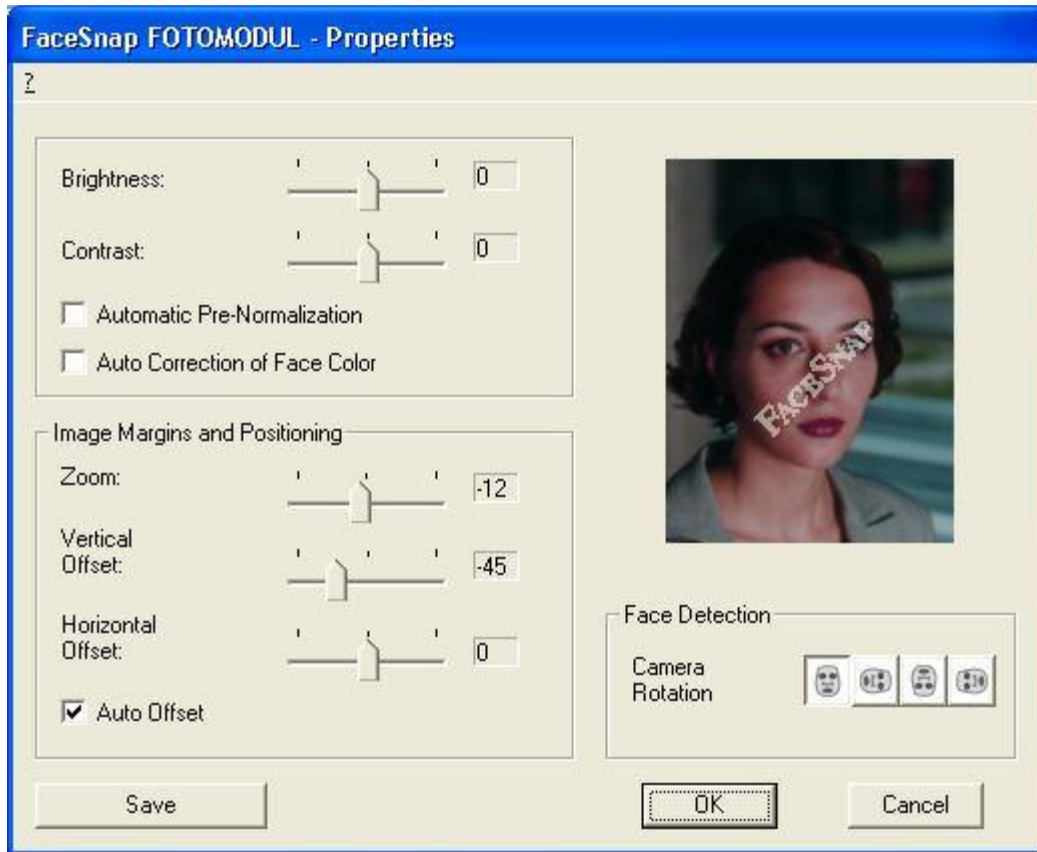
- The face is not rotated 

#### FaceSnap Plug In Operations in CardFive



**Auto Face Recognition and Crop** – On Options Menu | Imager Settings, if selected, the FaceSnap will always be called for Image Acquisition.

**Properties** button – Invokes FaceSnap configuration dialog. The properties window of the FaceSnap allows changing permanent settings for the detection of faces and processing of images. Values for the standardization of illumination in the output image as well as temporary settings for repeated face detection can be edited here.



### Brightness and Contrast

Changes or determines the luminance of the output image. If the toggle button "Automatic pre-normalization" is not set, the brightness and contrast of the original image can be de- and increased by the slider controls. If brightness and contrast are both set to zero, the output image has the same illumination as the input image.

If the "Automatic pre-normalization" is active, the output images will be normalized to a Standard illumination (pre-normalized). By changing the values for brightness and contrast the standard values for the renormalization will be de- or increased. Furthermore, it is possible to change contrast and brightness for a single image without saving the values as permanent settings.

### Auto Correction of Face Color

If this radio button is activated, the color of the output image (regarding the color of the face) will be corrected automatically. Thereby, a slightly color distorted face can achieve the original color again. If the color of the face is natural, the image color will not be adjusted.

### Zoom

Determines the size of the region that is cropped from the source image relatively to the size of the found face (face box). So, it is achieved that faces with different sizes or resolutions nearly have a constant size and margin in the result image. A value about 0 just provides the face region or box as a result image (region that includes eyes, nose and mouth). A value of 200 means that the left and right margins in the result image have the same dimensions as the face region. The colored area of the slider indicates the possible range of values for the actual image. If the face is situated near to the border of the input image and the scaled and cropped image region exceeds the border of the input image, the result image will be padded (filled up with white color) automatically.

### Examples:

Zoom: 10



Zoom: 100



Zoom: 200



### Vertical Offset

Moves the offset of the image region that is cropped from the input image up or down. If a piece of the upper part of the body of the person should appear in the output image, a positive offset should be set. However, if the hair of several persons is cut off in the output image, a negative offset should be set.

### Horizontal Offset

Moves the offset of the image region that is cropped from the source image to the left (negative offset) or to the right (positive offset). The horizontal offset can be used to move the face within the output image, e.g. if parts of a face exceed the output image caused by a slightly rotated face or to decenter the face within the output image.

### Auto Offset

If this radio button is set and the crop region exceeds the border of the input image, so that the image has to be padded, the cropped face image will be moved automatically by the amount of the inserted space.



Additionally, the Auto Offset function slightly corrects the horizontal offset of the face within the output image. Thereby, slightly rotated faces are better centered in the output image (the whole head will be centered if possible).

### Camera Rotation

Normally, faces are only found if they appear in an approximately upright position in an image. In some applications it may be useful to rotate the camera so that the original camera image is always in portrait format. With the icon buttons under "Camera Rotations" the standard rotational orientation of a face in the image can be set other than "upright".



### Permanent and Temporary Setup

If the "OK" button is pressed, the settings will only be accepted for the actual loaded image. The properties will not be saved permanently for further image acquisition sessions. But the changed settings take effect after closing the window by pressing the button "OK". The result image will be updated if settings for cropping the face or normalizing the image are edited. If the parameters for face detection are changed it is required to repeat the face detection to see the effects. By pressing the "Cancel" button the window will be closed without accepting the values.

**Crop to Face button** – Applies Face Recognition Auto Crop. Only available if Auto Crop in Imager Settings is unchecked.



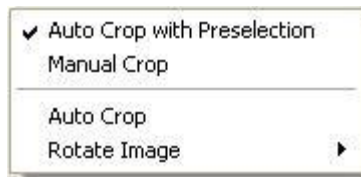
### Interactive Mode (with User Interface)

If a face was not found automatically the Interactive Mode is launched, the user interface of the application is displayed and the following window appears. Here, the user can edit the output image if it is necessary or supports the face detection if a face has not been found at once.



It is possible to choose between three different modes to crop a facial image from the original input image (on the left side). Depending on the

mode, the cursor changes within the original image. If the user presses the right mouse button within the original image, the following popup menu appears that allows determining the mode for cropping the face. Furthermore, it is possible to rotate the input image here.



### Auto Crop with Preselection

If this mode is selected it is possible to selected a region within the input image where to search for a face. The region and its size can be determined by pressing and holding down the left mouse button within the original image.



If a face has been encircled as displayed and the mouse button is released again, a new intensive search starts and the found face will be extracted automatically. This interactive cropping mode can be used to retry face detection if no face has been found in automatic mode (Auto Crop).

If the mode "Auto Crop with Preselection" is active the cursor within the original image appears as follows:



### Manual

### Crop

If a face was not found automatically and it is not possible to find a face in the "Auto Crop with Preselection" mode, the face or the box of the face (region that includes eyes, nose and mouth) can be set manually. By pressing the left mouse button within the input image the face rectangle can be drawn in at any position. By holding down the left mouse button and moving the mouse the size of the face box can be changed.



If a face has been marked as displayed and the mouse button is released again, the manually set face will be extracted automatically. Thereby, the outer rectangle represents the region that will be cropped from the input image. If the "Manual Crop" mode is active the cursor within the original image appears as follows:



#### Auto Crop

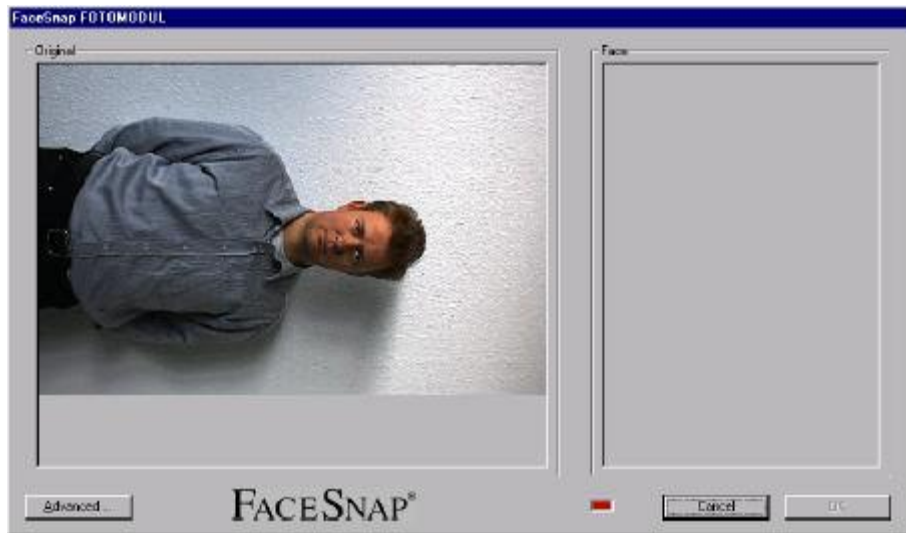
If the button "Auto Crop" is pressed within the popup menu of the original image, a new search for a face within the whole input image starts. This mode can be used to restart finding a face e.g. if the face detection setup has been changed within the property window (Button: Advanced...) or the input image has been rotated to the desired position.

#### Rotating Images

By pressing the right mouse button within the input image a popup menu appears. Within the submenu "Rotate Image" it is possible to choose the desired angle or rotation method:



Rotating an image is required e.g. if the image is upside down or a scanned input image is mirrored. After the image is rotated, pressing the menu button "Auto Crop" can start a new face search.



### Status Indicator

The status indicator informs the user if an error or warning occurred while processing the image:



An error occurred or no face has been found.



A face has been found and no error occurred.



No error occurred but there is a warning. A warning occurs e.g. if the user has extracted the face manually or if a filter is set and the image does not fulfill the filter conditions.

### Advanced

If the button "Advanced..." is pressed, a properties window appears. Here, it is possible to set up permanent face detection parameters. Furthermore, the cropping parameters can be changed without saving in order to edit the actual output image.

**NOTE:** If you have CardFive version lower than 7.0, that uses FaceSnap version 2.3, please contact [support@nfive.com](mailto:support@nfive.com) for previous Technote or update your CardFive in order to have FaceSnap version 3.0.