

Training Based Descreening command manual

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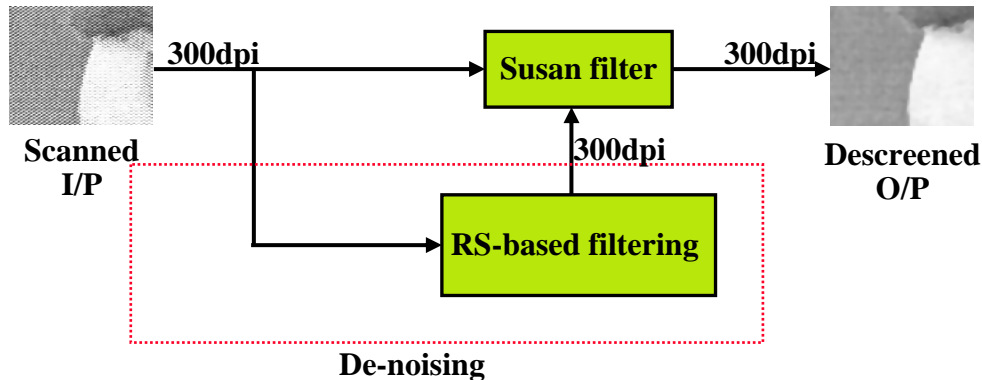
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Use scripts to run descreening

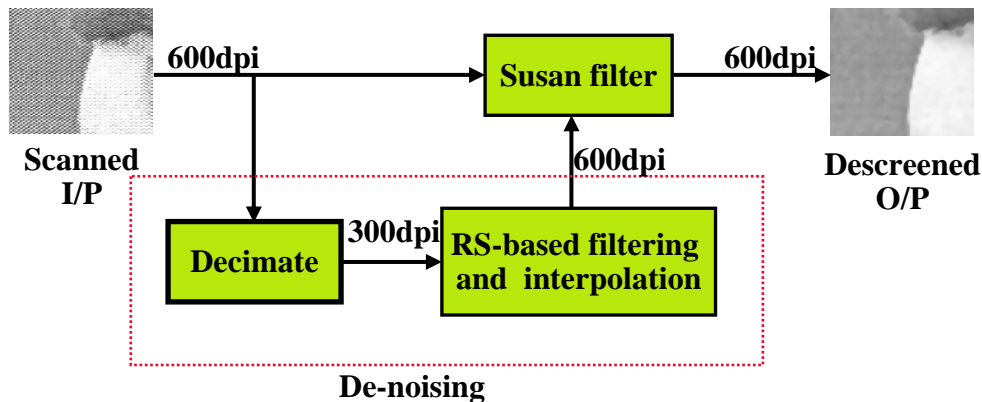
- The linux shell script “run_descreen1” provided with the package runs the descreening algorithm
 - ♦ Supports descreening of 300dpi and 600dpi scans
 - ♦ Calls the following ANSI-C commands:
 - » ./decimate (only for 600dpi)
 - » ./rs_denoise
 - » ./susan_smooth

Descreening with run_descreen1

- Architecture for 300dpi scans:
 - Parameters for RS-based filtering: “filter/den_1X”



- Architecture for 600dpi scans:
 - Parameters for RS-based filtering and interpolation: “filter/den_2X”



“decimate” command usage

- Sample usage
 - ♦ `./decimate in_img temp0 2 1 bilinear 0`
- Purpose
 - ♦ Used only for 600 dpi input images
 - ♦ Decrease the input image resolution from 600 dpi to 300 dpi
- Parameters:
 - ♦ Input file name (pgm/ppm file format)
 - ♦ Output file name
 - ♦ decimation factor: set “2”
 - ♦ number of images: set “1”
 - ♦ decimation mode : set “bilinear”
 - ♦ preprocessing flag: set “0” (Gaussian smoothing; 0=disabled)

“rs_denoise” command usage

- Sample usage
 - ♦ `./rs_denoise temp0 temp1 filters/den_2X 2.2 600 0`
- Purpose
 - ♦ Denoise the input image using Resolution Synthesis (RS) based filtering
- Parameters:
 - ♦ input file name (pgm/ppm file format)
 - ♦ output file name
 - ♦ filter_file
 - » You may use the existing filter_file which was trained using images scanned with an HP Scanjet 8250. Use the filters in filters/den_1X for 300 dpi images, and filters/den_2X for 600 dpi images. You can customize the filter_file for your scanner using the training package.
 - ♦ delta_factor
 - » Please see eqn. (15) of (Siddiqui, 2007) (see references)
 - ♦ scanner_resolution: set “300” or “600”
 - ♦ preprocss_flag: set “0” (Gaussian smoothing; 0=disabled)

“susan_smooth” command usage

- Sample usage

- ♦ `./susan_smooth temp1 in_img out_img 21 2 3 2.5 2`

- Purpose

- ♦ Smooth images while preserving thin lines and sharp edges

- Parameters:

- ♦ input file name (output file from `rs_denoise` command)

- ♦ original input file name (pgm/ppm file format)

- ♦ output file name

- ♦ brightness threshold: set the value between 20 and 40

- » SUSAN filter brightness threshold which is denoted by "sigma_b" in equation (29) of (Siddiqui, 2007) (see references)

- ♦ form_option: set “2” or “6”

- » Use $\exp(-x^2)$ or $\exp(-x^6)$ for weighting in equation (29) of the paper

- ♦ mask_size

- » "N" in equation (30) of the paper. For example, mask_size = 3 => filter is 7x7

“susan_smooth” command usage cont.

- Parameters (cont.)
 - ◆ sigma
 - » Standard deviation for Gaussian filter $h(m,n)$, which is denoted by "sigma_s" in equation (31) of (Siddiqui, 2007)
 - ◆ tone_correction_option (either 0, 1 or 2)
 - » 0 => filter in gamma corrected domain
 - » 2 => filter in linear domain
 - » 1 => filter in linear domain followed by tone correction

Reference journal paper

- Hasib Siddiqui, Charles A. Bouman: Training-Based Descreening. IEEE Transactions on Image Processing 16(3): 789-802 (2007)