

Photo Modular FX (V0.2)

By Roberto Mior (MiorSoft) 29/11/15

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INTRO

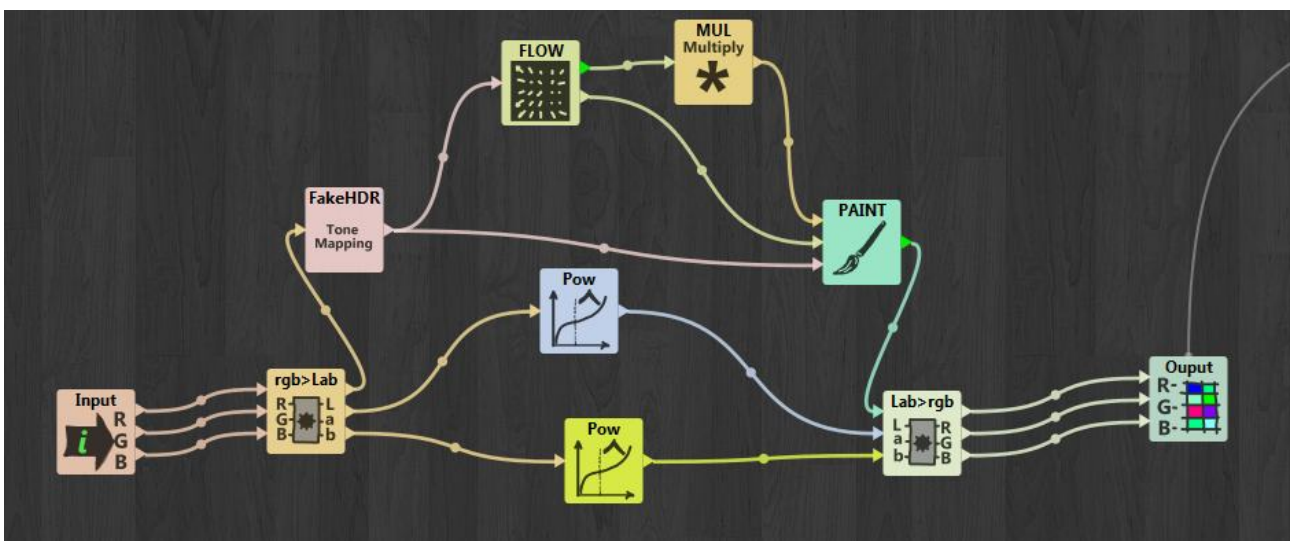
Photo Modular FX is intend to be a software to create unlimited custom Photo FXs based on connected "functions"/effects modules.

When you create an effect and apply it to a picture, the Effect Flow will be embedded in the output file (few bytes) , so it can be retrieved just by clicking "Import Project from Image". (The photo becomes the effect)

At the moment at the Output picture will be applied a light watermark. To remove it an Activation Key is needed. See the **ACTIVATE** "chapter".

Remember that connections Values are expressed in a range between 0 and 1 (except when overpass by computation)

Many thanks to **Olaf Schmidt** for the great support on GUI design: <http://www.vbrichclient.com/>



HOW TO CREATE A PROJECT FLOW.

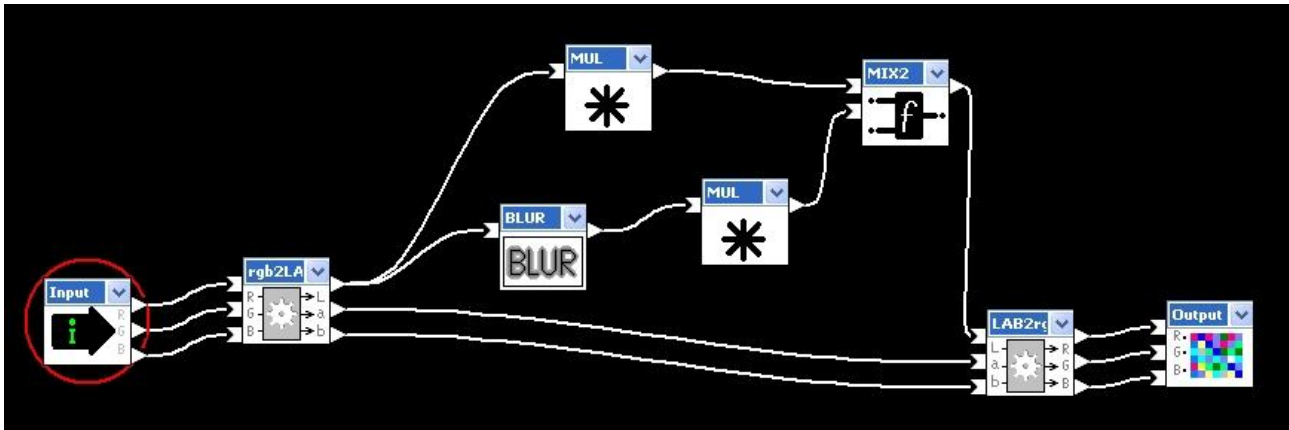
Let's see an example of how to create a project flow.

Despite the "Unsharp mask filter" is already integrated as a single function (called USM) , let's see how to create it with other modules from zero.

- First of all load the "START2" flow, wich has already included the RGB2LAB and LAB2RGB conversion. (Since we work with the Luminance "L" channel)
- Go up left and Select the module to add. In this case BLUR. Click Blackboard to add it. (You can click and Drag any Module in the Blackboard)
- **On NEW GUI , in the up right panel select the constructor Node , and click ADD**
- Connect Output from RGB2LAB to BLUR. (Click the first output of RGB2LAB and drag it to the input of BLUR). To ERASE a CONNECTION right click near to an Extreme of it.
- **On NEW GUI to Erase a Connection go over it (It turns Green) and Right Click**
- **On NEW GUI to Erase a node Right Click it**
- Click BLUR, at right will appear the selected module paramters, in this case the Radius. Put an

amount bigger than 1

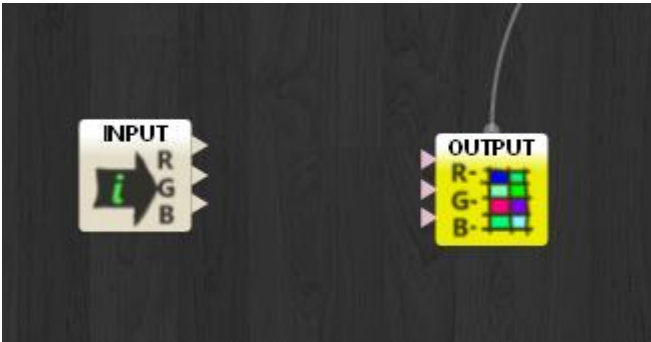
- Add 2 MUL (Multiply) modules and connect them as below. The MUL that has as input the output of BLUR represent the Amount Value of the Unsharp Mask filter. Assign to it a value of 150 (that means 1.5 [150%]). To the other MUL (the one that has as input the output of RGB2LAB) apply the value of first MUL + 100. (In this case $150 + 100 = 250$, that means $1.5 + 1 = 2.5$)
- Add a MIX2 (Mix 2 channels) Module and connect the inputs as figure below. Select the Mix Mode as SUB (Subtract) , that means that the output will be Input1 minus input2
- Lastly connect the output of MIX2 to LAB2RGB first input.



Load a picture and click RUN.

Start

To start a new project go to Project List and click START.txt

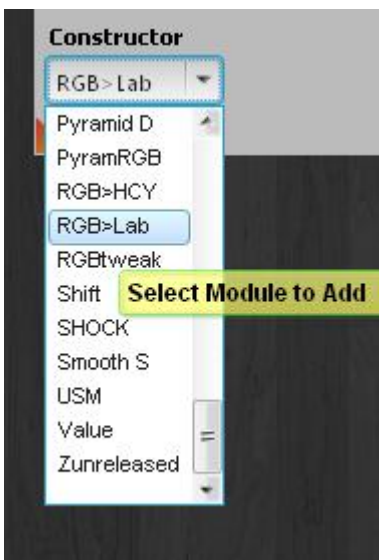


This is the minimum nodes required to start a project.

Then, for example, if you want to work with CieLab ColorSpace, you can load START2.txt project file, or add nodes and connections manually.

Add a Node

Go to Contruction (in the Up Right Panel) and select the node to add.



Then click the new added node and drag it where you want

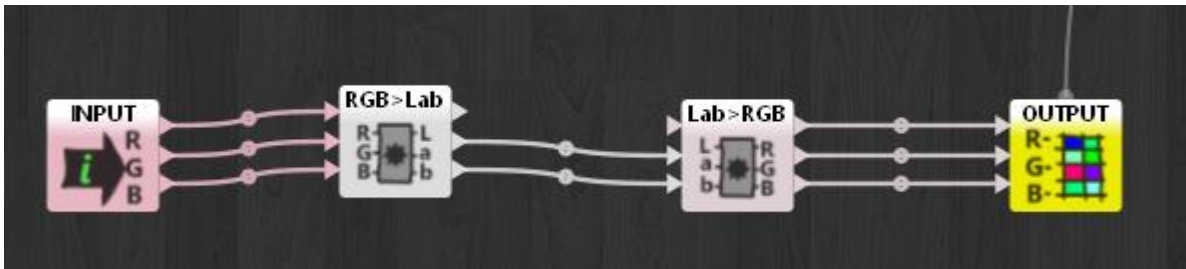
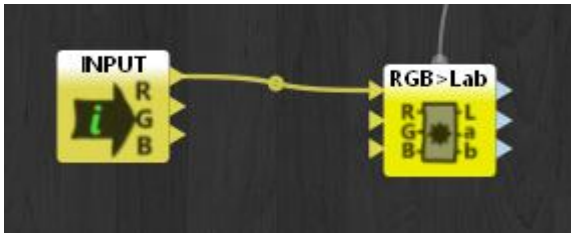
Delete Node

To delete a node just right click it.

Add a Connection

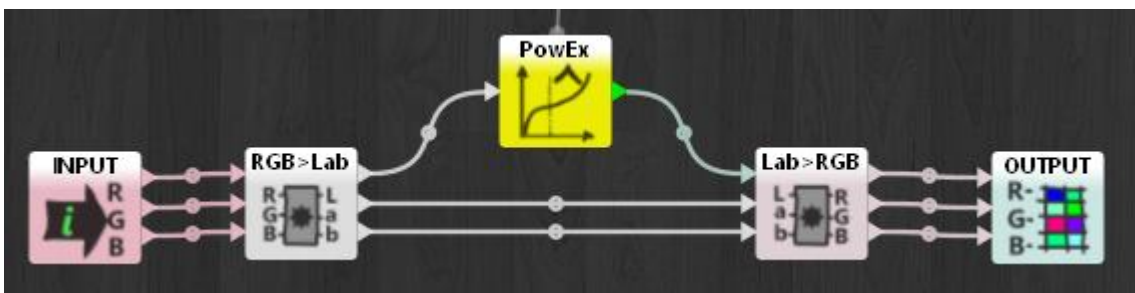
Move mouse near to the NodeOutput you want to connect.

Click And Drag it to the NodeInput to attach to.



Now, let's see how to increase Luminance contrast.

Add the PowEx Node

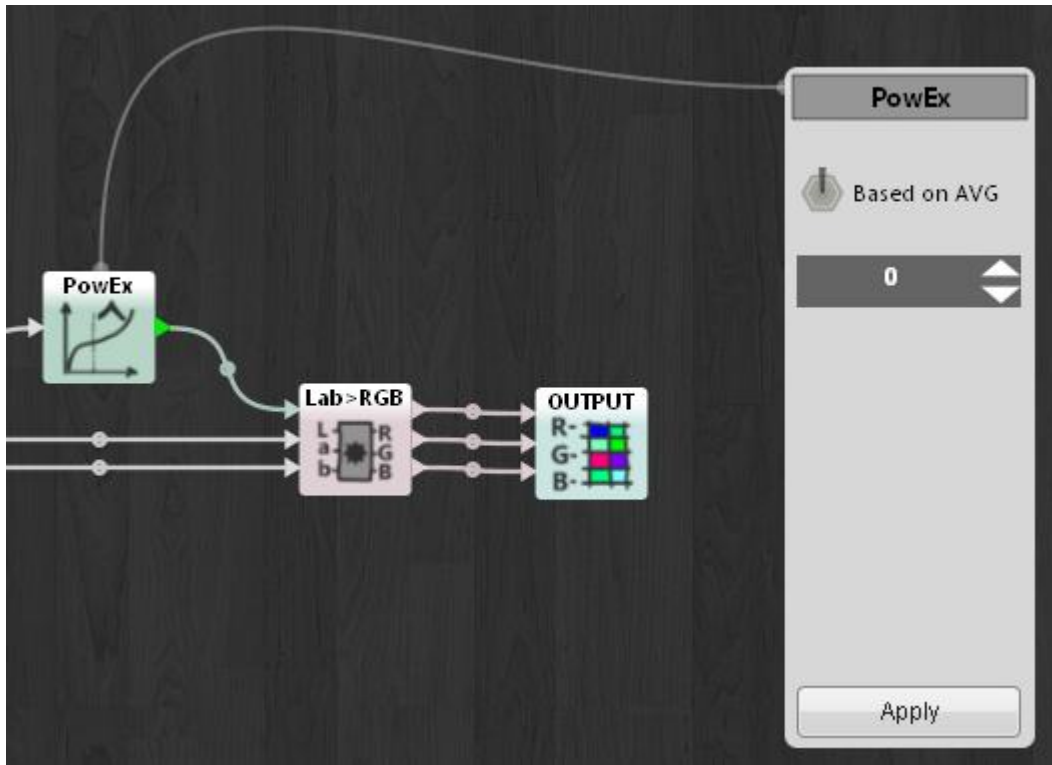


Delete a Connection

Go with mouse over it and right click

Parameters

If a node has parameters, they are visible and tweakable by clicking the node.



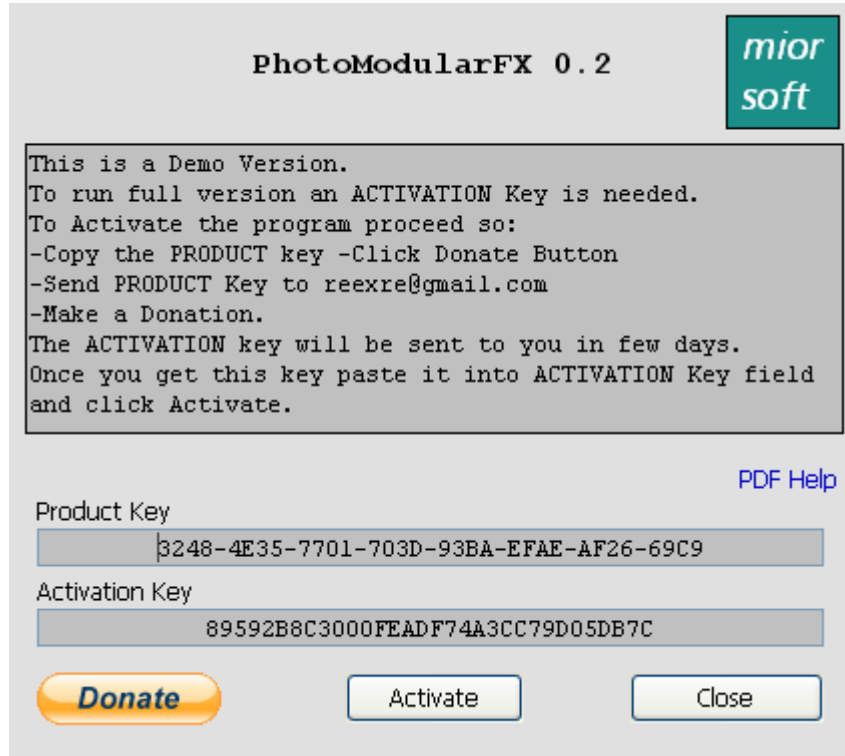
Run Flow



ACTIVATE

The Demo version is full functional and have only a little "limitation": At the output pitcures is applied a light watermark text up and below.

To remove the WaterMark click "A" Button



PhotoModularFX 0.2 mior soft

This is a Demo Version.
To run full version an ACTIVATION Key is needed.
To Activate the program proceed so:
-Copy the PRODUCT key -Click Donate Button
-Send PRODUCT Key to reexre@gmail.com
-Make a Donation.
The ACTIVATION key will be sent to you in few days.
Once you get this key paste it into ACTIVATION Key field
and click Activate.

[PDF Help](#)

Product Key
3248-4E35-7701-703D-93BA-EFAE-AF26-69C9

Activation Key
89592B8C3000FEADF74A3CC79D05DB7C

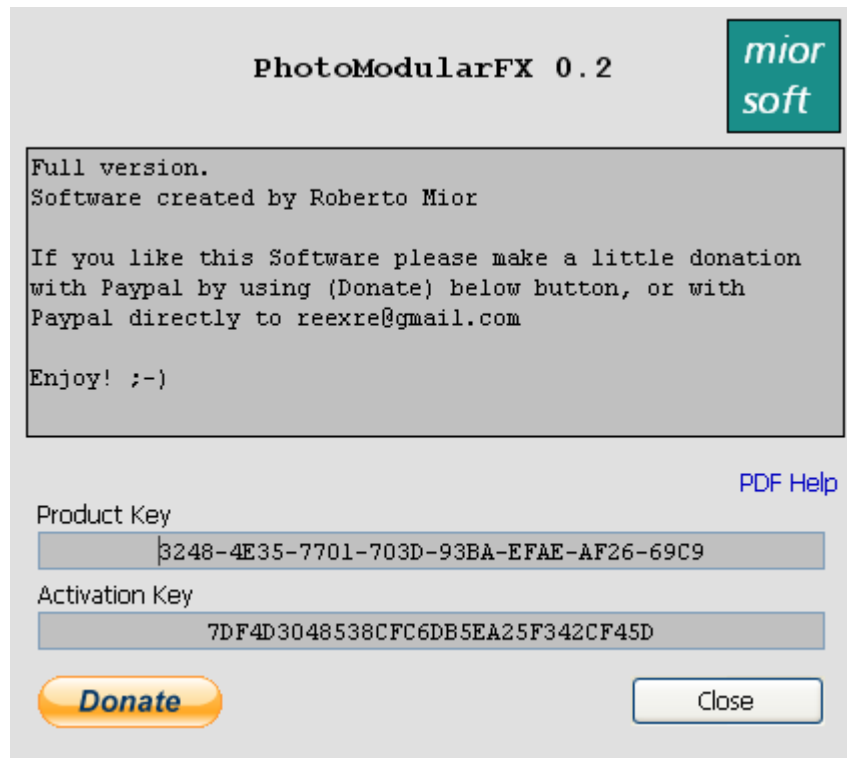
Donate Activate Close

Here you can find your Product key, that will work only on a single machine.

To obtain the correct Activation Key do these steps:

- Select and copy the Product Key
- Send the Product Key to reexre@gmail.com
- Make a free donation with Donate Button.
- The Activation Key will be sent to you in few days.
- Paste the received Activation Key in the ActivationKey field
- Click Activate.
- The Software will restart in Full Mode with NO WATERMARK

After auto-restart if you click "A" Button it will appear something like this:



MODULES / EFFECTS :

Will follow a list of single Effects that can be apply to input image / digital signal

INPUT

The Input Image



INPUT2

Support input picture, there can be more than 1 input2.

Useful to mix/blend pictures together or whatever else.

The 2nd input picture Path will be saved in the project, and it have the form of relative path to main Folder.
So if you port the project consider paths.



OUTPUT

Output Image (to Display and File)



Colorspaces conversions:

RGB>Lab

Convert RGB color Space to Cie Lab color Space

3 Inputs, 3 Outputs





Lab>RGB

Convert Cie Lab color Space to RGB color Space

3 Inputs, 3 Outputs



RGB>HCY

Convert RGB color Space to HCY color Space ("Hue,Chroma,(Y)Luma")

HCY is a colourspace which shares some features with HSL and YCbCr - it has Luma (Y) like YCbCr and fills the whole cube space like HSL, making it an ideal candidate for image editing.

1. Hue (H) computed in the same manner as HSV and HSL;
2. Chroma (C) computed as the scaled difference between the maximum unweighted RGB component and the minimum unweighted RGB component; and
3. Luminance (Y) computed as the weighted sum of RGB components.

3 Inputs, 3 Outputs



HCY>RGB

Convert HCY color Space ("Hue,Chroma,(Y)Luma") to RGB color Space

3 Inputs, 3 Output

RGB>HSL

Convert RGB colorspace to Hue-Saturation-Luminance using Quasimondo.com / Standard Algorithm

HSL>RGB

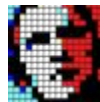
Convert Hue-Saturation-Luminance to RGB colorspace to using Quasimondo.com / Standard Algorithm

RGB>XYZ

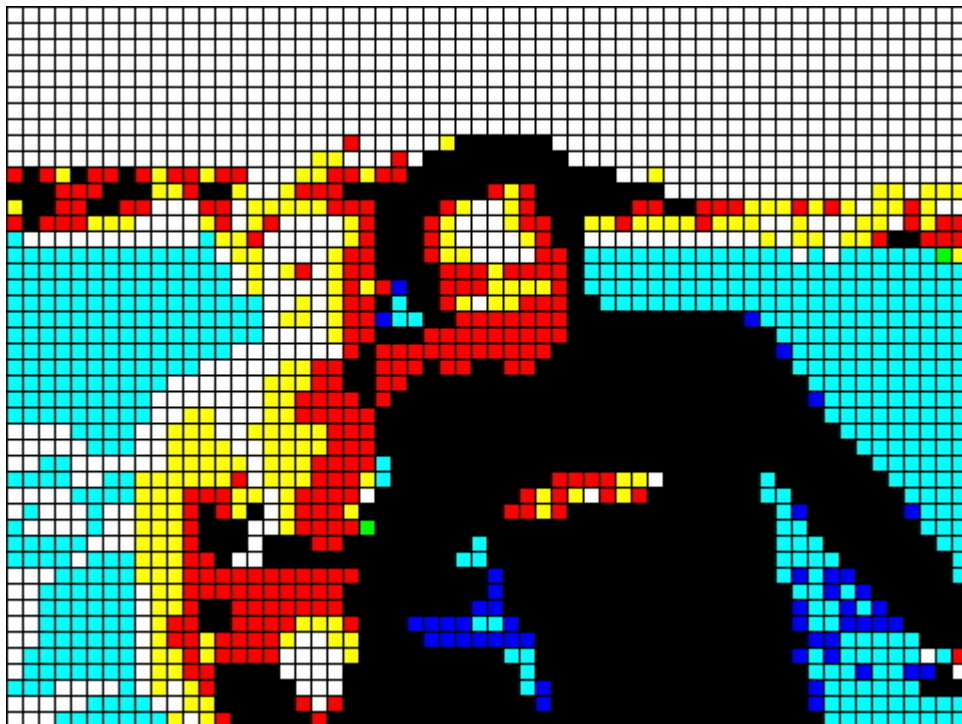
XYZ>RGB

RGB>YUV

YUV>RGB



8Colors





ADD

Just add a value (positive or negative) to current channel



BCS (Brightness-Contrast-Saturation)

Brightness , Contras and Saturation



BILATERAL

Edge-preserving Noise-reduction Smoothing Filter



BLUR



Borders

Apply Borders/Vignetting





CURVE

A simple Spline 5 Point curve interpolation.





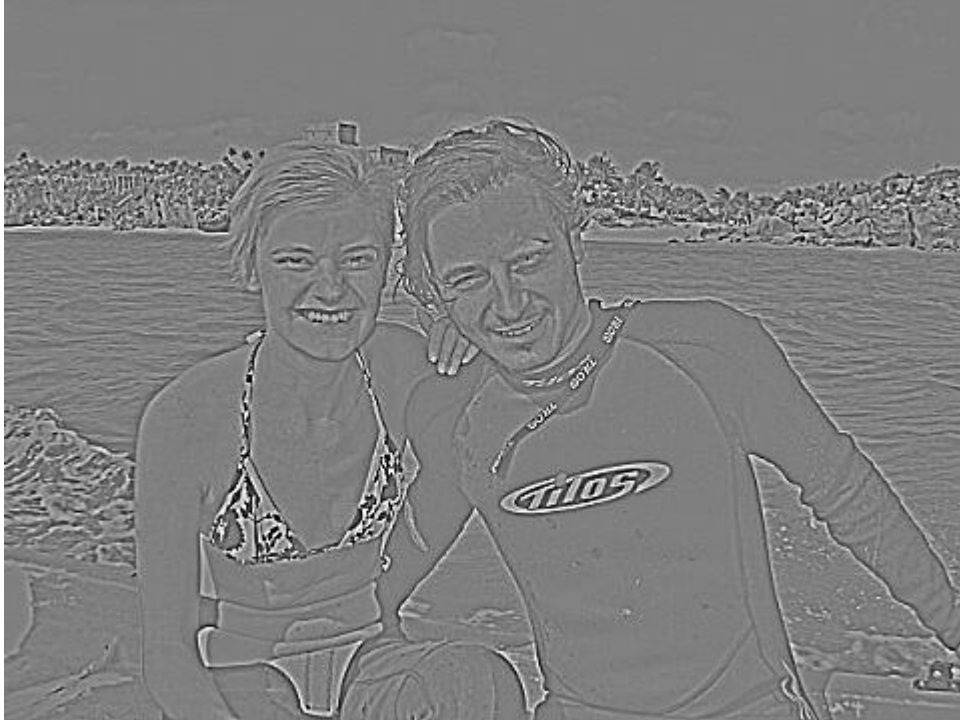


DCT BP(Discrete Cosine Transform)

Experimental Discrete Cosine Transform Band Pass

Can be used to:

Enhance/Extract Details:



Attenuate Details:



$$e^{-\left(\nabla/K\right)^2}$$

Diffusion

Simplified Iso/Anisotropic Diffusion

Similiar and little faster than Bilateral.





Distorsion

Deform warping Algorithms:

Fisheye



Pinch



SIN Radial



Radius to Power (1)



Radius to Power (2)



SIN Cartesian



Square root Cartesian



Arcsin Cartesian



Lens



Swirl 1



Swirl 2

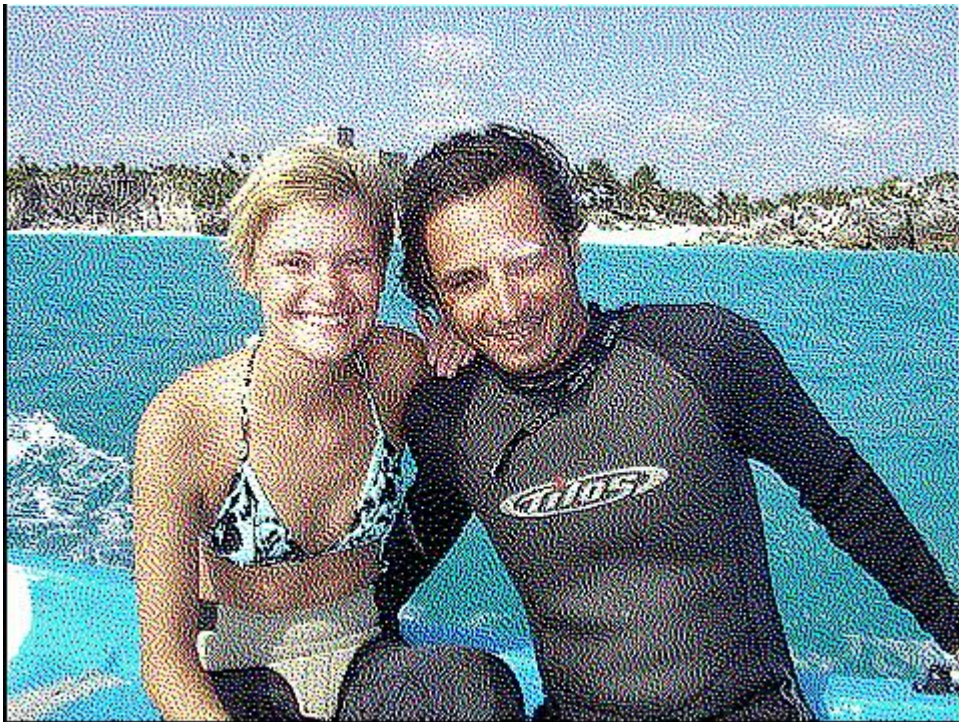
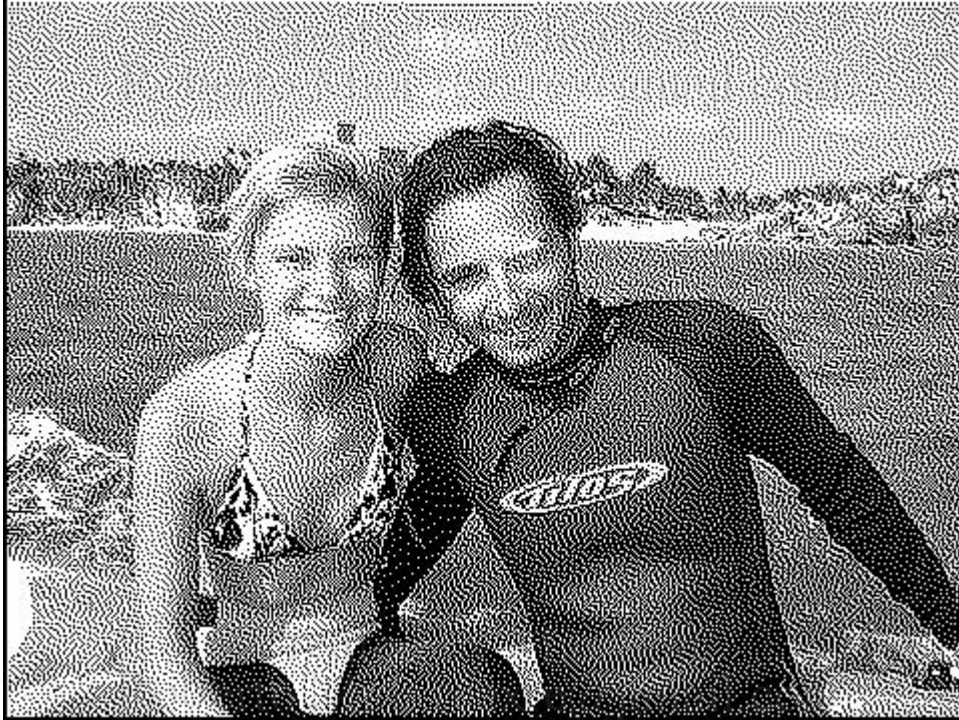




Dithering

Error diffusion Dithering Algorithms:

Sierra

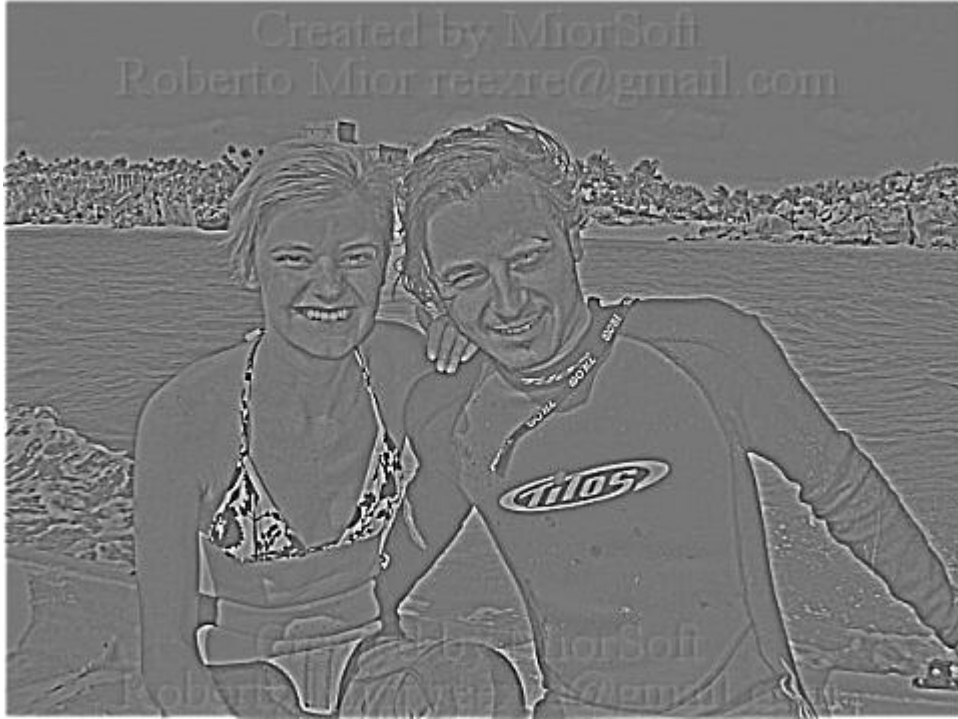




Difference of Gaussians (DoG)

Difference of gaussians

Both - $R=1.7$



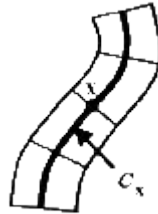
Absolute - $R=20$



Passing through Flow and Paint (R=2.7)

Created by MiorSoft
Roberto Mior reexre@gmail.com





FLOW Difference of Gaussians (DoG F)

Flow Based Difference of Gaussians

-Small Radius, Negative , Invert



-Small Radius, Both

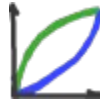


-12 Radius, Negative, Invert



-26 Radius, Negative, Invert





EXP-LOG

Simple EXP() or Log() Function

Tone
Mapping

fake HDR - Local Tone Mapping

Local Tone Mapping or Fake HDR (High Dynamic Range)

VERY SLOW!

*Still developing Phase



FLIP

Horizontal Vertical & Both Flip/Mirror

FLIP3

Horizontal Vertical & Both Flip/Mirror on all three channels

ORIGINAL



HORIZONTAL



VERICAL



BOTH



FLOW

1 Input

2 Outputs that are

- ✓ Pixel Angle Magnitude (0 – 1)
- ✓ Flow Angle (0-1)

These outputs must be Input of other Functions such as *PAINT*

Magnitude Output:



Angle Output (iterations 4)



f()

FORMULA

Transform pixels [X] according to any formula. Powerful but very slow.

At the moment it's possible to use these Variables:

X – Pixel Value

W – X Distance from center (-1,1)

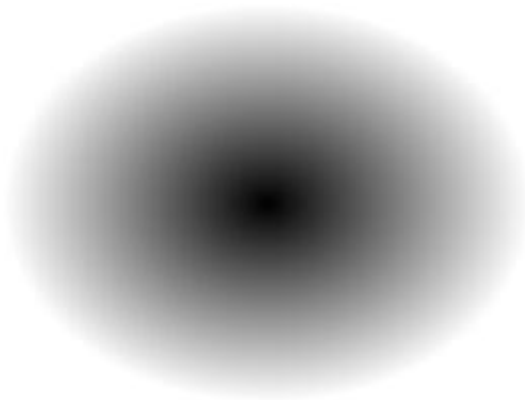
H – Y Distance from center (-1,1)

PI – 3.14...

In future there will be more variables and "Formula" Nodes with more inputs (now only 1 input [X])

Examples:

formula: $\text{sqr}(w*w+h*h)$



formula: $1-\text{sqr}(w*w+h*h)$



Original Grayscale



formula: $X^{0.3}$



formula: $X^{2.5}$



formula: $\sin(x \cdot \pi \cdot 0.5)$



formula: $x + (0.5 - \text{abs}(w))$



formula: $x * (1.25 - w * w) * (1.25 - h * h)$



formula: $\arcsin(x * 0.5 * \text{PI})$



γ

GAMMA

Simple Forward/Inverse Gamma Correction:

Orginal



Forward



Inverse



GLASS



GLASS3

Window glass effect (1 channel & 3 channels)



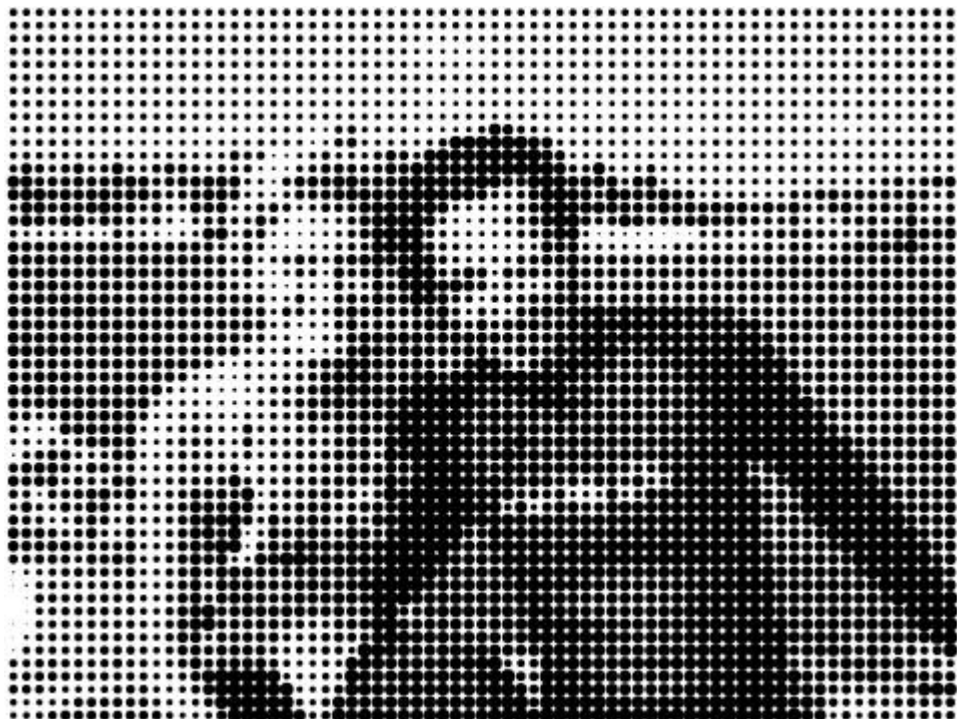
GLOW

*Still Developing



HALFTONE

Black Rounded



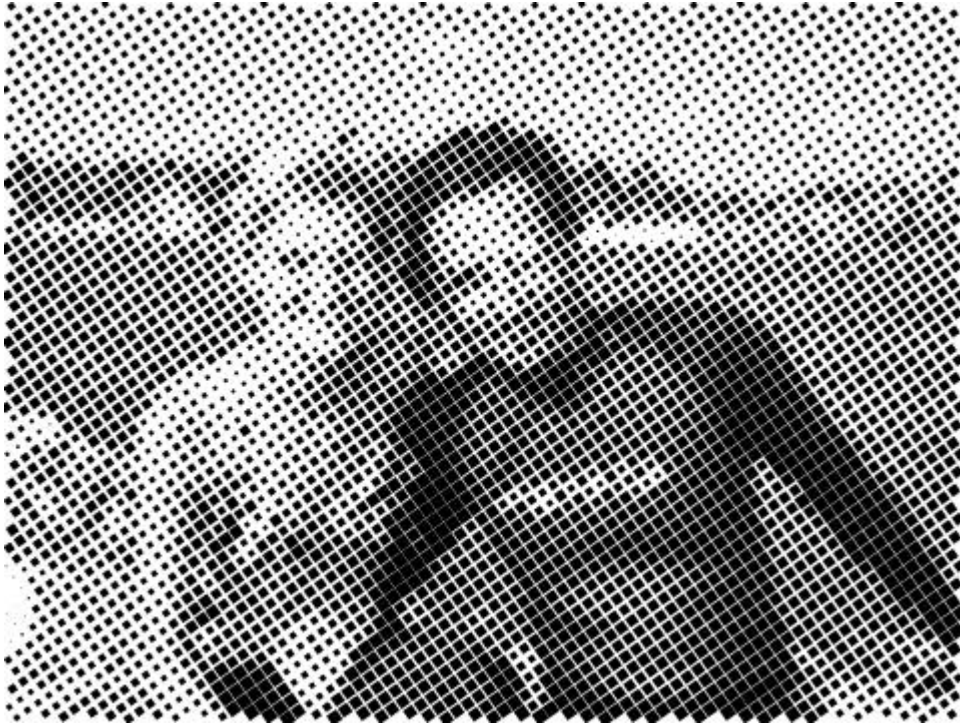
White Rounded



Leaf

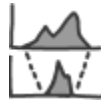


Rotated Box



HISTOGRAM EQUALIZE

Simple histogram equalization based on cumulative function



HistoMATCH

Histogram Match (Histogram Match - Change Input1 to match Input2 Histogram)

Look Project HistoMatch[...]

From this source picture:



And this Second picture as reference:



Change the picture according to the 3 RGB histograms of reference picture. Result:





HMAPD

Height Map Deform. Deform by Heightmap (4th input as heightmap)

Take a look at HMD???.txt projects





INVERT

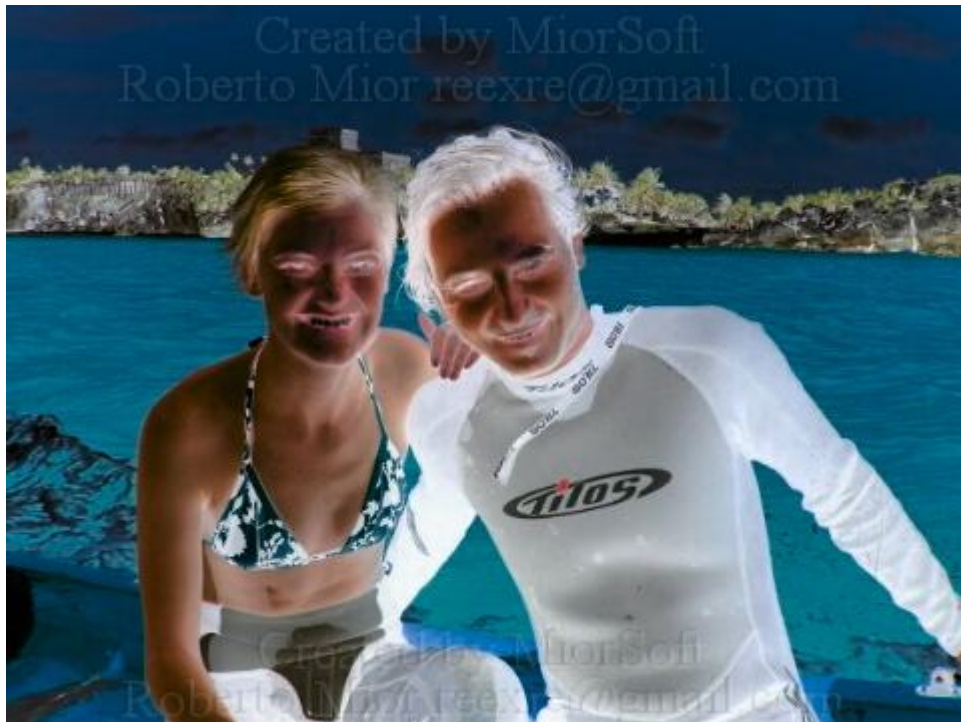
Invert the input:

$OUT = 1 - Input$

Inverted All RGB channels



Inverted Luminance channel





Kmean CLUSTER (1,2 & 3 D)

Perform Kmean Cluster Quantization/Discretization





Kwuahara

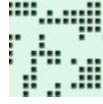




Kwuahara Anisotropic

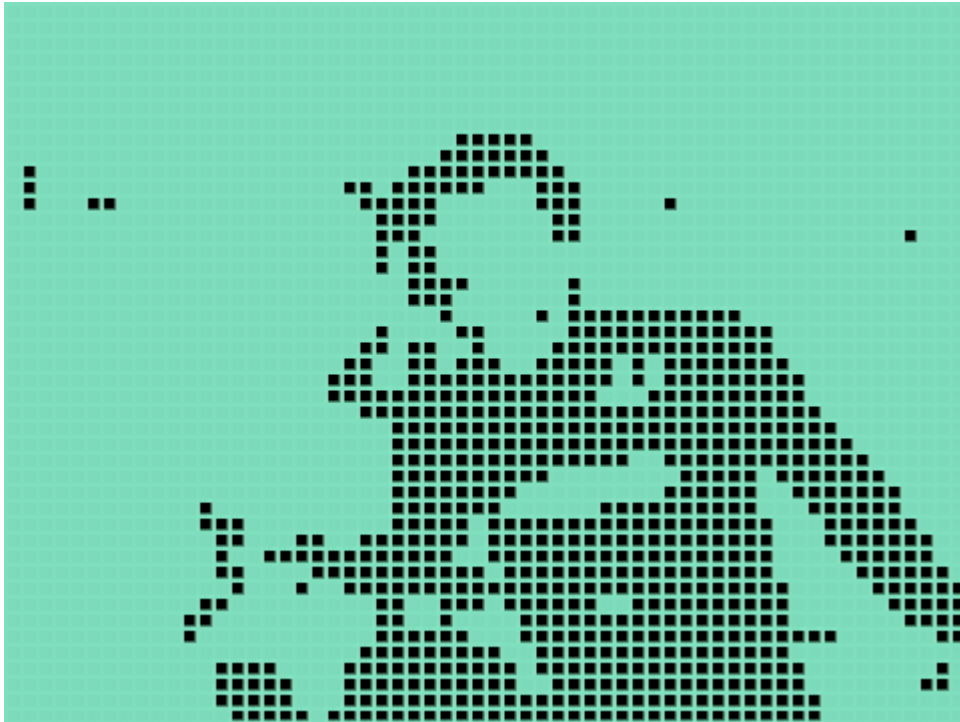
Still developing





LCD Display

A sort of old LCD display effect





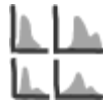
Local CONTRAST

Local Contrast

*Still developing Phase

Applied on Luminance Channel





Local HE (Histogram Equalization)

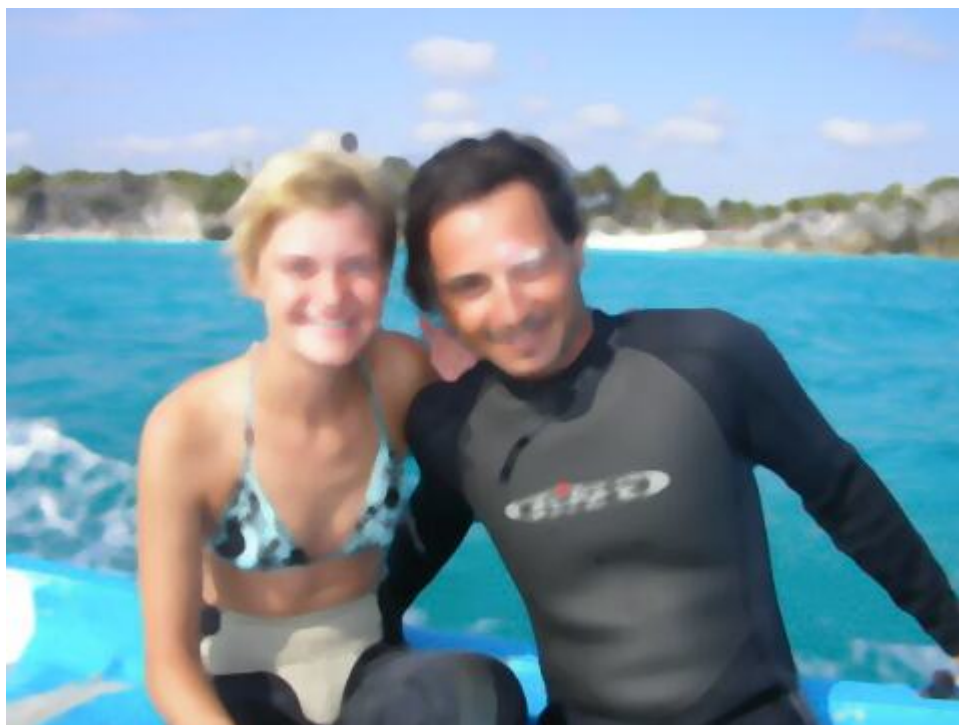
LCLAHE - Local Contrast Limited Adaptive Histogram Equalization





Median

Median filter



Advanced Local Contrast

*Still developing Phase



MIX2

Mix 2 channels

Modes are

- Average: $v1*0.5+v2*0.5$
or $v1*p+v2*(1-p)$
- Multiply: $v1*v2$
- Add: $v1*+v2$
- Sub: $v1-v2$
- Lighten $v1$ if $v1>v2$, $v2$ if $v2>v1$
- Darker $v1$ if $v1<v2$, $v2$ if $v2<v1$
- Screen (Dodge): $1-(1-a)*(1-b)$
- Overlay: if $a<0.5$ $2*a*b$, else $1-2*(1-a)*(1-b)$
- Hard Light = Overlay
- Soft Light (see wiki blending modes) as Cairo



MIX3

Mix 3 channels

Modes are

- Average: $(v1*+v2+v3)/3$
- Average Ex. $v1*P1+V2*P2+v3*P3$, where $P1+P2+P3=1$
- Sum: $(v1*+v2+v3)$



MUL

Multiply by a given value



NOISE

Fractional Brownian Motion (mixed)





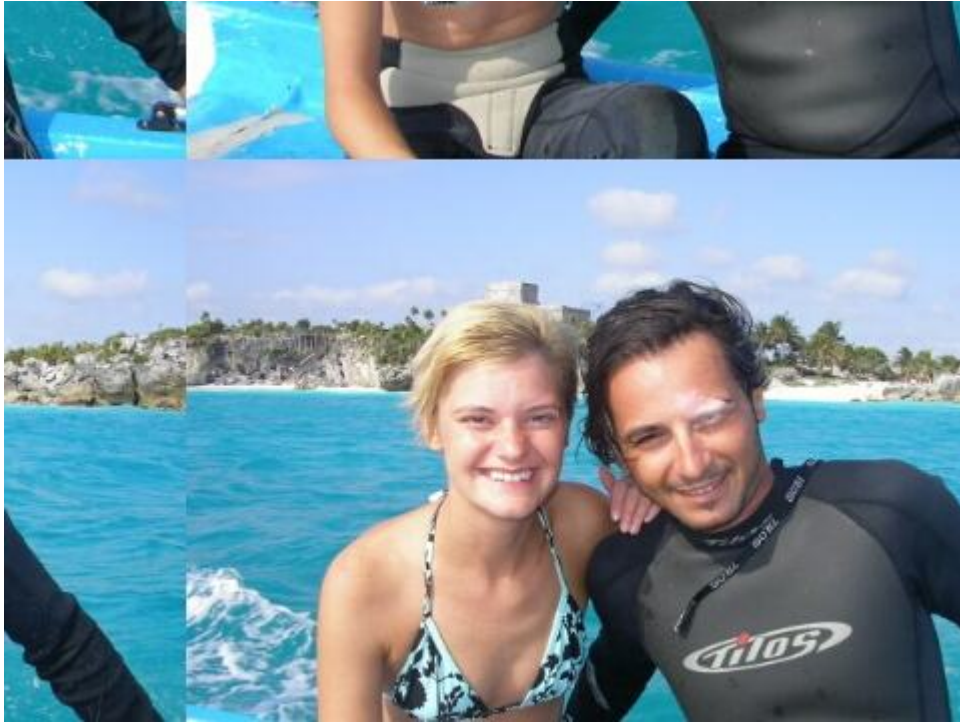
NOISER (Deformer)

Deform by Noise

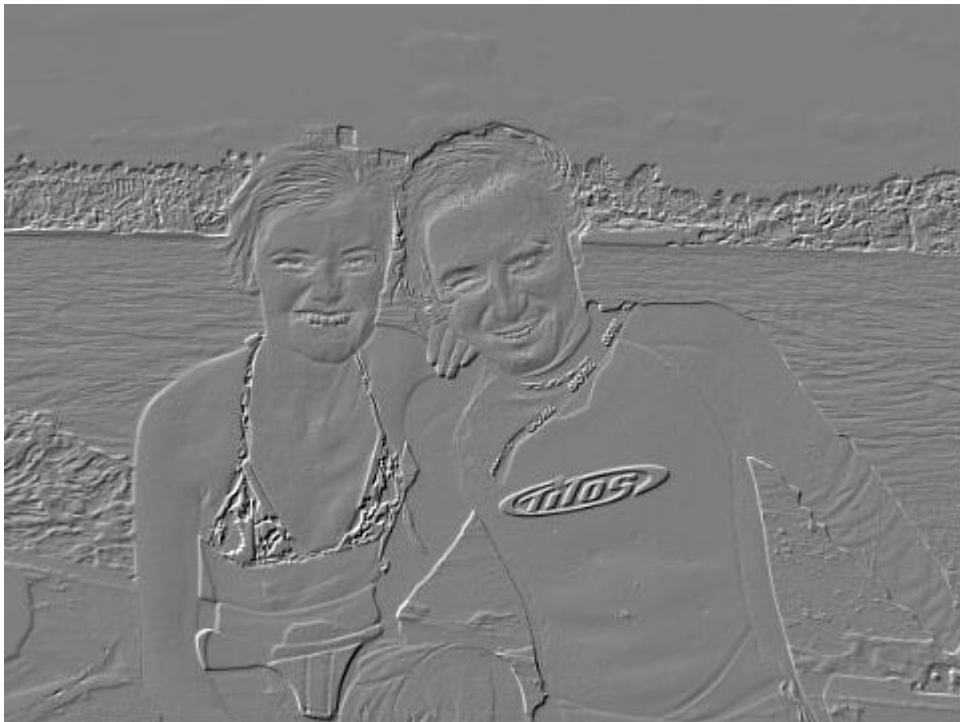


OFFSET (3)

Offset whole image by given Horizontal / Vertical Percentage



Can be used to create Emboss effect (By Offset 1,1 pixel). Look Project Emboss.txt:





PAINT

Paints along FLOW



Pixelate



POW

Standard Power : $Y=X^P$



POW extended

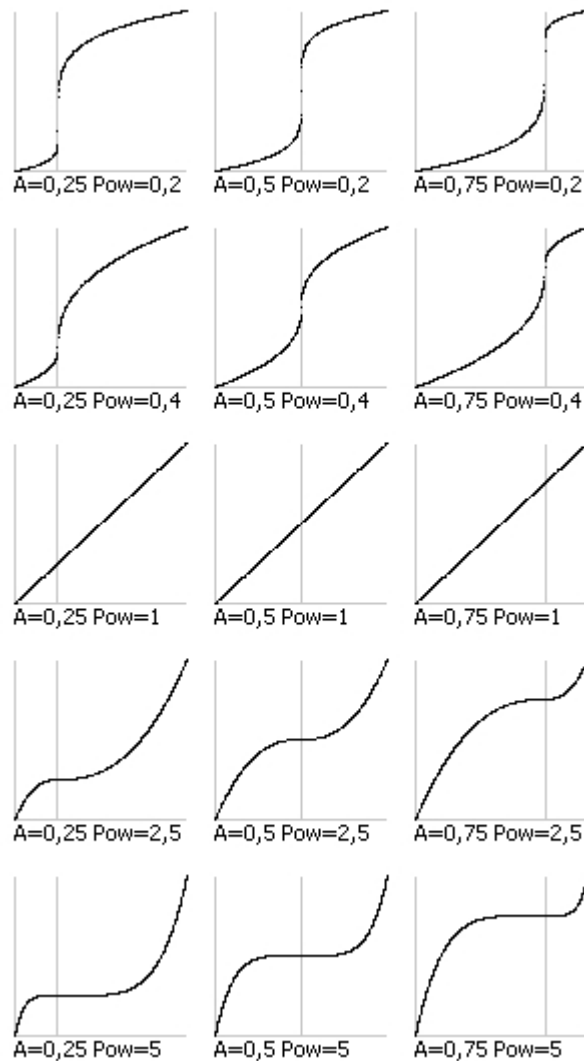
Perform a "special" kind of Power based on Average value or 50 (0.5)

It works so:

Let's call A the AVG or the given value

In Case of Input Greater than A

$$OUT = (((Input - A) / (1 - A))^{POW}) * (1 - A) + A$$



else, if Input is Smaller than A

$$OUT = A - A * ((A - Input) / A)^{POW}$$

Applied on Luminance Channel:

Pow=0.5



Pow=2





PYRAMID (Details)

Laplacian Pyramid Level-Detail enhancement/reduction

HCY, only luminance



RGB





QUANTIZE

Simple quantization

ORIGINAL



Grayscale uniform quantization 2



Grayscale HISTOGRAM BASED quantization 2

in this case (Histogram based) the number of white pixels is equal to the number of black pixels



Grayscale uniform quantization 4



Grayscale HISTOGRAM BASED quantization 4

in this case (Histogram based) each one of the 4 levels has the same number of pixels



Project Quantize-8Colors.txt

2 levels for each channel (RGB) = $2 \times 2 \times 2 = 8$ Colors

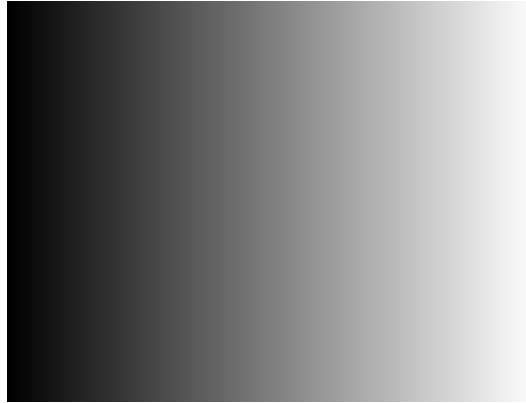




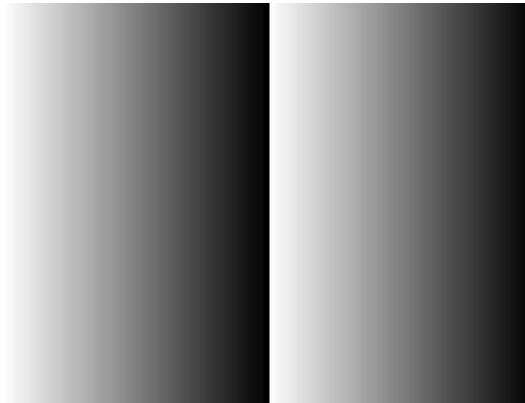
RAMP / Gradient

Gradient Ramp

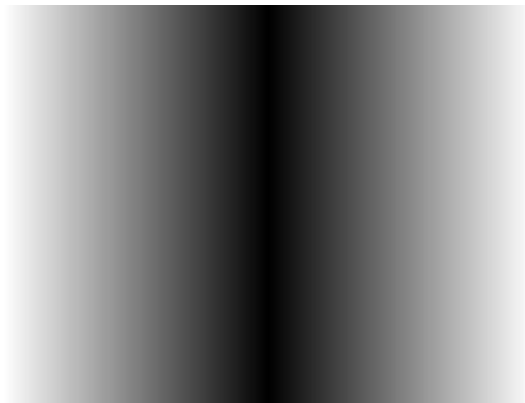
LEFT-RIGH



LEFT-RIGH – 2



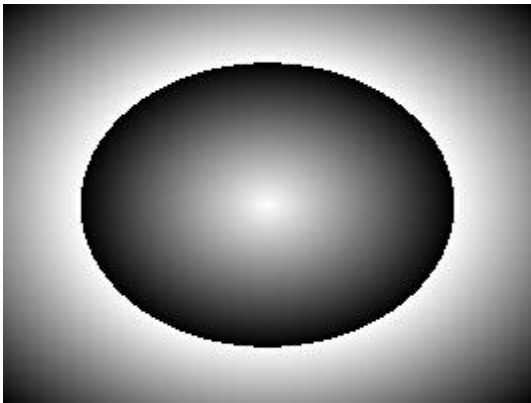
LEFT-RIGH – 2 *



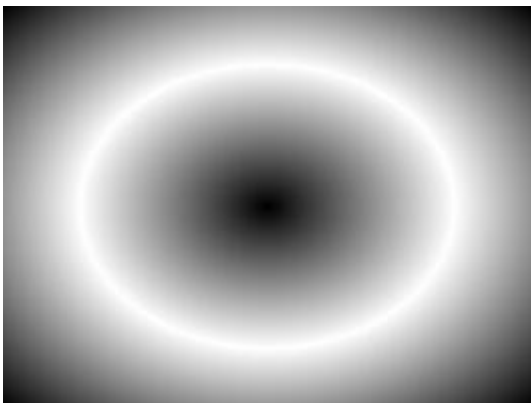
CONE UP



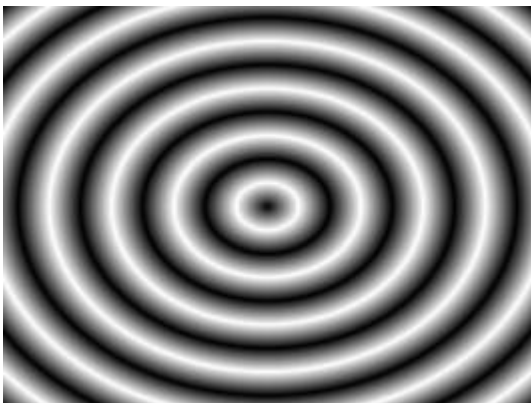
CONE UP 2



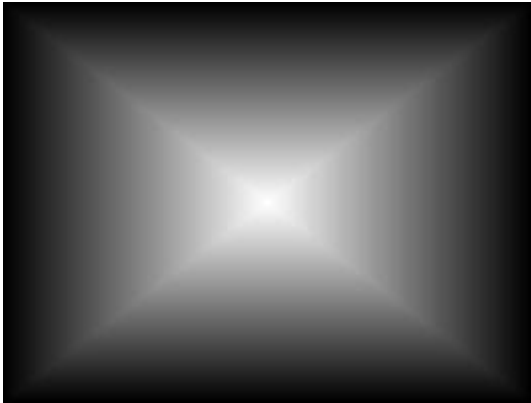
CONE UP 2 *



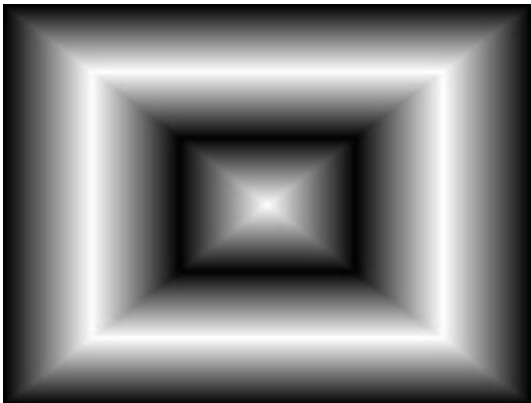
CONE UP 12 *



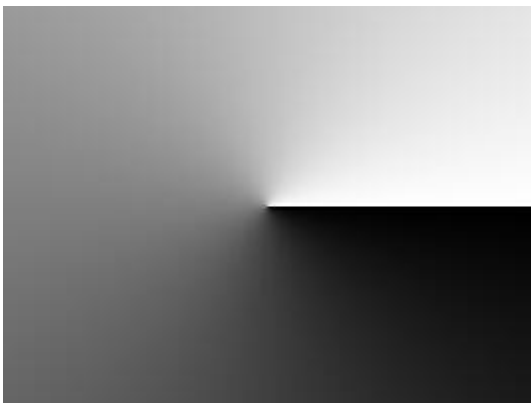
PYRAMID UP



PYRAMID UP 3*



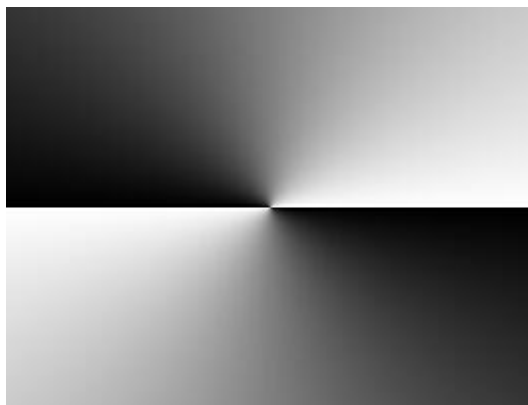
AUGER RIGHT



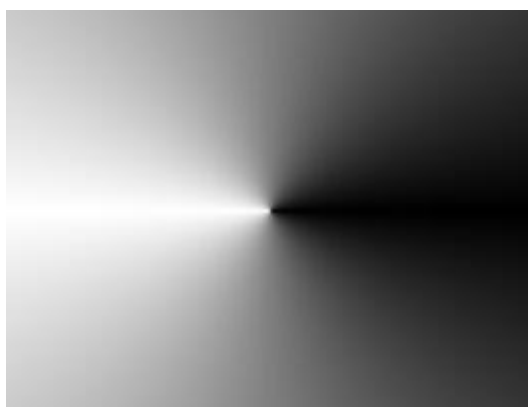
AUGER LEFT



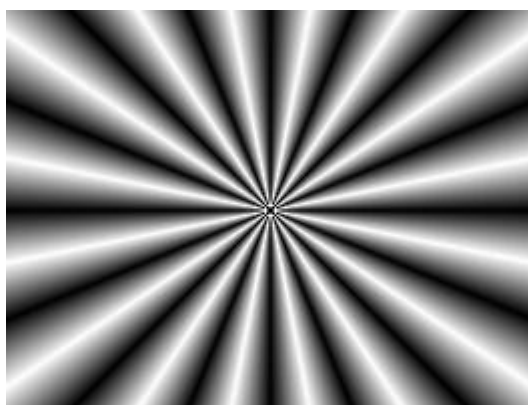
AUGER RIGHT 2



AUGER RIGHT 2 *



AUGER RIGHT 32 *



RGBtweak

Add or subtract Values from separated RGB channels

(Output values Clamped = 0-1)



SEPIA

Vintage spia effect

It's of 2 types:

3 RGB in, 3 RGB out

1 Gray in, 3 RGB out (Sepia [from] Gray)





Scratches

Vertical scratches to simulate old film degradation



Combining Noise, Scratches, Borders and Sepia:

[See Project `OLDFilm.txt`]



SHIFT

Add or subtract Value to a single channel.

Output Values "Rotated":

<0 eg -0.2 ---> 0.8

>1 eg 1.1 -----> 0.1



SHOCK

Shock Filter

*Still developing Phase





Size 2X

Enlarge by 2 the width and height



Size Half

Shrink by 2 the width and height

Use it carefully (start width and height must be multiple of 2)





SKETCH

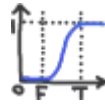
Special kind of "pencil"-Style sketch.

Only Edges:



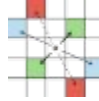
Edges and background:





Smooth Step

Smooth Step



SNN

SNN (1D) - Symmetric Nearest Neighbour Smoothing filter

SNN3

SNN (3D) - Symmetric Nearest Neighbour Smoothing filter applied to 3channel sseparately

STANDARD
DEVIATION

StdDEV

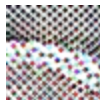
Standard Deviation 1D



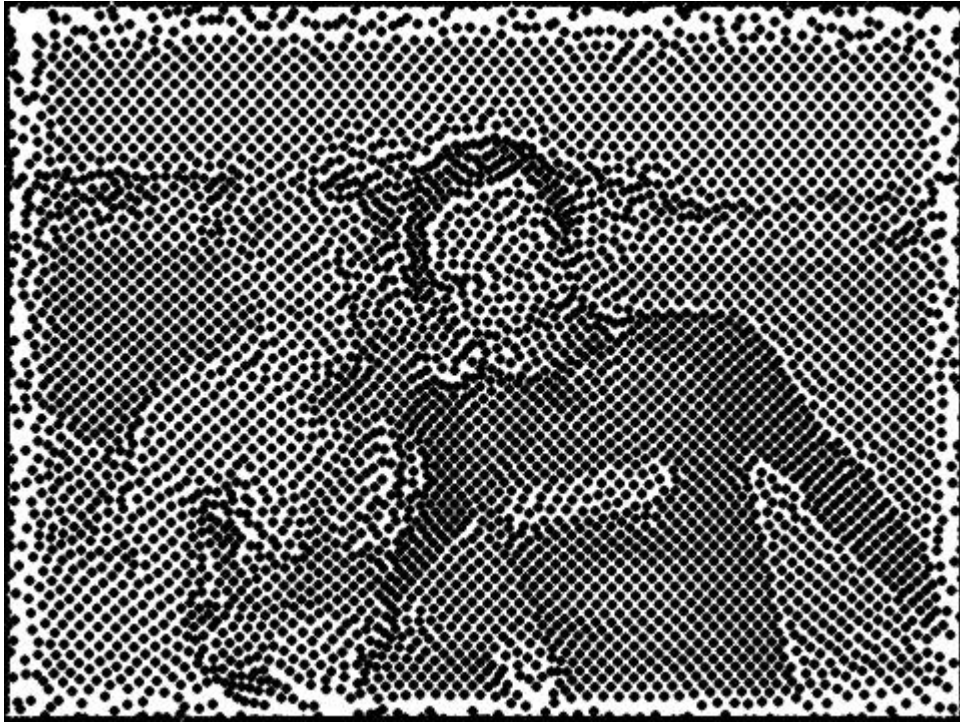
STANDARD
DEVIATION
3

StdDEV3

Standard Deviation 3 channels



Stipple



Tilt-Shift

Fake Miniature

Original and Miniaturized:



UNSHARP MASK

Unsharp mask filter.

Applied to Luminance Channel



All channels (RGB)



K
Value

VALUE (K)

A Constant value

Only output



VRLCN - Variable Radius Local Contrast Normalization

Original



Examples with different Source Amount:





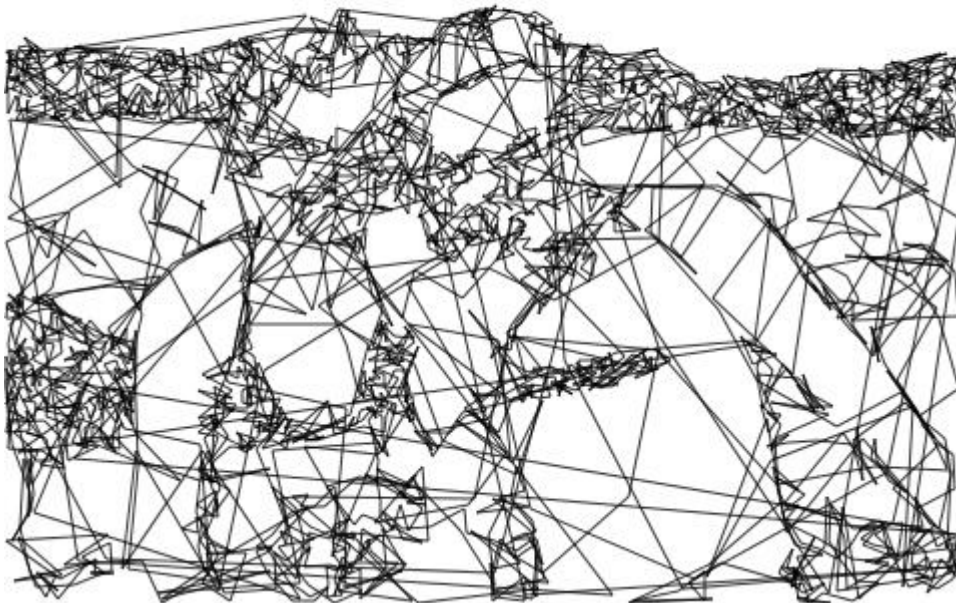
V2

*Still developing Phase



xMESH

A "Mesh" effect

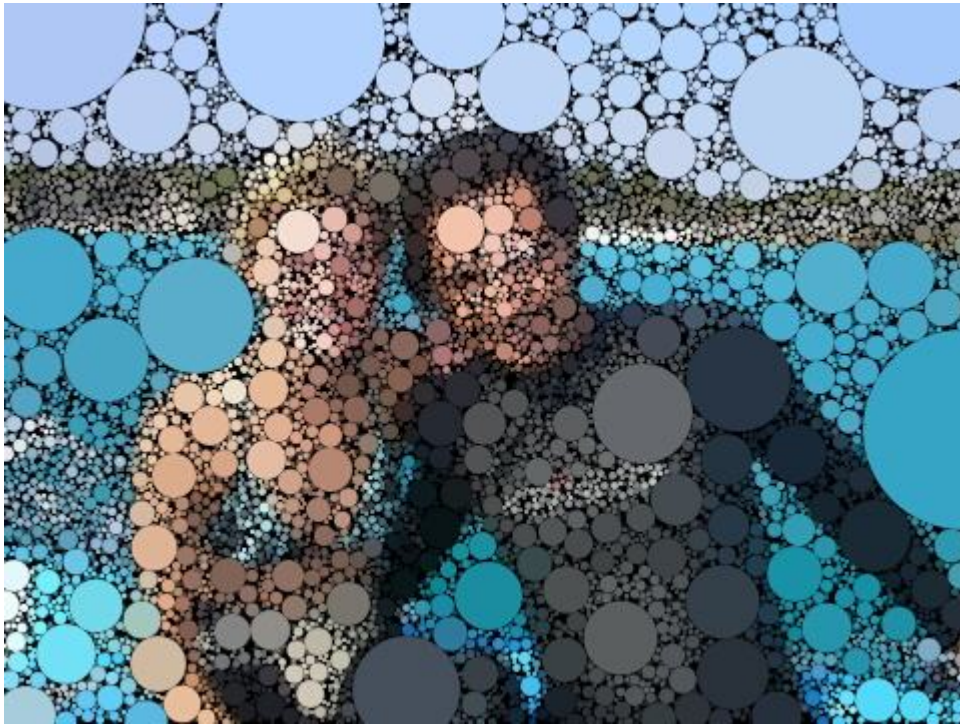


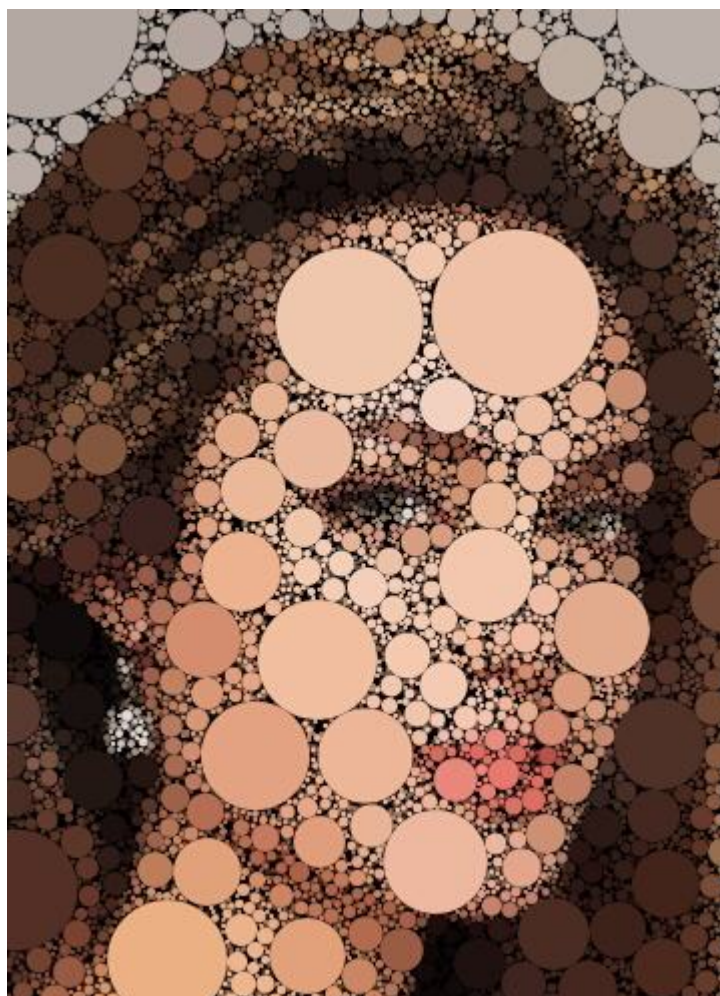


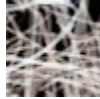
xPOIS

A very nice Pois effect.

Output image is created by filling it with Pois (Circles) of different size and colors:







STROKES

A very cool strokes-style paint effect:







A better explanation of the Effects/filters will be updated in further versions...

Don't esitate to write for suggestions or feature request such as new Node/Fxs or any kind of feedback...

Hope to find people interested in this project, with the will to see it improved and who would be happy to help with a little donation.

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