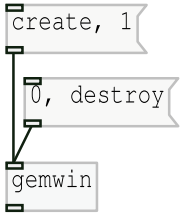
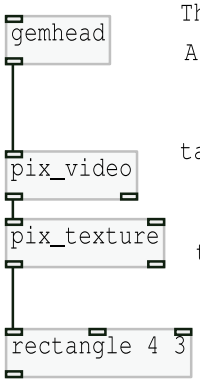
3 Pure data + Gem
Using the camera





This is a render-chain.
Always start it with gemhead.

takes the video image from your camera

textures the video image

onto an rectangle

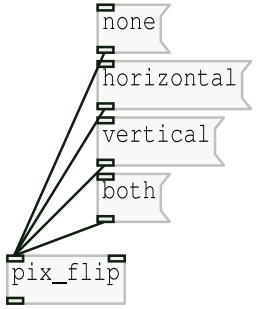
Challenges:

1 Flip the image around.

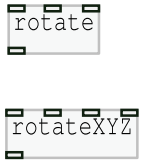
2 Adjust the image size and ratio.

Here are some suggestions how to approach this:

Suggestion 1



Suggestion 2



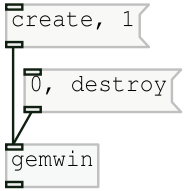
Suggestion 3

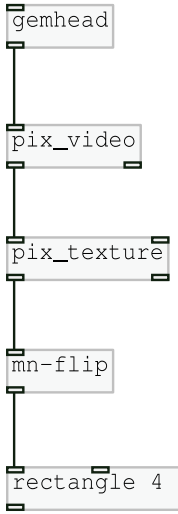
there is something simpler

4 Pure data + Gem
getting the display right

Every Pd patch can be used by other patches just like any built-in object.

Open up [mn-flip] which is just another Pd patch used by this one.
We call that an abstraction. In order to not confuse it with the built-in objects I save my abstractions with a special prefix.





This is a render-chain.
Always start it with gemhead.

takes the video image from your camera

textures the video image

edit this one!

onto an rectangle

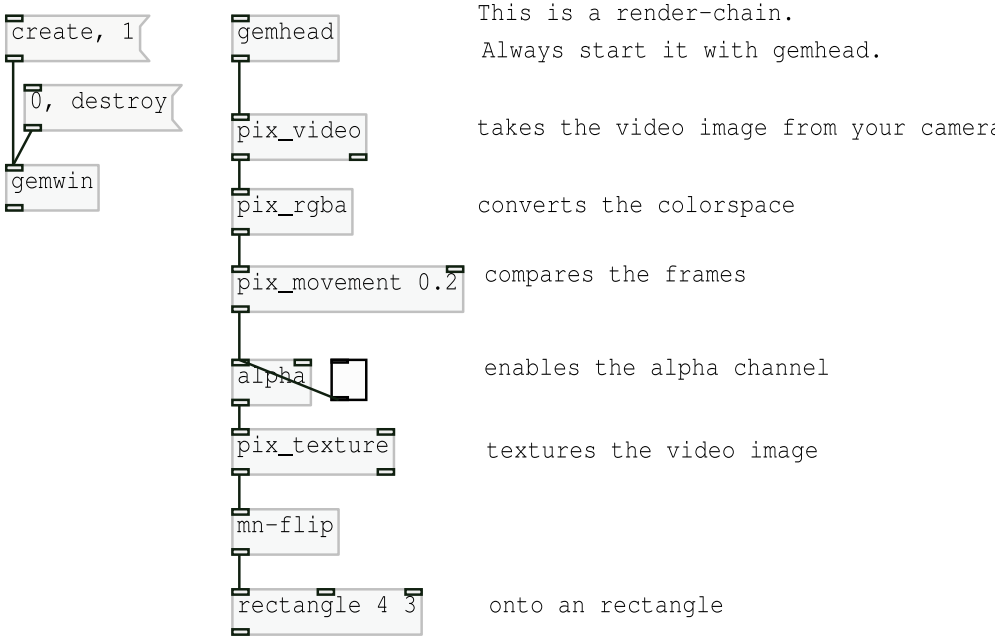
Challenge:

Point the camere on yourself. Raise your left hand. Is the Image mirrored or not? Hint: it is mirrored if it behaves just like a mirror would.

If it isn't mirrored: open up [mn-flip] and manipulate it in such a way that the image becomes mirrored. Save it.

4 Pure data + Gem
Using the camera to extract motion from the live video

How do we detect movement? Simply by comparing the current frame of the video with the previous frame.

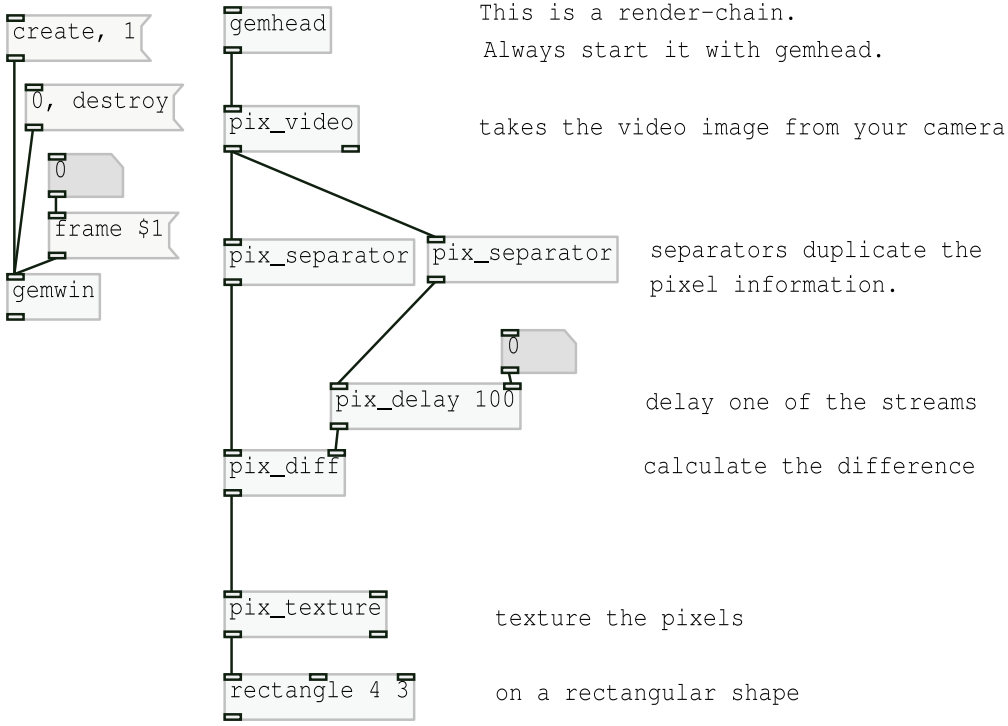


Challenge:

use pix_blob to express the detected movement in a number.

5a Pure data + Gem
Substract the presence from the past

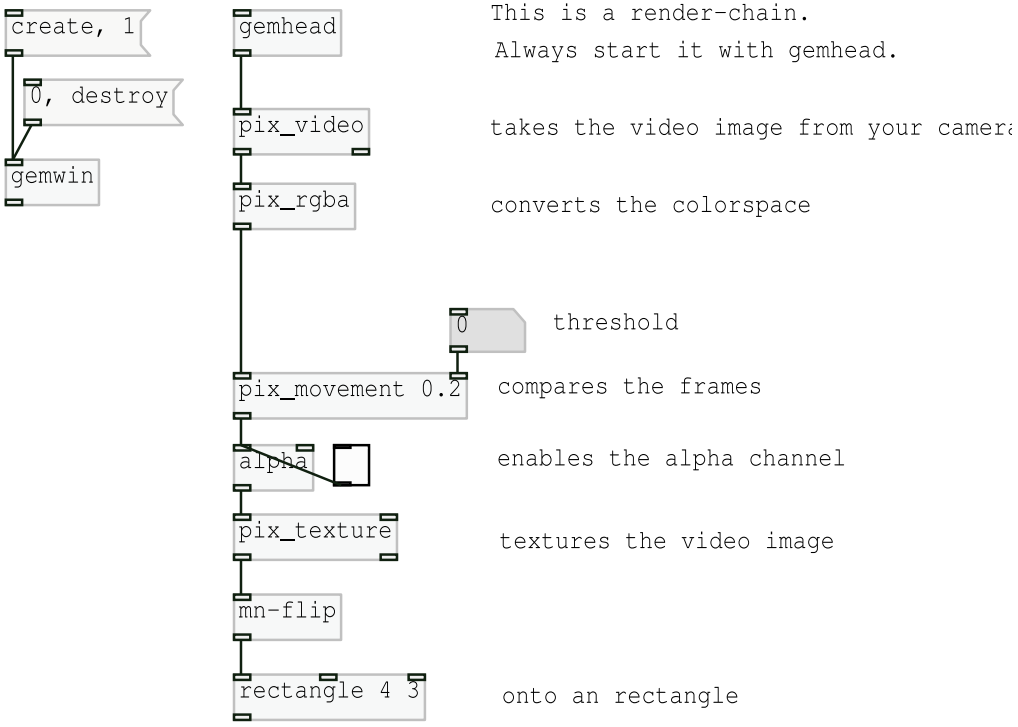
How do we detect movement? Simply by comparing the current frame of the video with the previous frame.



Other objects to try:

5b Pure data + Gem
Using the camera to extract motion from the live video

the pix_movement object creates a black and white image (a bitmap) from the difference to the previous frame with a threshold.

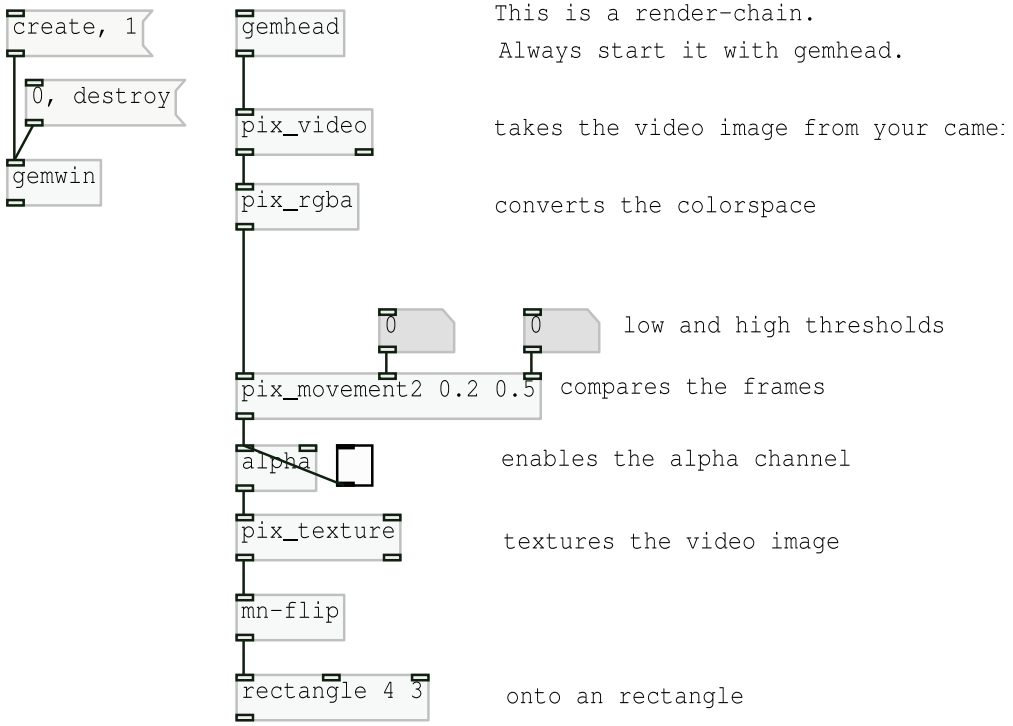


Challenge:

use pix_blob to express the detected movement in a number.

5c Pure data + Gem
Using the camera to extract motion from the live video

the pix_movement2 object allows a lower and higher threshold

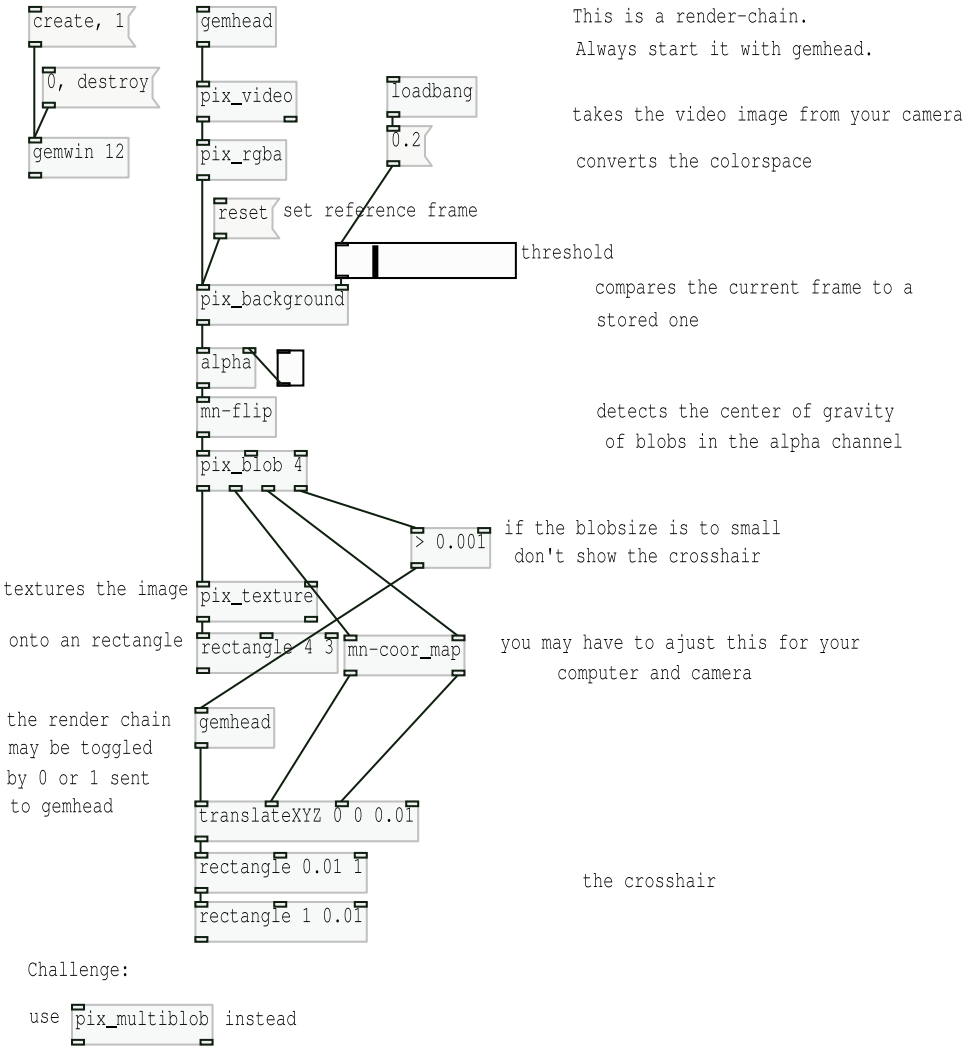


Challenge:

use pix_blob to express the detected movement in a number.

6 Pure data + Gem
Using Background substraction

If we compare the current frame to the previous frame, we
loose the position if the tracked object stops moving.
An aproach to this is to substract the Background

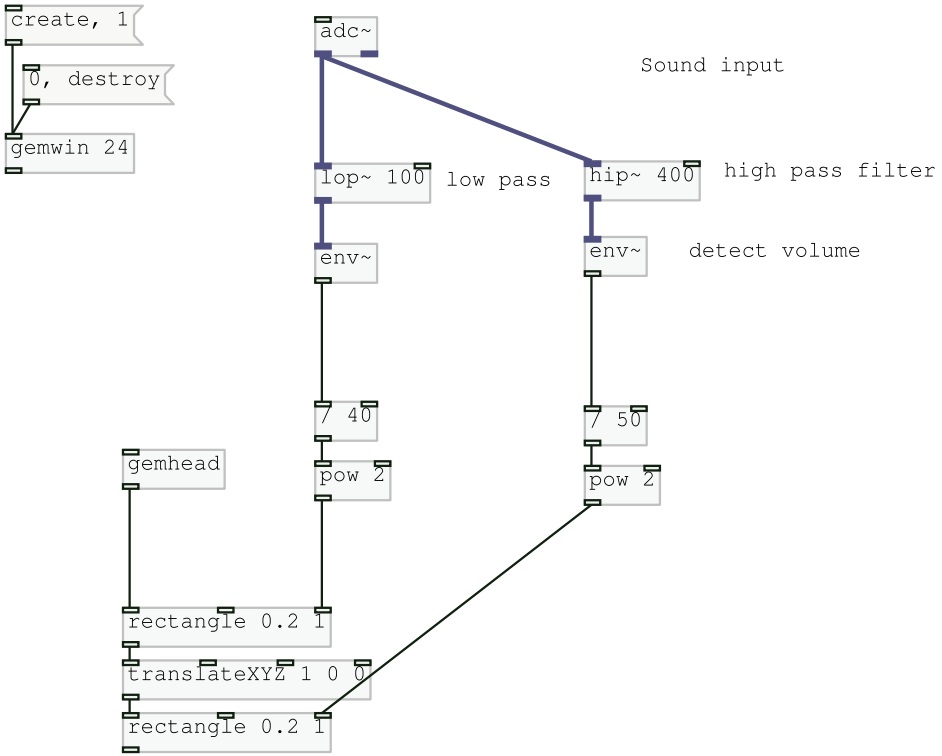


Challenge:

use `pix_multiblob` instead

9 Pure data + Gem
Using the micropone to trigger

Here we use the microphone to trigger some visual events

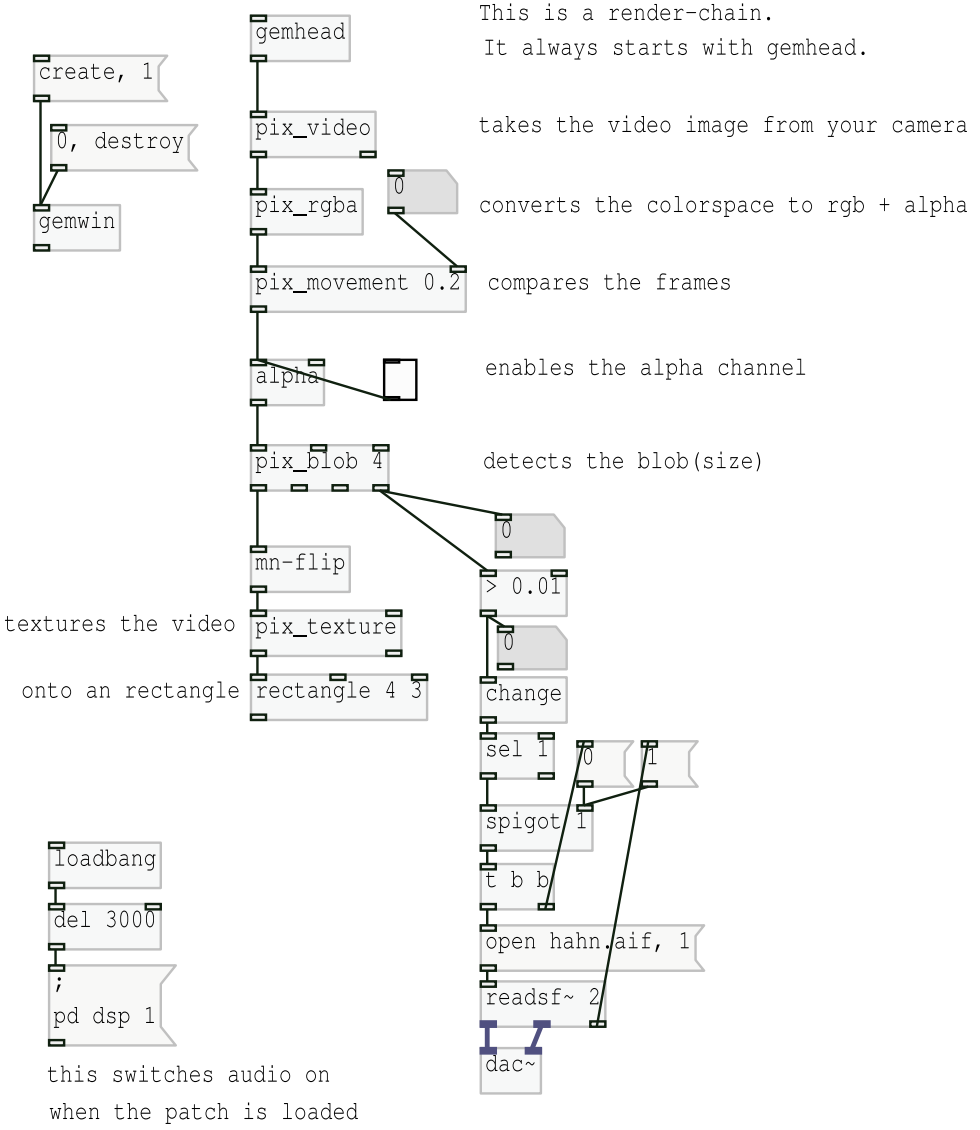


Challenge:

change the color of the objects dependng on the volume

use `color` or `colorRGB` .

8 Pure data + Gem
Using sound to signal the detected movement



This is a render-chain.
It always starts with gemhead.

takes the video image from your camera

converts the colorspace to rgb + alpha

compares the frames

enables the alpha channel

detects the blob(size)

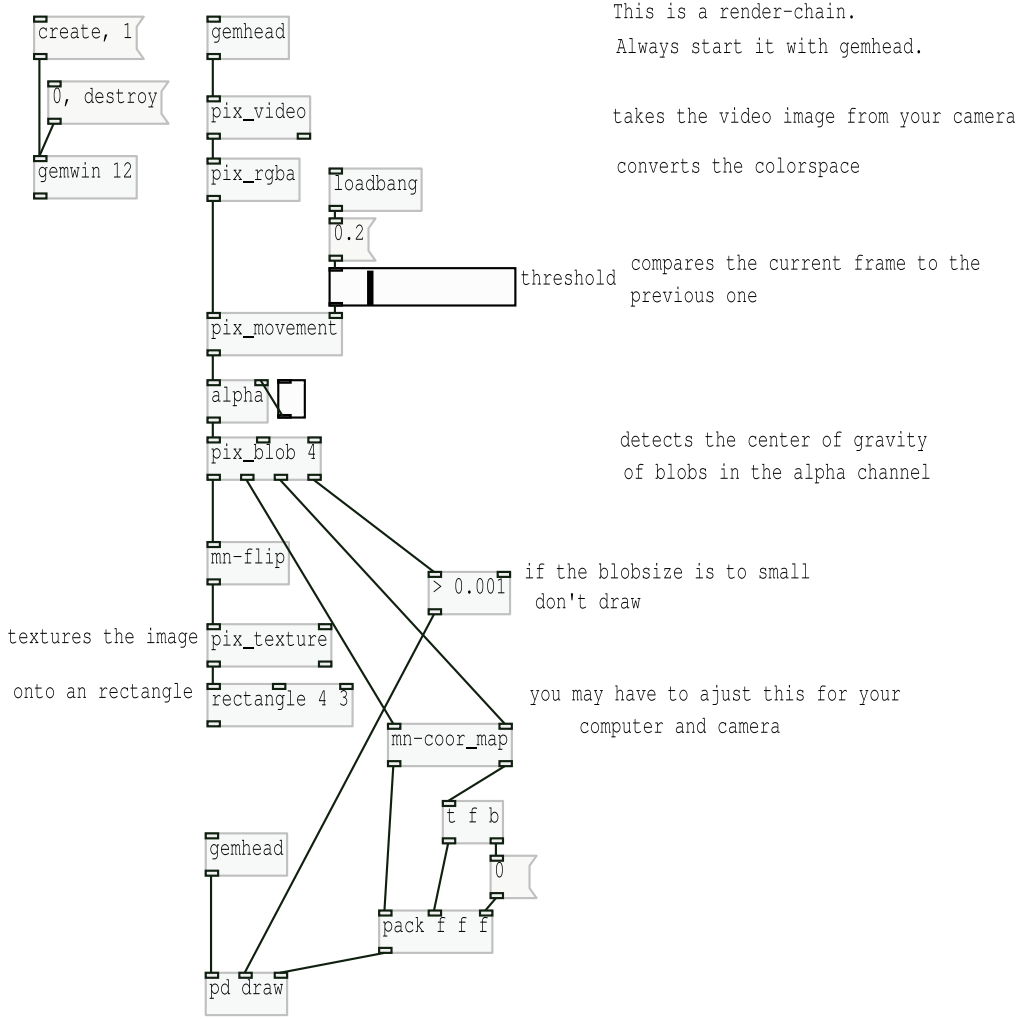
textures the video

onto an rectangle

this switches audio on
when the patch is loaded

9 Pure data + Gem
Draw a line following the movement

We can follow the movement by drawing a line
between the detected points.



This is a render-chain.
Always start it with gemhead.

takes the video image from your camera

converts the colorspace

compares the current frame to the
previous one

detects the center of gravity
of blobs in the alpha channel

if the blobsize is to small
don't draw

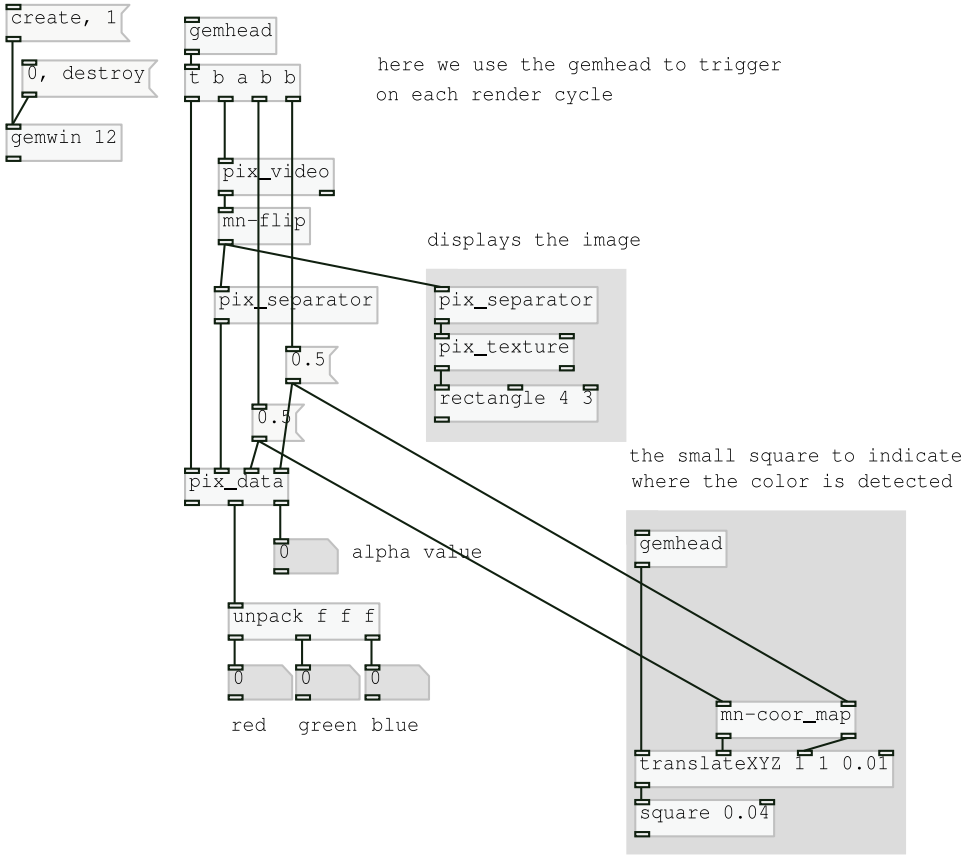
textures the image

onto an rectangle

you may have to ajust this for your
computer and camera

10 Pure data + Gem
check one Pixel for it's value

We can check one pixel for it's color and luminance like this:



Challenge:

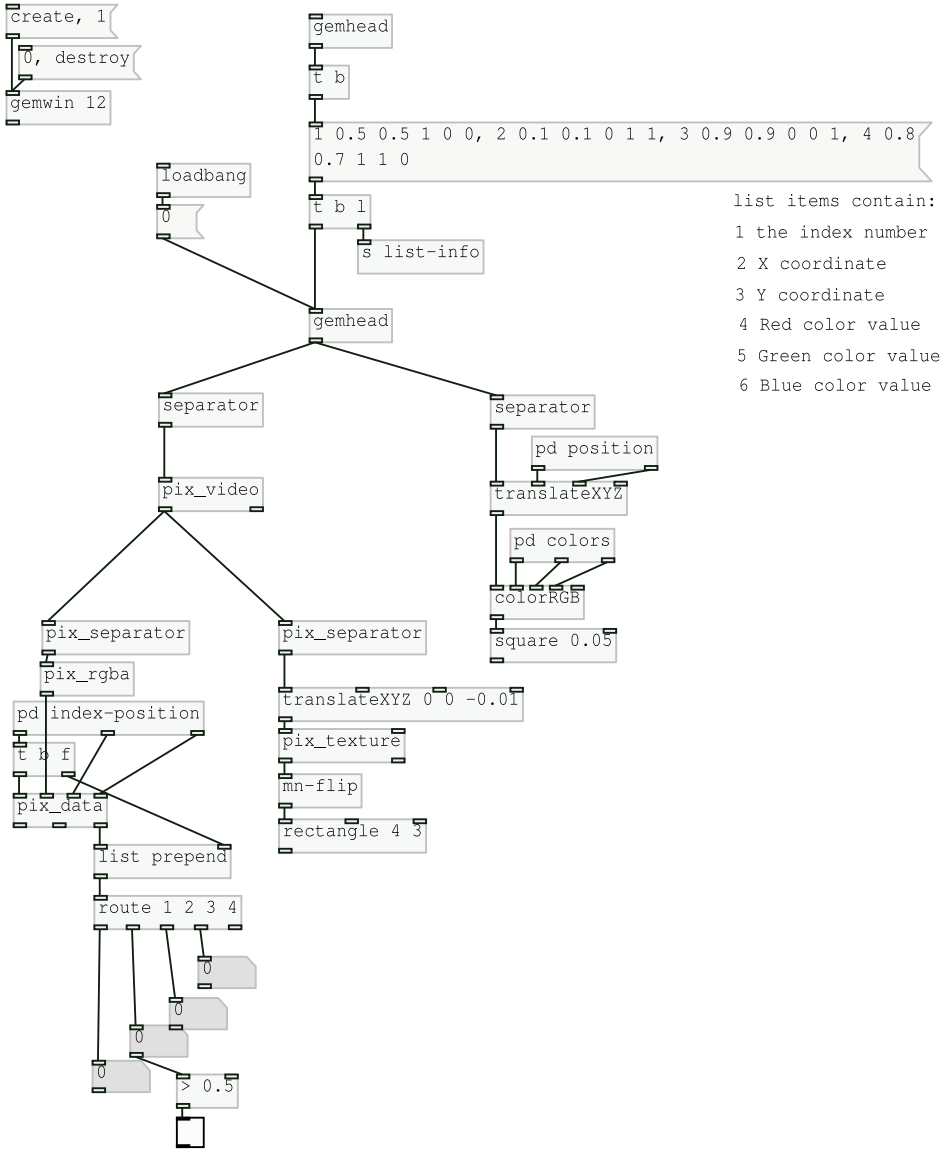
1 Use the values to output some sound

2 Use the color values and visualize them with colored dots

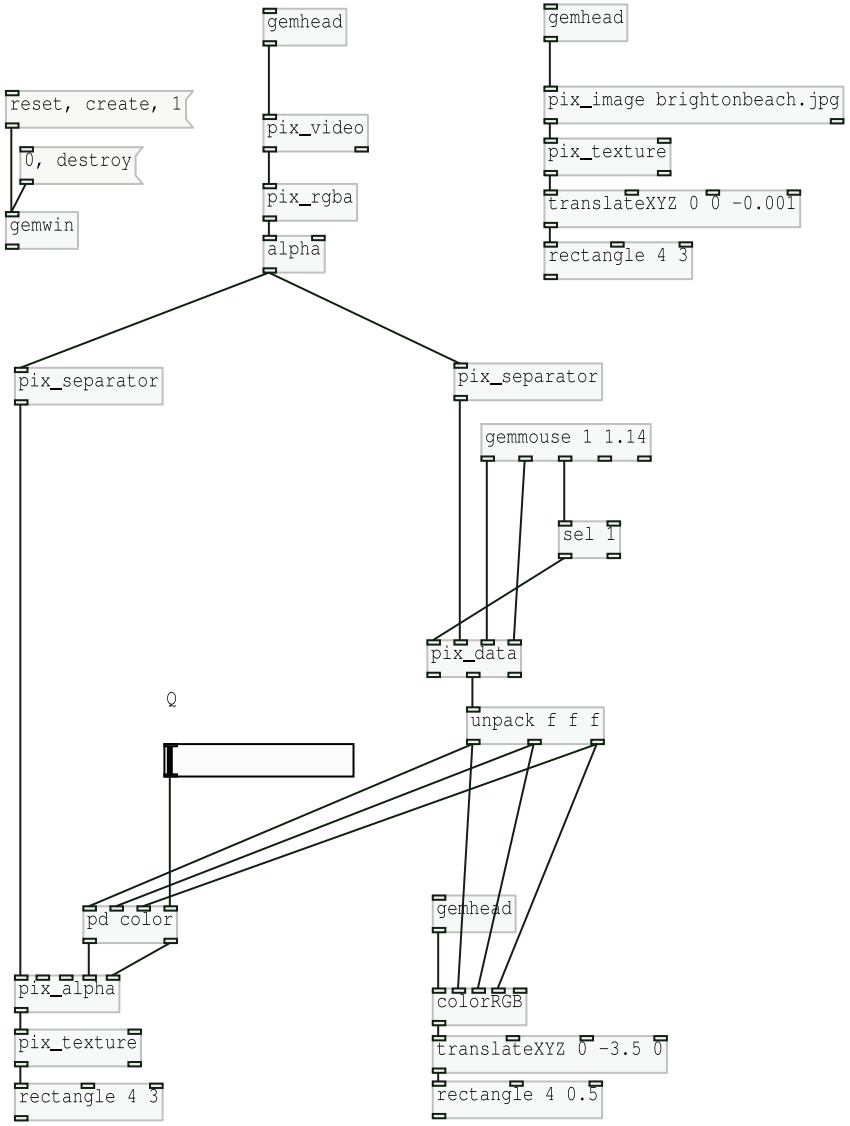
3 compare the pixels color to the average color in the image using pix_mean_color

11 Pure data + Gem
The double gemhead idiom

Let's see how to check the luminance for more than one spot

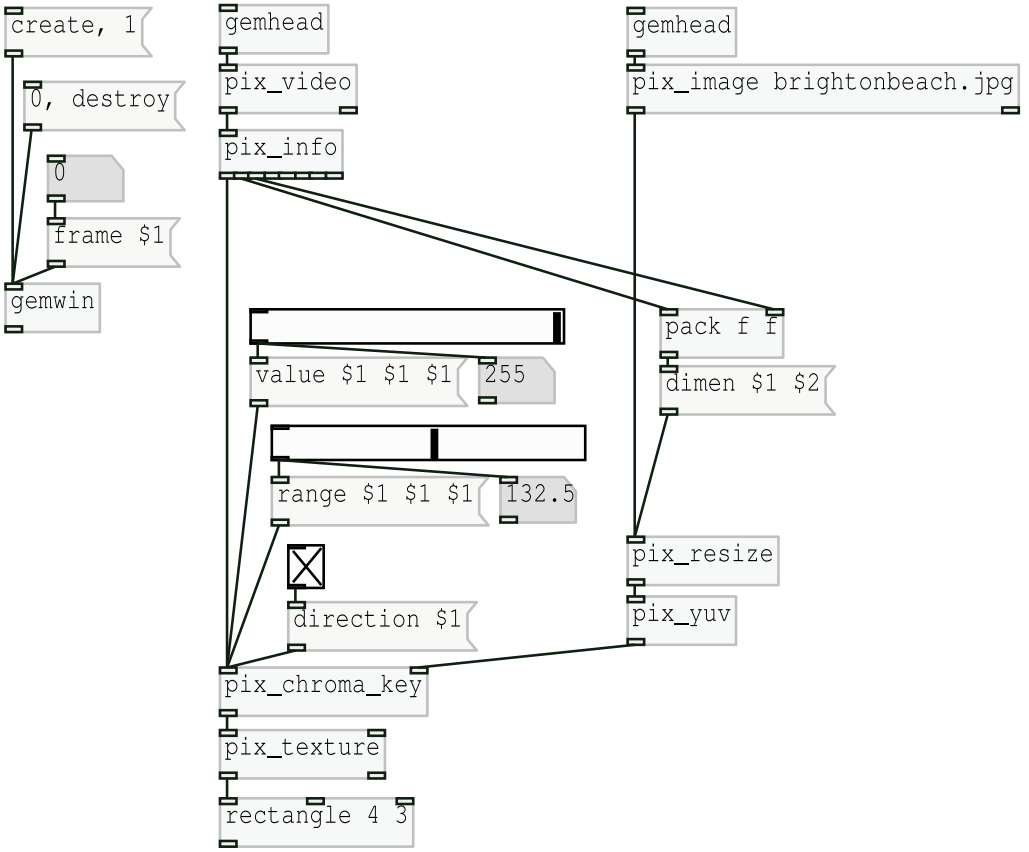


12 Pure data + Gem
Keying of a selected color



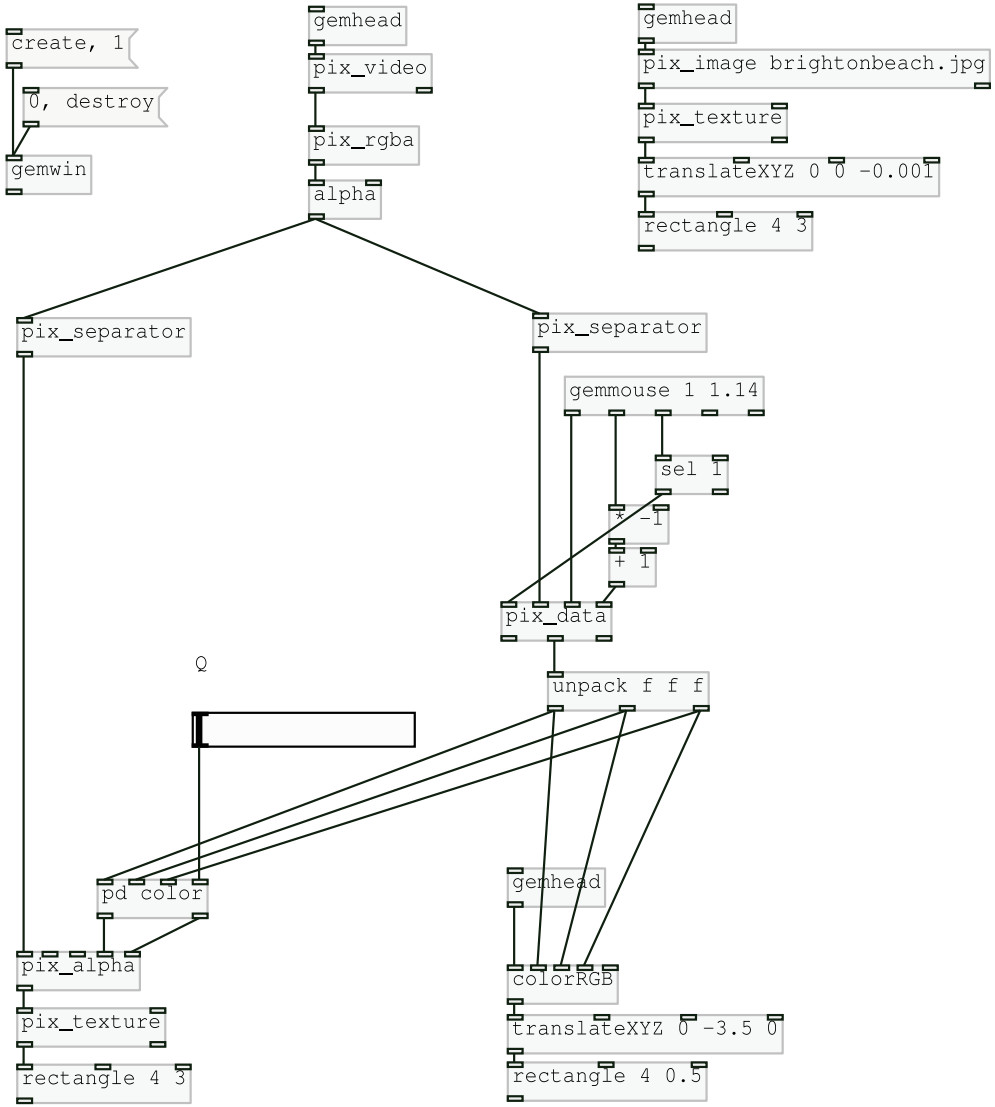
4a Pure data + Gem
Chroma Keying

Keying two images together is quite easy. This one is heavily inspired by the helppatch of pix_chroma_key.

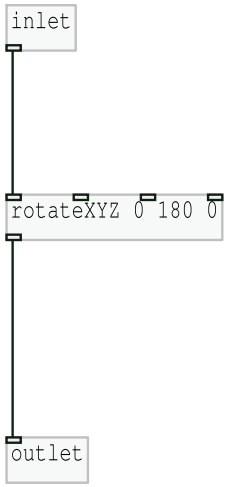


12b Pure data + Gem
Keying of a selected color

Click on the color in the Gem window which you want to key.
This Approach leads to less smooth edges.



nn-flip abstraction

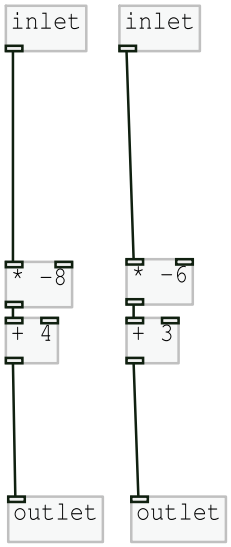


this is an abstraction to get the display mirrored on any system

Save this patch in such a way that the image appears mirrored on your screen.

Max Neupert, GMU - Bauhaus-University Weimar 2009

cool-map abstraction



in this abstraction we map the coordinates which we receive trough pix_blob to match the ones of the crosshair.

pix_blob's output has a range from 0 to 1 the rectangle, where our video is textured on is 8 units wide and 6 high.
point zero of the GEM's coordinate system is in the center

You might have to change the algebraic signs (+/-) depending on wether your webcam mirrors the image or not.

the multiplication expands the values to the new range
the addition shifts the point zero to the center.

color abstraction