

main()

Data input
Start of timer

image_rgb
image_gray*
temp_buf*
filter*
output*

edge_detect()

(no computations at
this stage)

rgbToGrayscale()

Convert **image_rgb**
into **image_gray**

Configure **filter** with
smoothing filter values

convolve2d()

Perform a 2D
convolution of
image_gray using
filter, with the result
stored in **output**

Configure **filter** with
vertical filter values

convolve2d()

Perform a 2D
convolution of **output**
using **filter**, with the
result stored in
image_gray

Configure **filter** with
horizontal filter values

convolve2d()

Perform a 2D
convolution of **output**
using **filter**, with the
result stored in
temp_buf

(no computations at
this stage)

combthreshold()

Set each position of
output to 255 or 0 if
the corresponding
positions in
image_gray and
temp_buf meet a
given threshold

(no computations in
this stage)

End of timer
Write **output** to file
Verify result with
checksum

Array sizes:

image_rgb: int[H][W * 3]
image_gray: int[H][W]
temp_buf: int[H][W]
filter: int[K][K]
output: int[H][W]

Where H is the image height, w
the width, and K the filter size

An asterisk (*) next to an array
indicates the array is modified in
the function

Right-directed arrows represent
function calls, and their args.

Left-directed arrows represent
function returns

Dotted lines represent a function
waiting for a call it made to
another function to be finished.