Find Corners using Harris Corner Detection

Description

Usage
image_harris(
  x,
  k = 0.06,
  sigma_d = 1,
  sigma_i = 2.5,
  threshold = 130,
  gaussian = c("fast Gaussian", "precise Gaussian", "no Gaussian"),
  gradient = c("central differences", "Sobel operator"),
  strategy = c("all corners", "sort all corners", "N corners", "distributed N corners"),
  Nselect = 1L,
  measure = c("Harris", "Shi-Tomasi", "Harmonic Mean"),
  Nscales = 1L,
  precision = c("quadratic approximation", "quartic interpolation", "no subpixel"),
  cells = 10L,
  verbose = FALSE
)

Arguments
x  an object of class magick-image or a greyscale matrix of image pixel values in the 0-255 range where values start at the top left corner.

k  Harris’ K parameter. Defaults to 0.06.

sigma_d  Gaussian standard deviation for derivation. Defaults to 1.

sigma_i  Gaussian standard deviation for integration. Defaults to 2.5.

threshold  threshold for eliminating low values. Defaults to 130.

gaussian  smoothing, either one of ’precise Gaussian’, ’fast Gaussian’ or ’no Gaussian’. Defaults to ’fast Gaussian’.

gradient  calculation of gradient, either one of ’central differences’ or ’Sobel operator’. Defaults to ’central differences’.

strategy  strategy for selecting the output corners, either one of ’all corners’, ’sort all corners’, ’N corners’, ’distributed N corners’. Defaults to ’all corners’.

Nselect  number of output corners. Defaults to 1.

measure  either one of ’Harris’, ’Shi-Tomasi’ or ’Harmonic Mean’. Defaults to ’Harris’.

Nscales  number of scales for filtering out corners. Defaults to 1.
image_harris

**precision**

Subpixel accuracy, either one of ‘no subpixel’, ‘quadratic approximation’, ‘quartic interpolation’. Defaults to ‘quadratic approximation’

**cells**

Regions for output corners (1x1, 2x2, ..., NxN). Defaults to 10.

**verbose**

Logical, indicating to show the trace of different substeps

**Value**

As list of the relevant points with the x/y locations as well as the strength. Note y values start at the top left corner of the image.

**Examples**

```r
library(magick)
path <- system.file(package = "image.CornerDetectionHarris",
  "extdata", "building.png")
x <- image_read(path)
pts <- image_harris(x)
pts

plt <- image_draw(x)
points(pts$x, pts$y, col = "red", pch = 20)
dev.off()
plt <- image_draw(x)
points(pts$x, pts$y,
  col = "red", pch = 20, cex = 5 * pts$strength / max(pts$strength))
dev.off()

## Or pass on a greyscale matrix starting at top left
mat <- image_data(x, channels = "gray")
mat <- as.integer(mat, transpose = FALSE)
mat <- drop(mat)
pts <- image_harris(mat)
plt <- image_draw(x)
points(pts$x, pts$y, col = "red", pch = 20)
dev.off()
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