Subject: Re: Mapping image into a polar-square coordinate
Posted by jschwab@gmail.com on Wed, 09 Jul 2008 19:43:58 GMT
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> yeah, but i dont know how to extract a rectangular matrix which rows
> are radius and columns are angles

Paolo's suggestion of bilinear is a good one.

The best thing to do is construct a polar coordinate system and then transform that into a rectangular system that is equivalent to your pixel indices.

Suppose there is a rectangular coordinate system, centered on the middle pixel of your 981 x 981 data. Then if we want to extract the annulus which is between 100 and 200 pixels from the center, we could do something like this.

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image: 981 x 981 (same as your ``data'' array)
new_image: 4096 x 10

;; first construct the equivalent polar coordinates

min_r = 100.0
max_r = 200.0

;; this is theta = [0, 2*pi)
new_th = rebin(dindgen(4096) / 4096d * (2d * !dpi), 4096, 10)

;; this is r = [r_min, r_max]
new_r = rebin(transpose((max_r - min_r) * dindgen(10) / 9d + min_r),
4096, 10)

;; now convert to rectangular coordinates
;; and shift such that the origin lies not at the center
;; but at image[0,0]

new_x = new_r * cos(new_th) + 490.0
new_y = new_r * sin(new_th) + 490.0

;; new_x and new_y are fractional pixel coordinates
;; use bilinear to extract the values

new_img = bilinear(image, new_x ,new_y)

Hope that helps,
Josiah