Subject: Re: Mean preserving interpolation (conservative interpolation)
Posted by DavidF[1] on Tue, 16 Oct 2012 16:52:39 GMT
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Brigitte writes:

> When I interpolate y=congrid(x,ny,/interp) an array, the mean of the original array (x) is different from the mean of the interpolated array (y). Is there a function or keyword to preserve the mean?

The keyword you are looking for is MINUS_ONE:

```
IDL> x = (Findgen(100)+1)*4
IDL> print, Mean(x)
     202.000
IDL> print, mean(congrid(x, 200, /minus_one))
     202.000
IDL> print, mean(congrid(x, 5250, /minus_one))
     202.000
IDL> print, mean(congrid(x, 5250, /interp, /minus_one))
     202.000
IDL> print, mean(congrid(x, 367, /interp, /minus_one))
     202.000
```

Cheers,

David

Subject: Re: Mean preserving interpolation (conservative interpolation)
Posted by wlandsman on Tue, 16 Oct 2012 17:14:24 GMT
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On Tuesday, October 16, 2012 12:52:39 PM UTC-4, Coyote wrote:
>
>
> The keyword you are looking for is MINUS_ONE:
>
>

While the /MINUS_ONE keyword works for your particular example, I don't believe it is a general solution. I'd suggest frebin.pro (http://idlastro.gsfc.nasa.gov/ftp/pro/image/frebin.pro) as a flux-conserving alternative to CONGRID.

```
IDL> x = randomn(seed,100)*10
IDL> y = congrid(x,367,/minus_one,/interp)
IDL> z = frebin(x,367)
IDL> print,mean(x),mean(y),mean(z)
```

-0.593289 -0.546786 -0.593280

Subject: Re: Mean preserving interpolation (conservative interpolation)
Posted by Brigitte on Wed, 17 Oct 2012 09:35:55 GMT
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Thank you both for the answer.
frebin does a good job!
Cheers,
Brigitte