Subject: Re: image data extraction
Posted by sterner on Fri, 03 Jun 1994 17:30:19 GMT
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landers@tsunami.dseg.ti.com (David Landers) writes:

> Finding image data along a line...

> This just picks points from the image. It doesn't do any image
> interpolation or anything like that. Just finds the closest x,y to the
> line.
   ... Text dropped ...

There is now an easy way to do this. Recent versions of IDL include
a function called INTERPOLATE which does linear, bilinear, or
trilinear interpolation depending on the dimension of the input array.

Let z be an array to extract a line from.
Let (ix1,iy1) and (ix2,iy2) be endpoints of the desired line.
Let n be the number of points desired along the line.

The 2-d indices into array z along the line are:

```
x = ix1 + (ix2-ix1)*findgen(n)/(n-1)
y = iy1 + (iy2-iy1)*findgen(n)/(n-1)
```

The desired values (bilinearly interpolated) along the line are now simply:

```
c = interpolate(z,x,y)
```

If you would like nearest neighbor interpolation do:

```
c2 = interpolate(z,round(x),round(y))
```

where ROUND is another fairly recent addition to IDL.

This also works if x and y trace a curve instead of a straight line.
You could use the mouse to draw a curve on an image and extract the
values along that curve.

Warning: INTERPOLATE has a keyword to do cubic interpolation.
It's easy to use, just add /cubic to the call.
However, don't assume this is better. Check it very carefully before
you rely on it. A number of people have reported problems with /cubic
in other routines (CONGRID, ROT). If the result of the cubic interp.
is carefully examined it will be found to have high frequency wiggles

in the values (with a period of roughly 20 some pixels for the case I just checked). As of V3.6 beta this problem still exists (for INTERPOLATE anyway). The default, bilinear, works very well.

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