Subject: Re: probability scale on 2D line plot?
Posted by davidf on Thu, 10 Dec 1998 08:00:00 GMT
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Peter Mason (p.mason@syd.dem.csiro.au) writes:

> Embarassed by my previous, useless post, I'll duel with the Send button
> again.

Funny. I thought I just *received* an article that started out
like this. I must be working too hard. :-(

Cheers,

David

P.S. Peter, I *always* learn something from your posts. Even
if it takes several days sometimes. Keep 'em coming, Mate. :-)

--
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Subject: Re: probability scale on 2D line plot?
Posted by Peter Mason on Thu, 10 Dec 1998 08:00:00 GMT
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Charlotte DeMott wrote:
> Does anyone know how to create a "probability axis" for a
> line plot? This is an axis that runs from nearly zero to
> nearly 1, that is stretched at each end, such that the
> cumulative distribution of a normal population appears as a
> straight line.

I think that you can use IDL's GAUSSINT() function to do this.
e.g., X = GAUSSINT((findgen(N)-(N-1.0)*0.5) / ((N-1.0)/(SD*2.0))) will
give you what you want over +/- SD standard deviations (N points
worth). You would then use such an X vector in your plot, instead of
just a straight findgen-style X vector.

Peter Mason

Subject: Re: probability scale on 2D line plot?
Posted by Peter Mason on Fri, 11 Dec 1998 08:00:00 GMT
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Embarassed by my previous, useless post, I'll duel with the Send button again.

I guess you're really after something similar to IDL's log scaling in functionality, but with the remapping done according to a cumulative normal distribution. You can't do this with a simple switch in the PLOT call (as with log scaling); you have to do it by steam power...

Say you have a vector DAT(N) that you want to plot stretched in this way. You also have the mean DAV and the standard deviation DSD of the underlying distribution. (Maybe you just calculate these from DAT.)
First you have to decide how much to stretch - how many standard deviations to cover. Say you pick 3.
The stretched data is: DAT1=GAUSSINT((DAT-DAV)/(3.0*DSD)).
Then you just use DAT1 instead of DAT in the plot call.

However, the plot's axis labels would now be "wrong". You could come right by doing something like this:

```
 NT=6      ;6 ticks, say
 TVAL=( FINDGEN(NT) * ((6*DSD)/(NT-1)) ) - 3*DSD ;over -3SD..3SD
 TVAL1=GAUSSINT( (TVAL-DAV)/(3.0*DSD) )  ;stretch them
```

Then in the plot call:

```
 PLOT, DAT1, ... YTICKS=NT-1, YTICKV=TVAL1, YTICKNAMES=STRTRIM(TVAL,2)
```

If you wanted "correct" DATA cursor readouts from your plot, you'd have to handle their *inverse* mapping.

Peter Mason