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Subject: Re: EXPAND.PRO - needed by CONTTW.PRO

Posted by [landsman](#) on Fri, 11 Sep 1992 17:56:00 GMT

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The EXPAND function given by Joe Zawadony will run faster and with less virtual memory problems if it uses the intrinsic INTERPOLATE function (introduced in V2.2.1). I include below a modified version (but without the keywords) that seems to give the same results. The keywords to account for missing data can be implemented in a straightforward way but I have not done so in this demo version.

-Wayne Landsman            [landsman@stars.gsfc.nasa.gov](mailto:landsman@stars.gsfc.nasa.gov)

pro EXPAND,a,nx,ny,result

```
;+
; NAME:
; EXPAND
; PURPOSE:
; Array magnification (CONGRID like except that this really works!)
; CATEGORY:
; Z4 - IMAGE PROCESSING
; CALLING SEQUENCE:
; EXPAND,A,NX,NY,RESULT
; INPUTS:
; A Array to be magnified
; NX Desired size of X Dimension
; NY Desired size of Y Dimension
; OUTPUTS:
; RESULT Magnified Floating point image of A array (NX by NY)
; RESTRICTIONS:
; A must be two Dimensional
; PROCEDURE:
; Bilinear interpolation.
; Not really fast if you have to swap memory (eg. NX*NY is a big number).
; OK Postscript users don't forget that postscript pixels are scaleable!
; MODIFICATION HISTORY:
; Aug 15, 1989 J. M. Zawodny, NASA/LaRC, MS 475, Hampton VA, 23665.
; Aug 26, 1992 JMZ, Added maxval and fillval keywords.
;     Demo version to show use of intrinsic INTERPOLATE function
;             W. Landsman   Hughes/STX
; Please send suggestions and bugreports to zawodny@arbd0.larc.nasa.gov
;-
s=size(a)
if(s(0) ne 2) then begin
  print,'EXPAND: *** array must be 2-Dimensional ***'
  retall ; This will completely terminate the MAIN program!!!
```

```
endif

; Get dimensions of the input array
ix = s(1)
iy = s(2)

; Calculate the new grid in terms of the old grid
ux = (ix-1.) * findgen(nx) / (nx-1.)
uy = (iy-1.) * findgen(ny) / (ny-1.)

dtype = s( s(0) + 2)
if dtype LE 3 then $
    result = interpolate( float(a), ux, uy, /GRID) $
else result = interpolate( a, ux, uy, /GRID)

return
end
```

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