
Subject: Patch to userlib/deriv.pro to add MAX_VALUE keyword

Posted by [rfinch](#) on Fri, 24 Dec 1993 17:22:08 GMT

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Following context diff, when run through patch, will add the MAX_VALUE keyword to the userlib function deriv.pro. However, I still believe it would be better if IDL had the fundamental notion of missing values built-in to their basic mathematics; IEEE NaN might be a good choice. If IDL understood NaN's, you wouldn't even need keywords for missing values or max_value (presuming that most usage of MAX_VALUE really is for missing values).

*** deriv.pro Fri Dec 24 09:19:35 1993

--- deriv.pro~ Fri Dec 24 09:20:03 1993

*** 1,6 ****

! Function Deriv, X, Y, max_value=max_value

;

; NAME:

; DERIV

--- 1,6 ----

! Function Deriv, X, Y

;

; NAME:

; DERIV

*** 13,20 ****

; Numerical analysis.

;

; CALLING SEQUENCE:

! ; Dy = Deriv(Y, max_value=mv) ;Dy(i)/di, point spacing = 1.

! ; Dy = Deriv(X, Y, max_value=mv) ;Dy/Dx, unequal point spacing.

;

; INPUTS:

; Y: Variable to be differentiated.

--- 13,20 ----

; Numerical analysis.

;

; CALLING SEQUENCE:

! ; Dy = Deriv(Y) ;Dy(i)/di, point spacing = 1.

! ; Dy = Deriv(X, Y) ;Dy/Dx, unequal point spacing.

;

; INPUTS:

; Y: Variable to be differentiated.

*** 22,30 ****

; spacing for Y (i.e., X(i) = i) is assumed.

;

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; OPTIONAL INPUT PARAMETERS:
! ;max_value: Maximum value; original values greater than this and
! ;           their neighbors will be restored to their original value,
! ;           not the first derivative.
;
;
; OUTPUTS:
; Returns the derivative.
--- 22,28 ----
;   spacing for Y (i.e., X(i) = i) is assumed.
;
;
; OPTIONAL INPUT PARAMETERS:
! ; As above.
;
;
; OUTPUTS:
; Returns the derivative.
*****
*** 51,78 ****
    n = n_elements(x)
    if n lt 3 then message, 'Parameters must have at least 3 points'

- count=0
  if n_params(0) ge 2 then begin
    if n ne n_elements(y) then message, 'Vectors must have same size'
-     IF KEYWORD_SET(max_value) THEN BEGIN
-       mv_ndx = where(y GT max_value OR $
-                   shift(y, -1) GT max_value OR $
-                   shift(y, +1) GT max_value, count)
-     ENDIF
    d = float(shift(y,-1) - shift(y,1))/(shift(x,-1) - shift(x,1))
    d(0) = (-3.0*y(0) + 4.0*y(1) - y(2))/(x(2)-x(0))
    d(n-1) = (3.*y(n-1) - 4.*y(n-2) + y(n-3))/(x(n-1)-x(n-3))
-     IF count GT 0 THEN d(mv_ndx) = y(mv_ndx)
    end else begin
-     IF KEYWORD_SET(max_value) THEN BEGIN
-       mv_ndx = where(x GT max_value OR $
-                   shift(x, -1) GT max_value OR $
-                   shift(x, +1) GT max_value, count)
-     ENDIF
    d = (shift(x,-1) - shift(x,1))/2.
    d(0) = (-3.0*x(0) + 4.0*x(1) - x(2))/2.
    d(n-1) = (3.*x(n-1) - 4.*x(n-2) + x(n-3))/2.
-     IF count GT 0 THEN d(mv_ndx) = x(mv_ndx)
    endelse
    return, d
  end
--- 49,63 ----
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Any opinions expressed are my own; they do not represent the DWR
