Subject: 'vectorizing functions'
Posted by leatherback on Tue, 06 Feb 2007 11:58:18 GMT
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Dear All,

I am working on a script to convert a whole series of x-y coordinates into path-descriptions:

- Distance between two points
- Angle compared to <0,1> vector
- Angle between consecutive steps

I -think- I have a function which calculates the angle between 2 vectors. However, as I have long lists of points (At the moment some 3 million, and growing with 100/hr) I would like to do this based on blocks of data, and use the IDL ability to do array-calculations.. I have written a buffer-reader for my data, which will allow me to read chunks of data from a file. I would like to process each chunk in one go, instead of one point at a time. Could somebody perhaps assist me in converting the functions I have written, and accept points [x,y], to functions that will operate on arrays [[x], [y]] of points?

Thanks!

The functions:

```
function calculate_length, vector

  length = sqrt(vector[0]^2 + vector[1]^2)
  return, length

end

;--------------------

function calculate_angle, vector1, vector2

  ; Length of the two vectors
  length1 = calculate_length(vector1)
  length2 = calculate_length(vector2)

  ;==> Before running check whether Cos_theta=0 is valid in all cases.
Prob. not! <==
  if ((length1 EQ 0) or (length2 EQ 0)) THEN begin

    Cos_theta = 0
```

```
  endif else begin
    Cos_theta =  (TRANSPOSE(vector1) # vector2)  / (length1 * length2)
  endelse
  Theta     =  ACOS(Cos_theta) * (180 / !pi)
  return, Theta
end
```