
Subject: Re: Plane fit

Posted by [MKatz843](#) on Fri, 23 Apr 2004 05:43:31 GMT

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> I was wondering if there is any function/routine to compute a 2
> dimensional fit (i.e. a surface) that fits a series of points spread
> in 3-dim space.

Here's what I use. My own home-cooked simple plane fit based on least squares. It couldn't be simpler. Well I suppose without all the keywords it could, but what fun is that?

```
; M. Katz 1/26/04
; IDL function to perform a least-squares fit a plane, based on
; Ax + By + C = z
;
;
; ABC = plane_fit(x, y, z, error=error)
;
function plane_fit, x, y, z, error=error, noerror=noerror,
noshow=noshow

tx2 = total(x^2)
ty2 = total(y^2)
txy = total(x*y)
tx = total(x)
ty = total(y)
N = n_elements(x)

A = [[tx2, txy, tx], $
     [txy, ty2, ty], $
     [tx, ty, N]]

b = [total(z*x), total(z*y), total(z)]

out = invert(a) # b

if not keyword_set(noshow) then begin
  print, 'Plane Fit: Ax + By + C = z'
  print, 'A = ', out(0)
  print, 'B = ', out(1)
  print, 'C = ', out(2)
endif

if not keyword_set(noerror) then begin
  error = stdev(out(0)*x + out(1)*y + out(2) - z)
  if not keyword_set(noshow) $
    then print, 's = ', error
endif
```

```
return, out ;--- [A,B,C]  
end
```

Unless you set the noerror keyword, the program also calculates the RMS error and returns it as a scalar in the error keyword. The noshow keyword suppresses printing of the A,B,C values to the screen.
