Subject: Re: How to do surface fit?
Posted by Evilio del Rio on Thu, 29 Jan 1998 08:00:00 GMT
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On Wed, 28 Jan 1998, Gang Chen wrote:

>> Use the KX keyword to SFIT, it will return an array of coefficients, in
>> your case:
>>
>> IDL> zfit = SFIT(z,2,KX=k)
>> IDL> help,k
>> COEFF FLOAT = Array[3, 3]
>>
>> They are calculated with the convention X= 0,...,NX and Y=0,...,NY
>> (so you must to make the needed conversion).
>
>
> HI Evilio,
>
> I really appreciate your help on this. It seems that it works the way I
> wanted. But I have another question: Since the default grids are set with
> X= 0,...,NX and Y=0,...,NY in the source code for SFIT, how can I do for a
> non-uniform grids (e.g., X=0, 1, 4, 5, 9, ..., and Y=3, 4, 7, 11, ..)?
> Do I have to resort to interpolation so that values at uniform grids can be
> distributed?
>
> Many thanks,
> Gang Chen == gang@cochise.biosci.arizona.edu
>

Humm... Well, in fact you could use multivarite linear fitting, this is
fine if you have low-degree polynimials. You should use the function

REGRESS

but you must prepare before the independent variables. Let's call u to the
REGRESS dependent variable (they call it Y in the doc) and v the set of
independient variables (X in the doc). The fit REGRESS does is:

u = const+a0*v0+a1*v1+...+an-1*vn-1

if you compare with your problem:

z = a+b*x+c*y+d*x*x+e*xy+f*y*y

you must set:
u <=> z
const <=> a

a0 <=> b, v0 <=> x
a1 <=> c, v1 <=> y
a2 <=> d, v2 <=> x*x
(etc...)

This is not strictly correct since the "independent" variables are not (x,
is strongly correlated with x^2, x*y, etc.) but it will work if your data
are not very abnormal. The correct procedure, however, should be an
improved SVDFIT so that it can accept multiple independent variables since
the values of "X" are only used to calculate the user-supplied function
FUNC (see IDL doc on SVDFIT and "Numerical Recipes in FORTRAN", ch. 15.4,
pag. 675).

Maybe we could suggest this change to RSI people.

Cheers,

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"Anywhere you choose,/ Anyway, you're gonna lose"- Mike Oldfield