Subject: Re: Assign data point to n-Dimensional grid
Posted by Kenneth P. Bowman on Fri, 22 Jun 2012 15:14:01 GMT
View Forum Message <> Reply to Message

In article <ada6c25c-b056-4578-8d10-f9fb2fa9694d@googlegroups.com>,
 antar3s86@gmail.com wrote:

> Hi
>
> I face a serious problem in the development of my algorithm.In principle it
> is very simple:
>
> I have a data point in a 9-dimensional parameter space (say,
> x1,x2,x3,y1,y2,y3,z1,z2,z3) with x,y,z being physical quantities with
> different units. Furthermore, I have an unequally spaced 9-dimensional
> reference grid and all i have to do is to compute which grid point is closest
> to my data point with respect to all 9 dimensions.
>
> I have to do this several billion times, so I really want to make sure to do
> it as fast as possible.
>
> Any help with that?
>
> cheers

Is your grid separable? That is, does the x-coordinate of
each grid point depend only on x? If it does, you can find
the index of each nearest neighbor independently of the others.

If your grids are regular, you should be able to compute the
nearest neighbor index. Something like this

```
  i = ROUND(nx*(x - xmin)/(xmax - xmin))
```

If your grids are not regular (not evenly spaced), use
VALUE_LOCATE to do a binary search.

If your grids are not separable, you have a much more difficult
problem.

Ken Bowman