Subject: Interpolation from irregular to regular grid
Posted by adisn123 on Tue, 08 Aug 2006 19:24:02 GMT
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Hi,

WHile reading a paper relavant to my project, I found one thing really questioning.

THe paper used an interpolation method to obtain a regular three-dimensional grid
from the irregular three -dimensional data set.

I wonder whether there is any advantages in reforming an irregular data grid to a regular grid.
Whatever the irregular data points are, aren't there the real data? If you change to a regular grid, then don't the data values slightly change?

That is,
my question will be
when, and why do we want to change from an irregular grid to a regular grid in 3D?

Subject: Re: Interpolation from irregular to regular grid
Posted by manodeep@gmail.com on Thu, 10 Aug 2006 05:23:36 GMT
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Well for one thing, its much easier to generate projections from a regular grid than from a
a set of N points in space. And you have to be careful while performing the gridding by making sure *some* quantity is conserved thereby determining the optimal grid size.

adisn123@yahoo.com wrote:
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Subject: Re: Interpolation from irregular to regular grid
Posted by James Kuyper on Thu, 10 Aug 2006 17:54:33 GMT
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The main reason is convenience. Writing routines to work with irregularly gridded data is very complicated and tricky. Routines for handling regularly gridded data are much easier to write, far more efficient, and correspondingly easier to find. The improved performance is especially noticeable in interpreted languages like IDL, where the kinds of loops you have to write to handle an irregular grid are very inefficient, and cannot be easily replaced with the much faster matrix operations.

Converting irregularly gridded data to a grid inherently involves loss of information, and introduction of extra, spurious data. Making

reasonable error estimates on the results of such an analysis can be very tricky. I'd avoid it, if you can, but in this case "if you can" is a big "if".