Subject: 2D interpolation with sparse data
Posted by Ken G on Tue, 22 May 2007 14:38:44 GMT
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Here's an interesting interpolation problem.

Suppose I have a coarsely sampled 2D dataset--an image. There are several ways to fill-in the missing data, including TRIGRID and TRI_SURF, etc. What I find though, is that these methods can introduce severe artifacts due to the nature of the triangulation.

This example figure here shows the problem clearly:
http://goldberg.lbl.gov/newsgroup/interpolation_problem.jpg [28k]

My original image has simple, horizontal bands with no vertical features. My sparse sampling is collected at striped angles, as you can see. I realize that these interpolations aren't 'wrong' per se: the way in which they are triangulated strongly affects the final result.

Short of re-writing my own triangulation routine, I am wondering if there is already a way that I can tell TRIANGULATE to prefer triangulation along the x-direction, for example, which in this case would solve the problem. Or if there is another built-in routine that might work better for me?

I have tried using various Fourier filtering ideas that didn't work out as well as I had hoped. I also tried rotating my data-set in various ways, triangulating, and then rotating back. So far, those ideas haven't worked either.

Any ideas?

Thanks,
Ken G