Subject: Re: match_2d
Posted by Jeremy Bailin on Wed, 29 Apr 2009 02:44:09 GMT
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On Apr 27, 3:06 pm, JDS <jdtsmith.nos...@yahoo.com> wrote:
>> I'm pretty sure there's a HIST_ND-based algorithm of doing this
>> similar toMATCH_2Dbut taking spherical trig into account, but I
>> don't have the patience to figure it out.
>
> That would be challenging for the whole sphere, since histogram can
> only evaluate monotonic coordinate fields. You can always first remap
> your coordinates using some projection which puts the ill-behaved
> parts (nominally, the poles) far away, and preserves distance
> locally. For example, if you have a small field (a degree or so) near
> the pole, this would be a nice way of solving the converging longitude
> lines issues. But generally? Sounds tough.
>
> JD

How about if it was done in 3D? Instead of 2D angular coordinates, use the 3D coordinates of the relevant points on the surface of a unit sphere, and then use HIST_ND to determine which 3D bin the points are in and build the algorithm analogously to MATCH_2D?

The main problem I see is that, for small bin sizes (ie. small desired angular separations), there's a lot of wasted memory storing the histogram in locations that don't lie on the surface of the sphere and therefore are necessarily zero. But maybe there's a way of enumerating the bins that do contain part of the surface - if so, then you could use that enumeration to map the 3D positions into a simple number that you can run HISTOGRAM on.

-Jeremy.