Nomination comments:

Inpaint\_nans fills a hole in matlab. (Yes, the pun was intentional.) But there

is indeed a niche that inpaint\_nans falls into.

The alternative to inpaint\_nans is griddata (interp1 can be used for the 1-d

problems) but griddata fails to extrapolate well. Griddata also has serious

problems when its data already lies on a grid, due to its use of a Delaunay

triangulation. The other serious problem with the use of griddata is the

triangulation itself. The shape of the hole to be filled can sometimes result

in triangles with a poor aspect ratio (long, thin triangles) which are in turn

poor for interpolation. In fact, Griddata can even leave interior points

uninterpolated (see the tests.)

A future plan for inpaint\_nans is to add an option that will use a locally

anisotropic membrane model. This will allow better modeling for certain

classes of wavy surfaces. I'm also highly tempted to remove method 5.

I've never really liked it, having put it in at the request of one user. It has

no valid theory behind it in the context of inpaint\_nans.

In the interest of openness, I'll also say what inpaint\_nans does not do. It

does not handle non-uniform grids. It is limited by the amount of memory

in the size of the arrays it can handle, although some of the methods were

explicitly provided to be more memory efficient than others. Inpaint\_nans

also makes heavy use of sparse matrices, so surprisingly large problems

are accessible.

Finally, while inpaint\_nans does work for 1-d problems, they are not my

target. Interp1 (with 'spline' as the method) is as accurate, and should be

faster in general.

John