# Subject: Re: Finding the closest value in an array...
Posted by Mark Hadfield on Tue, 30 Mar 2004 10:13:20 GMT

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Tim Robishaw wrote:
> Hi there.
>
> Seems like every few minutes I'm taking a scalar and trying to locate
> which value in an array it's closest to.  VALUE_LOCATE() finds the
> interval of a monotonic vector that the value lives in, so it's not
> quite what I'm looking for, but it's awfully close!  I end up just
> doing this:
>
> IDL> useless = min(abs(vector-value),minindx)
> IDL> closest = vector[minindx]
>
> I'm embarrassed to admit I don't know of any other way to do this.  Is
> there some slick way like VALUE_LOCATE() to do this?  I find it
> aesthetically unpleasant to have to set something to a useless value
> just to get at the corresponding index; however, I can't see any way
> to be clever about it. And it's pretty much to the point: I'd bet
> VALUE_LOCATE() is doing a lot more stuff behind the scenes than the
> simple two lines above (judging from the old Goddard library routine).
>
> I guess I'm surprised that I haven't found some canned routine for
> this (like in the Goddard library) given that I usually need to find
> closest values more often than intervals in which a value lives.
> -Tim.

My Motley library at

   http://www.dfanning.com/hadfield/idl/README.html
   http://www.dfanning.com/hadfield/idl56/README.html

has a routine called MGH_LOCATE which locates a one or more specified
values in the "index space" of a 1D array. The result is a floating
value, which you can then treat with FLOOR, CEIL or ROUND to get the
integer index immediately below, immediately above, or closest. There is
also a 2D counterpart called MGH_LOCATE2.

IDL> print, mgh_locate(findgen(11)^2, XOUT=30)
      5.45455
IDL> print, round(mgh_locate(findgen(11)^2, XOUT=30))
        5


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Mark Hadfield            "Ka puwaha te tai nei, Hoea tatou"

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