Subject: Re: array manipulation (TOTAL-ing or MEDIAN-ing) in uneven bins
Posted by Jeremy Bailin on Wed, 12 Dec 2012 22:03:51 GMT
View Forum Message <> Reply to Message

On 12/12/12 10:16 AM, havok2063@gmail.com wrote:
>
> I have several unrelated problems that I'm solving in the same efficient way (with loops). I'm trying to perform some array operation on an array, according to a list of (let's call them) uneven bins.
>
> I have an array, say d, of 146 elements. I have a separate array that represents uneven bins that I want to perform the operation on, like MEDIAN, or TOTAL. For example,
>
> ntot = [15,45,56,90,116,146]
>
> I want as output an array, of 6 elements, that contains the MEDIAN (or TOTAL) of array d according to the indices listed in ntot.
>
> So the 1st element would contain median(d[0:14],/even), the 2nd median(d[15:44],/even), etc....
>
> Or the same thing with total....total(d[0:14]), total(d[15:44]) , etc...
>
> Right now I'm looping over the number of elements in ntot to do this and I don't much care for loops.
>
> I don't think this is quite the same thing as the example given in the "Horror and Disgust of Histogram" article nor does this sound like something I can do with value_locate, although I'm not too familiar with value_locate.
>
> Any ideas on this? Thanks a lot.
>

As David says, this screams VALUE_LOCATE. And HISTOGRAM. They play very nicely together for this sort of problem!

First we need to label the bin for each element:

```
nelements = 146
binlabel = value_locate(ntot, lindgen(nelements))
```

Then use histogram to group the elements by bin label. Notice that the way you've defined ntot, elements 0 through 14 will be labelled "-1" by value_locate, so we start the histogram there:

```
nbin = n_elements(ntot)
hist = histogram(binlabel, min=-1, max=nbin-1, reverse_indices=ri)
```

And finally we do the usual loop through the reverse indices to

calculate the statistics:

```
medianbin = fltarr(nbin)
totbin = fltarr(nbin)
for i=0L,nbin-1 do if hist[i] gt 0 then begin
   these = ri[ri[i]:ri[i+1]-1]
   medianbin[i] = median(d[these], /even)
   totbin[i] = total(d[these])
endif
```

-Jeremy.
