
Subject: Re: Mode function for floating point arrays
Posted by [Rob Klooster](#) on Mon, 08 Jul 2013 08:24:08 GMT
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On second thought, it will be more efficient to treat the array as a sparse array and use `value_locate`, as in David's article:

http://www.idlcoyote.com/code_tips/valuelocate.html

```
sortedarray = array[Sort(array)]  
arrayenum = sortedarray[Uniq(sortedarray)]  
mappedarray = Value_Locate(arrayenum, array)  
hist = histogram(mappedarray, min=0)  
mode = arrayenum[where(hist eq max(hist))]
```

Maybe you can update the `uniq` function to accept a value for `epsilon` to decide whether two floating values are equal or not.

Regards,
Rob.

```
> Op maandag 8 juli 2013 10:01:16 UTC+2 schreef Rob Klooster het volgende:  
> Hi Matthew,  
>  
>  
>  
> Histogram also works on floating point arrays, you just need to set the binsize:  
>  
>  
>  
> hist = histogram(array, binsize=epsilon, locations=locations)  
>  
> mode = locations[where(hist eq max(hist))]  
>  
>  
>  
> Note that for small values of epsilon, the resulting histogram array can become very large.  
>  
>  
>  
> Regards,  
>  
> Rob.  
>  
>  
>
```



```

>> QUESTION:
>
>>
>
>> Here is my attempt. Can anyone make it better/faster?
>
>>
>
>>
>
>>
>
>> ;-----
>
>>
>
>> function mrmode, array, $
>
>>
>
>> EPSILON=epsilon
>
>>
>
>> compile_opt idl2
>
>>
>
>>
>
>> ;Number of points in ARRAY
>
>>
>
>> npts = n_elements(array)
>
>>
>
>>
>
>> ;Default value for EPSILON
>
>>
>

```

```

>> if n_elements(epsilon) eq 0 then epsilon = 1d-5
>
>>
>
>>
>
>>
>
>> ;[index, count] for keeping track of mode statistics
>
>>
>
>> mode_count = lonarr(2, npts)
>
>>
>
>>
>
>> ;Store first ~unique number. Count the how many ~unique numbers there are.
>
>>
>
>> mode_count[* ,0] = [0,1]
>
>>
>
>> nunique = 1
>
>>
>
>>
>
>> ;Step through all points in ARRAY
>
>>
>
>> for i = 1, npts - 1 do begin
>
>>
>
>>     match_found = 0
>
>>
>

```

```

>>
>
>>
>
>> ;Try to pair the new point with other mode candidates
>
>>
>
>> for j = 0, nunique - 1 do begin
>
>>
>
>> if array[i] gt array[mode_count[0,j]]-epsilon && $
>
>>
>
>> array[i] lt array[mode_count[0,j]]+epsilon $
>
>>
>
>> then begin
>
>>
>
>>
>
>>
>
>> mode_count[1,j] += 1
>
>>
>
>> match_found = 1
>
>>
>
>> endif
>
>>
>
>> endfor
>
>>
>
>>
>
>>
>

```

```

>> ;If no match was found, create a new mode candidate
>
>>
>
>> if match_found eq 0 then begin
>
>>
>
>> mode_count[*,nunique] = [i,1]
>
>>
>
>> nunique += 1
>
>>
>
>> endif
>
>>
>
>> endfor
>
>>
>
>>
>
>> ;Get the mode
>
>>
>
>> void = max(mode_count[1,*], iMode)
>
>>
>
>> mode = array[mode_count[0,iMode]]
>
>>
>
>>
>
>>
>
>> return, mode
>
>>
>

```

```

>> end
>
>>
>
>>
>
>>
>
>>
>
>>
>
>> ;-----
>
>>
>
>> ;Example Program (IDL> .r mrmode) //////////////////////////////////
>
>>
>
>> ;-----
>
>>
>
>> array = [1.2, 0.1, 3.3, 0.1, 2.0, 3.3, 4.8, 1.2, 0.1, 0.1, 6.7, 3.3]
>
>>
>
>> mode = MrMode(array)
>
>>
>
>> print, FORMAT='(%The mode is: %f)', mode
>
>>
>
>>
>
>>
>
>> end

```
