Subject: Mode function for floating point arrays
Posted by Matthew Argall on Fri, 05 Jul 2013 18:55:23 GMT
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PEAMBLE:
I need a function that finds the mode of a floating point array. I have read David Fanning's article about integer arrays

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

From this article about majority voting, it seems like "Hist_ND" works for floating point values, but I have no experience with the magic of HISTOGRAM

https://groups.google.com/forum/#!searchin/comp.lang.idl-pvw
ave/Mode$20of$20a$20floating$20point$20array/comp.lang.idl-p
vwave/YZK2ey-O5sE/9fLvx_AG2IAJ

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
```