Subject: Re: Displaying 3-D vector fields
Posted by Rick Towler on Thu, 14 Nov 2002 19:52:25 GMT
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> Okay I get it now Thank God ! I seem to be running into a memory
> problem in trying to display 18K vectors at a time though ? I don't
> get any indication of this, but it bombs after some number less than
> that number of vectors

18K... That's a lot, but hopefully not too many. You do realize that you will not be viewing these in real time. What are your system spex?

I used the test program below to generate an array of 20K vector objects. The array of objects and *one sample* of location and magnitude data required about 31MB. Displaying this dataset using XOBJVIEW required about 50MB. IDLDE required around 70MB total as reported by windows task manager.

So it seems like you should be able to do this on a relatively new PC given you manage your data. You probably can't just read in all of your data at once. I would read in a single sample (or time step or whatever you want to call it) at a time, plot it, then read in the next and plot, and so on. Something like:

```
nvectors=18000
nsamples=1000

;  create our data arrays
magnitudes=FLTARR(3,nvectors)
locations=FLTARR(3,nvectors)

;  create the vector objects
vectors = OBJARR(nvectors)
for n=0, nvectors-1 do vectors[n] = OBJ_NEW('vector', color=[255,0,0])

for n=0, nsamples-1 do begin

   ;  read in this samples data
   readf, 1, magnitudes
   readf, 2, locations

   ;  update the vectors
   for n=0, nvectors-1 do vectors[n] -> SetProperty, $
      MAGNITUDE=magnitudes[*,n], LOCATION=locations[*,n]

   ;  draw the scene
   oWindow -> Draw, oView
```

```
    ;  Grab the image in the window and write to file

endfor

;  clean up
obj_destroy, vectors
```

This is just a start. I have left a lot of detail out and the readf statements are wrong I'm sure but the general form is there.

This does bring up the question as to how you are going to 'view' this visualization. with 18k vectors you are not going to be able to view the entire scene and make anything out I don't think. And since you will not be able to view this in real time you won't be able to "fly around" in the vector field (on my well endowed PC it took maybe 1.5 minutes for XOBJVIEW to draw the 20k vector scene).

If you want to try to view the entire scene then you can't just rely on the length of the vector to present your information. One thought would be to modify the vector object so that it's color is representative of it's magnitude. Another option would be to script camera movement and do a fly thru/around of the vector field.

But I suppose we should concentrate on getting something on the screen first. :)

-Rick

```
start_mem=MEMORY(/current)

locations=FLTARR(3,20000)
magnitudes=RANDOMU(SYSTIME(/seconds),3,20000)

;  create a regular grid of vectors 200x100 in the xz plane
for n=0, 199 do locations[0,n*100:(n*100)+99]=FINDGEN(100)
for n=0, 199 do locations[2,n*100:(n*100)+99]=n

vectors = objarr(20000)

for n=0, 19999 do vectors[n] = OBJ_NEW('vector', LOCATION=locations[*,n], $
    MAGNITUDE=magnitudes(*,n), COLOR=[0,0,220])

;print,'Mem in MB:',(MEMORY(/highwater) - start_mem) / 1024. / 1024.

xobjview, vectors, /block
```

```
print,'Mem in MB:',(MEMORY(/highwater) - start_mem) / 1024. / 1024.

obj_destroy, vectors

end
```