Subject: Where is the error in this DCT-approach?
Posted by rogass on Tue, 27 Oct 2009 21:02:23 GMT
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Hi there,
I cant find the error in this little program to compute forward and backward the discrete cosine transform of an image. It seems to be also difficult to avoid the loops. Please help me. Here is the code:

```
function cr_dct,dat,mode,shiftit=shiftit

sz = size(dat,/dimensions)
dim = n_elements(sz)
mode = n_elements(mode) eq 0? -1 : -2>mode<2
shiftit = keyword_set(shiftit)? 1 : 0

case dim of

1 : begin

  end
2:  begin
   x = sz[0]
   y = sz[1]
   c = fltarr(sz)
   sqrtx  = sqrt(x)
   sqrty  = sqrt(y)
   sqrt2  = sqrt(2)
   sqrt2x  = sqrt2/sqrtx
   sqrt2y  = sqrt2/sqrty
   arr   = c
   indarr  = (((l=findgen(x>y)))#(2.*l+1))*!dtor
   cosxarr  = cos(indarr/(2.*x))
   cosyarr  = x eq y? cosxarr : cos(indarr/(2.*y))
   for u=0,x-1 do begin
    for v=0,y-1 do begin
     alphau = u eq 0 ? sqrtx : sqrt2x
     alphav = v eq 0 ? sqrty : sqrt2y
     tmparr = arr
     ;tmparr=dat*((r=rebin(cosxarr[u,*],x,y))) * $
      ; (x eq y? r: rebin(cosyarr[v,*],x,y))
     ;tmparr=(dat)[*] * ((r=(rebin(cosxarr[u,*],x,y))[*])) * $
      ; (x eq y? r : (rebin(cosxarr[v,*],x,y))[*])

      for i=0,x-1 do $
       for j=0,y-1 do $
        tmparr[i,j] = mode eq -1? $
            dat[i,j]*cosxarr[u,i]*cosyarr[v,j] : $
```

```
          alphau*alphav*dat[i,j]*cosxarr[u,i]*cosyarr[v,j]
     c[u,v] = mode eq -1? total(tmparr)*alphau*alphav : total(tmparr)

    endfor
   endfor
   c = shiftit? shift(c,long(x/2),long(y/2)) : c

  end

endcase
print,mode
return,c
end

pro test_dct
test=dist(16)
tvscl,congrid(test,128,128),0
tvscl,  congrid(cr_dct(cr_dct(test,-1,/shiftit),1,/shiftit),128,128) ,1
end
```

Thank you and best regards

CR
