Subject: Re: computation time for convolution
Posted by wlandsman on Fri, 11 Jul 2014 02:17:33 GMT
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Here's an interesting post addressing the question -- for what size kernel is the Fourier transform more efficient that direct convolution?

http://programmers.stackexchange.com/questions/171757/comput
ational-complexity-of-correlation-in-time-vs-multiplication- in-frequency-s

Given a kernel of width K and an image of width W, the Fourier transform method is more efficient than direct convolution when

K > sqrt(8*alog(W)/alog(2))

The author makes a lot of approximations. F0r example, I do think that David Stern was able to be more efficient than (K^2)*(W^2)in his implementation of direct convolution. For a 1024 x 1024 image the above formula says that Fourier transforms are preferred when K > 9, whereas my simple experiments suggest that K ~ 64 is more appropriate for IDL. --Wayne