
Subject: Avoiding Loops in IDL 8.2.2

Posted by [Nate Tellis](#) on Sat, 22 Jun 2013 00:04:31 GMT

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Hi all,

I have a series of 711x4096x3 arrays. I am searching for good fits to a model, which is an 11x19 array, using a reduced chi-square fit. As it is now, I step across, pixel by pixel, column by column, pane by pane, and perform the fit to a subimage centred at the loop indices (normalized to the value of the central pixel). The fit is simple element-wise subtraction and squaring of the sub images, followed by one call to 'total' on the sub-image:

$$\text{Chi}^2_{\text{red}} = 1/N_{\text{pixels}} * \text{Sum over each pixel}((\text{image} - \text{fit})^2/\text{error}^2)$$

(This is of course fast, as the -, ^2, /, and 'total' operations utilize the IDL thread pool)

I know I can speed this up by using operations that leverage multithreading. How can I go about avoiding these hated nested for loops? Performing the fits on all ~8,500,000 subimages without multithreading takes way too long - about 90 seconds on average.

Thank you for the help,
Nate
