
Subject: Re: Today's IDL Lesson

Posted by d.rowenhorst@gmail.co on Thu, 14 Aug 2008 19:27:21 GMT

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On Aug 14, 3:05 pm, David Fanning <n...@dfanning.com> wrote:

> Folks,
>
> A couple of weeks ago I was give some IDL code to,
> essentially, find blobs in a large image, do some
> processing on them, and return a result image. The
> images we want to work on are on the order of
> 8800 by 6800, pretty big.
>
> Naturally, the code contained FOR loops coming out
> the wazzoo and it was VERY slow. I don't know *how*
> slow because I turned the computer off when I noticed
> smoke coming out the back and I couldn't immediately
> locate the damn fire extinguisher.
>
> Because lousy code doesn't necessarily prevent you
> from writing scientific papers about your algorithm,
> I read the paper to get the gist and decided their
> algorithm was overly complicated and that I could do
> it a lot more simply (and in WAY fewer loops).
>
> So I code it up, using a much smaller image subset,
> and it was quicker than snot. When I thought I had
> all the kinks worked out of it, I decided to give'er
> a try on the larger images. It took about 48 minutes
> to run. Humm. Odd.
>
> But I couldn't immediately see where the problem was.
> I decided to play tennis instead of work on it anymore. :-)
>
> This morning I ran the PROFILER on the code, and saw it
> was spending most of its time in the WHERE function.
> I was using the WHERE to locate the indices of blobs I
> wanted to work with from the LABEL_REGION image. A couple
> of quick tests showed that as that as that image gets larger,
> the search time of WHERE goes up exponentially.
>
> "Humm, I wish LABEL_REGION just returned the indices like the
> HISTOGRAM function does," I thought.
>
> What!? After 20 years of working with IDL it finally sunk
> in. What I need is a HISTOGRAM!!!!
>
> Here is the bottom line. My program, which took 48 minutes

> to run yesterday, takes 10 *seconds* to run today.
>
> Sometimes you just gotta love IDL! :-)
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming (www.dfanning.com)
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Yeah - I learned a little bit ago that anytime that you are looping over a where function to pull out individual regions, a histogram with reverse_indices is going to going to get the job done much faster

Subject: Re: Today's IDL Lesson
Posted by [David Fanning](#) on Thu, 14 Aug 2008 20:27:53 GMT
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d.rowenhorst@gmail.com writes:

> Yeah - I learned a little bit ago that anytime that you are looping
> over a where function to pull out individual regions, a histogram with
> reverse_indices is going to going to get the job done much faster

I guess the lesson I learned is that I am pretty much never going to use LABEL_REGION without also using HISTOGRAM. In fact, because you have to also muck around with LABEL_REGION to get good results, I am going to write my own function that does all this all at once! Look for it soon in the Coyote Library. :-)

This would make a *perfect* object, and you don't even have to save the image. All you need is the REVERSE_INDICES from the Histogram and the size of the image and you can easily reconstitute the image if and when you need it.

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming (www.dfanning.com)

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Today's IDL Lesson
Posted by [David Fanning](#) on Tue, 19 Aug 2008 20:35:20 GMT
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David Fanning writes:

- > This would make a *perfect* object, and you
- > don't even have to save the image. All you need
- > is the REVERSE_INDICES from the Histogram and the
- > size of the image and you can easily reconstitute
- > the image if and when you need it.

As promised, I put a new object up on my web page today, named BLOB_ANALYZER to make it easier to do some of this blob processing I've been talking about. It is sort of a combination of LABEL_REGION, HISTOGRAM, FIND_BOUNDARY and FIT_ELLIPSE. It can not only get blob indices quickly, but it can perform various analysis functions on those blobs.

Having said that, this is version 0.9 I guess, as I didn't have time to incorporate some of the neat features Ben Tupper showed me in one of his similar programs. I did steal some of his best ideas, though, and I plan to incorporate more features if and when I need them. In particular, I do NOT store the actual image in my object, since I am working with large images, and I don't want to carry around this overhead. That restriction limits some of the things I can do. But if you need a feature, ask. Ben will be happy to point out how it can be done correctly. :-)

If you decide to give the Blob Analyzer a try, be sure you also download a new version of Fit_Ellipse. Previous versions of Fit_Ellipse were not thinking about memory usage, and that has become a priority for me now. So this was rewritten to have a MUCH smaller memory footprint (and a new, essential keyword).

http://www.dfanning.com/ip_tips/blobanalsis.html
http://www.dfanning.com/programs/blob_analyzer__define.pro
http://www.dfanning.com/programs/fit_ellipse.pro

Feedback is always appreciated. Just be sure to SHOUT LOUDLY. :-)

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

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