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Subject: Sacrilegious but genuine question

Posted by [Francis Burton](#) on Tue, 08 Jan 2002 16:26:13 GMT

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How easy would it be to obtain the functionality of IDL by using Python as the underlying language glue, supplemented by hard-coded modules for image, signal & file processing, graphical I/O etc.? It seems that it can already do that in some problem domains - e.g. Python Imaging Library.

Put another way: What are the advantages of IDL compared to such an open source framework?

Cheers,  
Francis

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Subject: Re: Sacrilegious but genuine question

Posted by [David Fanning](#) on Thu, 10 Jan 2002 14:01:32 GMT

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Francis Burton (F.Burton@biomed.gla.ac.uk) writes:

> I mentioned extensibility. What I would =really= like to be  
> able to do in IDL is have windows which allow much greater  
> interaction with plotted data. For instance, I have fairly  
> large (50,000-500,000 point) digitized signals which I would  
> like to 1) plot in an efficient manner (i.e. min-max for each  
> x pixel rather than drawing a line between every point) and  
> 2) create and overlay various mousable widgets which return  
> values to IDL code. For example, I'd like to be able to click  
> an arbitrary number of points under the trace to define a  
> baseline for subtraction - and be able to adjust the position  
> of already defined nodes, but constrain them to be monotonically  
> increasing in x. In this case, the widget (if that is the right  
> name for it) would return a list of (x,y) values. Then the IDL  
> code could do the subtraction and replot the adjusted trace.  
>  
> The trouble is that I have no idea how to do this in IDL. I'm  
> not even 100% sure that it is possible - at least, I believe  
> the effort required would be prohibitive.

While I agree that the effort required to do this for a novice IDL programmer might \*seem\* prohibitive, I'm pretty sure its not really that hard. At least it's no more prohibitive than most of the other projects many of us take on as a matter of course.

What you want to do is exactly what you purchased a programming language for. Yes, you have to know a fair amount about your tools to do it. But how is that any different from any other tool? (I'm thinking of that wonderful stained glass window handed down from my wife's ancestors that I assured my wife I would have mounted in a fancy cabinet several years ago now. I'm still learning how to sharpen my new wood plane!)

- > On the other hand,
- > a well designed framework of the type exemplified by PYDL
- > =could= make such extension quite easy.

It *\*could\**, but I seriously doubt that it *\*would\**.

Cheers,

David

P.S. Let's just say if too many more months go by, I'm going to have to hire a real carpenter. :-(

--

David W. Fanning, Ph.D.

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Subject: Re: Sacrilegious but genuine question

Posted by [James Kuyper](#) on Thu, 10 Jan 2002 15:27:12 GMT

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David Fanning wrote:

...

- > While I agree that the effort required to do this
- > for a novice IDL programmer might *\*seem\** prohibitive,
- > I'm pretty sure its not really that hard. At least
- > it's no more prohibitive than most of the other projects
- > many of us take on as a matter of course.
- >
- > What you want to do is exactly what you purchased
- > a programming language for. Yes, you have to know
- > a fair amount about your tools to do it. But how
- > is that any different from any other tool?

Basically, what he'd like is a program someone else has already written and debugged, that does what he'd like to do. That's not an unreasonable desire.

For instance, ENVI is an IDL package that handles a huge variety of tasks that are of interest to people working in image processing. Every time I find a new problem in that area, I usually have some idea how to write IDL code to implement it, but I hope that ENVI has some feature sufficiently similar that I don't have to implement it myself. So far, to get exactly what I want, I've usually had to do it myself, but sometimes ENVI does save me the effort.

It's not unreasonable for him to hope for a similar facility for signal processing. I'm afraid I don't know of any, but I'm willing to bet that there are some.

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Subject: Re: Sacrilegious but genuine question

Posted by [David Fanning](#) on Thu, 10 Jan 2002 15:59:50 GMT

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James Kuyper (kuyper@gscmail.gsfc.nasa.gov) writes:

> Basically, what he'd like is a program someone else has already written  
> and debugged, that does what he'd like to do. That's not an unreasonable  
> desire.

I don't disagree with this sentiment at all. I just think it is a questionable proposition when you purchase a programming \*language\*, whose purpose is to \*build\* things of this sort.

There are plenty of canned analysis software packages (ENVI is one). If they do what you want to do, you buy one. If they don't, you pretty much have to roll your own. I think that is more or less still the nature of science, although it's true that I have been out of school for a long time now. :-)

Cheers,

David

--

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Subject: Re: Sacrilegious but genuine question  
Posted by [Francis Burton](#) on Thu, 10 Jan 2002 18:46:53 GMT  
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David Fanning wrote:

>  
> James Kuyper (kuyper@gscmail.gsfc.nasa.gov) writes:  
>  
>> Basically, what he'd like is a program someone else has already written  
>> and debugged, that does what he'd like to do. That's not an unreasonable  
>> desire.  
>  
> I don't disagree with this sentiment at all. I just think  
> it is a questionable proposition when you purchase  
> a programming \*language\*, whose purpose is to \*build\*  
> things of this sort.  
>  
> There are plenty of canned analysis software packages  
> (ENVI is one). If they do what you want to do, you buy  
> one. If they don't, you pretty much have to roll your own.  
> I think that is more or less still the nature of science, although  
> it's true that I have been out of school for a long time now. :-)

Actually, what I would like most of all is software that makes it possible for me (or someone else) to write analysis programs for people who either don't program at all or who would be able to write a dozen or so lines of FORTRAN- or BASIC-like code to say what they want to do with their data (i.e. simple scripting).

Conventional programming languages are too low level to expect non-programmers to do anything useful.

Other analysis programs try to offer all the functionality that the designers think will be wanted. They end up doing 90% of what is required. The remaining 10% is sorely missed, but nothing can be done about that because the program is fixed, inextensible.

Microcal's Origin allows functionality to be extended with a inelegant scripting language which has a steep learning curve - too steep for most users. However, it does do 90% of what most of the users here want. But it is not possible to override or change the display methods, so plotting 500,000 points is slooow.

Maybe I should take a look at Insight (which I have just discovered)??

Francis

---

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Subject: Re: Sacrilegious but genuine question  
Posted by [David Fanning](#) on Thu, 10 Jan 2002 20:25:53 GMT  
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Francis Burton (F.Burton@biomed.gla.ac.uk) writes:

> Maybe I should take a look at Insight (which I have just  
> discovered)??

Uh, no, I don't think so. But that's up to you.

You could pay to have someone write the program you  
want in IDL. I really don't think it is a big project.  
Maybe a day's work. Could be less.

I know a guy in England who could do it for you  
ASAP. :-)

Cheers,

David

--

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Subject: Re: Sacrilegious but genuine question  
Posted by [Pavel A. Romashkin](#) on Thu, 10 Jan 2002 20:44:06 GMT  
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Well, IDL is not an application as Igor or Origin. It is a language.  
And, as such, the project you've described is of course totally possible  
to write.  
And it is a custom project, because I know of no commercial software  
that would contain the features you describe, for a simple reason - they  
are very specific.  
As far as Python and your project ... good luck. I am sure it is  
possible too. We'll be expecting a progress report in some 2-3 years :)  
Cheers,  
Pavel

Francis Burton wrote:

>  
> snip

>  
> The trouble is that I have no idea how to do this in IDL. I'm  
> not even 100% sure that it is possible - at least, I believe  
> the effort required would be prohibitive. On the other hand,  
> a well designed framework of the type exemplified by PYDL  
> =could= make such extension quite easy.

---

---

Subject: Re: Sacrilegious but genuine question  
Posted by [David Fanning](#) on Thu, 10 Jan 2002 21:07:53 GMT  
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Pavel A. Romashkin (pavel\_romashkin@hotmail.com) writes:

> As far as Python and your project ... good luck. I am sure it is  
> possible too. We'll be expecting a progress report in some 2-3 years :)

I don't know about you, but I think I'm getting more  
cynical with age. Good thing there is a steady stream  
of young hot-shots pouring out of our Universities  
who are too inexperienced to be cynical yet. :-)

Cheers,

David

P.S. Where the hell is that list of resolutions I wrote!?  
I was sure there was a "Be Patient" item on there. :-)

--

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Subject: Re: Sacrilegious but genuine question  
Posted by [Francis Burton](#) on Fri, 11 Jan 2002 14:18:21 GMT  
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David Fanning wrote:

>  
> Francis Burton (F.Burton@biomed.gla.ac.uk) writes:  
>  
>> Maybe I should take a look at Insight (which I have just  
>> discovered)??

>  
> Uh, no, I don't think so. But that's up to you.

Why do you say that? Is it flawed in some way?

> You could pay to have someone write the program you  
> want in IDL. I really don't think it is a big project.  
> Maybe a day's work. Could be less.

Do you mean the baseline subtraction? If so, I have done that already myself using C. The program also does a pretty good job of displaying long multichannel signal files, with scrolling and zooming. The problem is that this C program is not easily extended without it quickly becoming a mess. (It also allows very limited additional analyses via a kind of plug-in mechanism which spawns a separate process to work on the original data file.)

Or do you mean the kind of general purpose extensible data display/analysis program that I was talking about?

> I know a guy in England who could do it for you  
> ASAP. :-)

If you mean the latter, then by all means give me this guy's name!

Francis

---

Subject: Re: Sacrilegious but genuine question  
Posted by [Francis Burton](#) on Fri, 11 Jan 2002 14:30:05 GMT  
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"Pavel A. Romashkin" wrote:

>  
> Well, IDL is not an application as Igor or Origin. It is a language.  
> And, as such, the project you've described is of course totally possible  
> to write.  
> And it is a custom project, because I know of no commercial software  
> that would contain the features you describe, for a simple reason - they  
> are very specific.

Yes, but what I am looking for is very general! :-) I want something that allow very specific features to be added easily - both using an easy-to-understand scripting language that novice users can handle, and by providing a mechanism or framework that facilitates the addition of external modules (coded in the same language would be nice). What I

personally =don't= want to have to do is develop the core system supporting this extensibility if someone has already done it.

> As far as Python and your project ... good luck. I am sure it is  
> possible too. We'll be expecting a progress report in some 2-3 years :)

I didn't promise I'd take it on. :-) I'm still at the stage of looking around to see what has already been done (hence my original question).

Francis

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Subject: Re: Sacrilegious but genuine question  
Posted by [David Fanning](#) on Fri, 11 Jan 2002 15:06:48 GMT  
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Francis Burton (F.Burton@biomed.gla.ac.uk) writes:

> Why do you say that? Is it flawed in some way?

"Flawed" wasn't the word I had in mind, but the word I was thinking about did start with an "F". :-)

In any case, Insight has been dropped by the fine folks at RSI in the latest versions of IDL.

>> You could pay to have someone write the program you  
>> want in IDL. I really don't think it is a big project.  
>> Maybe a day's work. Could be less.  
>  
> Do you mean the baseline subtraction? If so, I have done  
> that already myself using C. The program also does a pretty  
> good job of displaying long multichannel signal files, with  
> scrolling and zooming. The problem is that this C program is  
> not easily extended without it quickly becoming a mess.

I meant an IDL program that allowed you to display data the way you want to, without everything "quickly becoming a mess".

> Or do you mean the kind of general purpose extensible data  
> display/analysis program that I was talking about?

I'm afraid I assumed you were talking about IDL when you mentioned this. :-)

> If you mean the latter, then by all means give me this guy's  
> name!



I'll have him contact you.

Best Regards,

David

--

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---

Subject: Re: Sacrilegious but genuine question

Posted by [Francis Burton](#) on Fri, 11 Jan 2002 15:31:19 GMT

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David Fanning wrote:

- > "Flawed" wasn't the word I had in mind, but the
- > word I was thinking about did start with an "F". :-)
- >
- > In any case, Insight has been dropped by the fine
- > folks at RSI in the latest versions of IDL.

Seriously, I'm interested to know why you think it's no good.  
Did RSI drop it for the same reason?

- > I meant an IDL program that allowed you to display
- > data the way you want to, without everything "quickly
- > becoming a mess".

Oh, alright. I think I should have a go at that myself -  
make it my first IDL project.

- >> Or do you mean the kind of general purpose extensible data
- >> display/analysis program that I was talking about?
- >
- > I'm afraid I assumed you were talking about IDL when
- > you mentioned this. :-)

"But IDL is a language, not an application."

Patience David - I'm learning! :-P

- >> If you mean the latter, then by all means give me this guy's
- >> name!

>  
> I'll have him contact you.

It would be good to have a chat if he's into that. If he's only interested in my limited grant money, then it might be better to leave it for the moment. :-) But thanks for the offer.

Francis

---

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Subject: Re: Sacrilegious but genuine question  
Posted by [David Fanning](#) on Fri, 11 Jan 2002 16:26:36 GMT  
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Francis Burton (F.Burton@biomed.gla.ac.uk) writes:

> Seriously, I'm interested to know why you think it's no good.  
> Did RSI drop it for the same reason?

The official word is that IDL dropped Insight because it could not be made compatible with the Y2K problem. I, personally, take everything RSI says at face value, so I believe them. :-)

Insight lives on, though, in the form of Live Tools. But I'm afraid these don't meet your requirements for extensibility either, as RSI does not make the source code for these tools available. (Presumably they are too difficult to modify, even to solve time/date problems.) My biggest problem with these tools is that they do 90% of what I want (possibly), but it is that other 10% that I desperately need.

As you are discovering, this is probably true of most, if not all, applications. That is why a programming language is preferable to an application for most scientists. When you can combine a program (e.g., ENVI) with a programming language, you may have the best of all possible worlds. And there is a LOT of IDL code out there. For example, I think my MPI\_PLOT program would probably be quite easy to modify for your purposes. You would have a very nice, interactive program that displays data exactly the way you want it to, and you could extend it easily.

>> I meant an IDL program that allowed you to display  
>> data the way you want to, without everything "quickly

>> becoming a mess".  
>  
> Oh, alright. I think I should have a go at that myself -  
> make it my first IDL project.

It would be a perfect first project, I think.

> "But IDL is a language, not an application."

Yes, but a high-level language that \*builds\* applications.  
That is the key, I think.

> Patience David - I'm learning! :-P

Me, too. :-)

Cheers,

David

--

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Subject: Re: Sacrilegious but genuine question  
Posted by [Francis Burton](#) on Fri, 11 Jan 2002 17:19:50 GMT  
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David Fanning wrote:

>> Seriously, I'm interested to know why you think it's no good.  
>> Did RSI drop it for the same reason?  
>  
> [...]  
>  
> Insight lives on, though, in the form of Live Tools.  
> But I'm afraid these don't meet your requirements for  
> extensibility either, as RSI does not make the source  
> code for these tools available. (Presumably they are  
> too difficult to modify, even to solve time/date  
> problems.) My biggest problem with these tools is  
> that they do 90% of what I want (possibly), but it  
> is that other 10% that I desperately need.

This goes to show how hard it is to get this kind of thing right!

According to the "Using Insight" manual, Insight is written in IDL. That suggests to me that the task of creating the general purpose extensible data display and analysis program that I am looking for is not particularly easy using IDL - otherwise wouldn't RSI have done this already? Or perhaps the market for such a program is really much smaller than I imagine.

- > As you are discovering, this is probably true of
- > most, if not all, applications. That is why a programming
- > language is preferable to an application for most
- > scientists. When you can combine a program (e.g., ENVI)
- > with a programming language, you may have the best of
- > all possible worlds.

Bingo! "ENVI boasts a fully-accessible underlying language, the Interactive Data Language (IDL)." This is exactly what I want, except tailored more to analyzing arrays of data than images - with all the power of IDL of course.

Pavel Romashkin mentioned Igor. I was under the impression that this was available only for the Mac, but having checked their website I see they also support a Windows version. This looks fairly close to my "holy grail". It's a pity they don't do Unix too. It might even be a good model for an open source effort.

- > And there is a LOT of IDL code
- > out there. For example, I think my MPI\_PLOT program
- > would probably be quite easy to modify for your
- > purposes. You would have a very nice, interactive
- > program that displays data exactly the way you want
- > it to, and you could extend it easily.

I will certainly take a look at MPI\_PLOT.

Thanks for another illuminating reply!

Francis

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Subject: Re: Sacrilegious but genuine question  
Posted by [Pavel A. Romashkin](#) on Fri, 11 Jan 2002 19:43:21 GMT  
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If you have IDL, try it. There are a lot of array displaying routines out there. And they are all open source (despite some being cleverly disguised as .sav files :). So you can easily add your own functionality.

Cheers,  
Pavel

P.S. David, for nothing better to do (I can't seem to make progress on the paper I am supposed to write), I just wrote a direct graphics object version of DISPLAY. You wouldn't believe that for all functionality of DG (well, most frequently used, anyway) the code is just 150 lines! Lets just say (tm) that after a peak of the code complexity on one's learning curve there is that ditch where you get the same functionality with much less code. I am trying to reach perfection now where all will be done with 10 lines. What's the limit? No code at all and everything works?

Francis Burton wrote:

>  
> Yes, but what I am looking for is very general! :-) I want something  
> that allow very specific features to be added easily - both using an  
> easy-to-understand scripting language that novice users can handle,  
> and by providing a mechanism or framework that facilitates the addition  
> of external modules (coded in the same language would be nice). What I  
> personally =don't= want to have to do is develop the core system  
> supporting this extensibility if someone has already done it.

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Subject: Re: Sacrilegious but genuine question  
Posted by [David Fanning](#) on Fri, 11 Jan 2002 20:01:59 GMT  
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Pavel A. Romashkin (pavel\_romashkin@hotmail.com) writes:

> What's the limit? No code at all and everything works?

I've heard that if budgetary concerns are not limiting,  
dialing a handful of numbers on your telephone works.  
Or, you can wait for version 6.0 of the software. I'm  
sure this is what RSI/Kodak have in mind. :-)

Cheers,

David

--

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Subject: Re: Sacrilegious but genuine question  
Posted by [Pavel A. Romashkin](#) on Fri, 11 Jan 2002 20:10:51 GMT  
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David Fanning wrote:

>

> I've heard that if budgetary concerns are not limiting,  
> dialing a handful of numbers on your telephone works.  
> Or, you can wait for version 6.0 of the software. I'm  
> sure this is what RSI/Kodak have in mind. :-)

Should the above be rephrased as

if budgetary concerns are not limiting,  
you can wait for version 6.0 of the software. I'm  
sure this is what RSI/Kodak have in mind. :-)

I am afraid I am no longer waiting for 6. 5.5 is my last one :(

Pavel

---