Subject: PostScript and IDL,
Posted by root on Tue, 26 May 1998 07:00:00 GMT
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Hi, I'm having problems with PostScript generated by IDL_5.1 on a Linux system -- I expect the problem to be general, though.

In principle, I'd like to use the Live_tools and other procedures (like Insight) that allows easy printing of plots already on screen.

The generated PostScript is, however, rather useless since even the simplest plot generates very large PostScript files. The problem seems to be that the screen buffer is simply copied, rather than redrawing the plot to the printer device. A very large bitmap is therefore written instead of a few PostScript primitives.

A sad consequence of this is also, that PostScript tools (like PSfrags for LaTeX) won't work.

I wonder, if there is a way to redraw a view generated by a procedure like live_plot to a direct graphics device? Other suggestions? Any help is appreciated.

Cheers, Lars
---
larsh@magnet.drcmr.dk

Subject: Re: PostScript and IDL,
Posted by woodford on Wed, 27 May 1998 07:00:00 GMT
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In article <6kgmk7$a3r$1@ratatosk.uio.no>, steinhh@ulrik.uio.no (Stein Vidar Hagfors Haugan) wrote:

> In my opinion, the PostScript output from object graphics
> is so lame (both in quality and file size) that it is
> endangering the whole idea of using object graphics for
> anything that you may at some point in time want to
> publish on paper.

I completely agree. I am a Mac Matlab user who is slowly migrating to IDL, in part because of IDL's support of single-precision floating point and in part because of Mathworks' decision to discontinue development of Matlab for the Mac. The primary reason that I am moving slowly is IDL's poor support for postscript output. Want postscript output from Matlab? Set up your figure as you want it, then hit command-s. Want postscript output from IDL? You can jump through hoops with direct graphics, or give

up all hope with object graphics.

Paul

Subject: Re: PostScript and IDL
Posted by Mike Schienle on Wed, 27 May 1998 07:00:00 GMT
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Mirko Vukovic (mirko_vukovic@notes.mrc.sony.com) writes:

> > Dick and I have been kicking around the idea of writing a class
> > library of direct graphics objects that we could offer for
> > sale.
>
> No, NO, NOooo!
>
> Not for sale. Give it away freely, let it go forth and multiply,
> and then write books and give lectures for it. You will make some
> money, but will be revered.

This is actually my idea too. I would much rather be revered
than rich. But my wife points out that our retirement program
seems to be carting the kids to all manner of athletic endeavors
in hopes that one of them turns out to be a professional athlete. :-(

My hopes are pinned on the youngest, after he twice scored 6 goals
in a game in a soccer tournament this weekend. :-)

I'm sure Mirko was responding in jest, but it brings up a point that may be missed by some folks.

The reality of the situation is that giving away things for free leads to ... giving away more things for free. I maintain the FAQ for this newsgroup and nearly every week I receive private email asking to help solve a problem with IDL. Not once has a free solution I've offered turned into something tangible, nor do I expect it to. I'm not complaining, just pointing out the reality. David Fanning routinely

offers applications to the group that I'm sure have taken him several hours, if not days, to create. It's unfortunate, but our society and spouses/family require some modicum of income to provide support and maintenance, not unlike software.

Personally, I would love to see David Fanning put a price tag on his PS_Form program, as well as several others. I'd send him a check for PS_Form without hesitation. If our user community could commit to things like this, I'm convinced there would be a hell of a lot more programs available for IDL and PV-WAVE and we wouldn't have to reinvent so many wheels. When I ask for changes to a program from David, there is a hesitation about asking for something which I've not invested any time or money in, and I suspect others feel similarly. Consequently, I'll make the changes myself and roll them back into any updates as they come along.

Any other thoughts along these lines? And yes, I do have an ulterior motive.

Mike Schienle

Subject: Re: PostScript and IDL,
Posted by Struan Gray on Wed, 27 May 1998 07:00:00 GMT
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Stein Vidar Hagfors Haugan, steinhh@ulrik.uio.no writes:

> RSI are continually trying to judge what compromizes to make
> based on input from us - so please make your voice heard!

A quick fix: make a routine that takes a scene and saves it in one of the standard 3D file formats (it would save me some work if RSI chose Quickdraw3D). Then use another program for presentation rendering and high-quality printing. It might not make the unix crowd happy but will be second nature to PC and MAC users who already use Photoshop, Illustrator, Igor etc etc to print IDL data they want to look good.

Struan

Subject: Re: PostScript and IDL,
Posted by thompson on Thu, 28 May 1998 07:00:00 GMT
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davidf@dfanning.com (David Fanning) writes:

> Hi Folks,

> It seems this discussion has pricked a number of sympathetic
> ears at RSI. But the developers who have to make the
> decisions need help from us as to what we really want.
> Here is how one developer framed the problem for me:

> The big issue for us is what tradeoffs are users willing
> to make in order to get scalable PostScript output. They
> will have to give up speed/memory/filesize or WYSIWYG to
> get the type of PS they are looking for.
>
> What sort of rendering would you be willing to give up to get
> scalable/embedded EPS? Would you will willing to give up
> smooth shading and lights? How about zbuffering and/or
> textures? Would you consider a mixed mode rendering where
> individual views are rendered as bitmaps or raw PS depending
> on their contents? How about if a scene were rendered as all
> bitmap or all PS depending on the objects in the scene? How
> about a device which rendered only what is possible with
> PS (i.e. some objects would disappear completely)?

> These are the real issues we are struggling with right now...
> Any input you have would be helpful.

> Immediately after a new release is when the big discussions
> about what to do next go on. There is a lot of horse trading
> between marketing and the developers over what is needed and
> what is possible in the given time frame. This is absolutely
> the time when users can have the most influence over what happens
> next. If you have ideas about this or anything else you like/dislike
> about IDL, this would be a good time to get those fingers
> working. I should think anyone at support@rsinc.com would
> be happy to pass your comments along to the appropriate
> people.

> Cheers,

> David

> ---
> David Fanning, Ph.D.
> Fanning Software Consulting
> E-Mail: davidf@dfanning.com
> Phone: 970-221-0438
> Coyote's Guide to IDL Programming: http://www.dfanning.com/

This whole discussion is really scaring me. We're still using IDL/v4, and I haven't tried to play yet with object graphics, so I really don't know what it's like compared to direct graphics. However, I certainly wouldn't want to give up any of the capabilities that we currently have with direct graphics. In regards to PostScript, this would be:

1. The ability to use the complete resolution capabilities of the printer. This is best achieved with a combination of line graphics, rastered graphics with scalable pixels, and font-driven graphics. WYSIWYG of the strictest sense doesn't sound like a very good goal to me, since obviously a PostScript plot should be much higher quality than what you see on the screen.

2. The ability to produce encapsulated PostScript plots that can be dynamically resized and incorporated into documents (e.g. LaTeX).

3. Since we often mail PostScript files, or put them on the Web, size is a very important factor. I wouldn't want to see PostScript files dramatically increase in size.

I suppose there are types of graphics that fall into grey areas between these different concerns, particularly in the area of 3D rendering. For example, SHADE_SURF must be a difficult routine to implement in PostScript because it's something like an image, but the "pixels" are trapezoidal. I don't know if PostScript can handle that in a direct sense, or some kind of mapping to a finer grid needs to be done. I suspect the latter, because SHADE_SURF,DIST(10) generates a much larger PostScript file than TVSCL,DIST(10). There must be trade-offs in that sort of 3D rendering.

However, 3D rendering hasn't been of tremendous importance to me, except in special cases. My concern is with 2D rendering. Whatever are the object-oriented equivalent of PLOT (etc.) and TVSCL should not give up anything in efficiency in creating PostScript files.

William Thompson

Subject: Re: PostScript and IDL,
Posted by wmc on Thu, 28 May 1998 07:00:00 GMT
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davidf@dfanning.com (David Fanning) writes:
> Here is how one developer framed the problem for me:
>
> The big issue for us is what tradeoffs are users willing

> will have to give up speed/memory/filesize or WYSIWYG to

> get the type of PS they are looking for.

> What sort of rendering would you be willing to give up to get

> smooth shading and lights?
Yes

> How about zbuffering and/or textures?
Yes

> individual views are rendered as bitmaps or raw PS depending
> on their contents?
That sounds sensible

> bitmap or all PS depending on the objects in the scene?
Yup, that sounds sensible too...

> about a device which rendered only what is possible with
> PS (i.e. some objects would disappear completely)?
OK, provided it had an option to warn you if that happened

- William

William M Connolley | wmc@bas.ac.uk | http://www.nbs.ac.uk/public/icd/wmc/
Climate Modeller, British Antarctic Survey | Disclaimer: I speak for myself

---

Subject: Re: PostScript and IDL,
Posted by steinhh on Thu, 28 May 1998 07:00:00 GMT
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Mark Hadfield wrote:

> I agree entirely with your criticisms of Object Graphics, but I think you're
> stretching it a bit to blame the inadequacies on the PC experience of the
> developers.
>
> I've always thought IDL's image/bitmap orientation resulted from its being
> designed for Unix/X-Windows systems.

Yes, I'm definitely stretching it quite a bit, and at the same time
exposing some nasty preconceptions of mine about PC people :-)

Funny though, that your experience seems to point in the

other direction :-)

The one single thing that in my opinion pointed the most towards
PCs was the complete lack of non-interactive (non-)specification of
printer type/resolution/output format/file name. PCs are not
exactly renowned for having background batch jobs that process
large amounts of data which has to be put into various types
of files, with varying file names, no specific printer type,
just simply an EPS file that could be included with no problems,
no matter what size the figure ends up with on paper.

The way I tend to view PC users is that they seldom bother
to think about portability or generality, as long as they
can fudge things to work in their particular case
(this hardware configuration, this particular figure in this
particular document..)

Of course, this is hardly a correct view (in general).

Regards,

Stein Vidar

Subject: Re: PostScript and IDL,
Posted by Mark Hadfield on Thu, 28 May 1998 07:00:00 GMT
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> .... For some reason, it seems that the OG
> printer output interface was written by someone with
> experience exclusively from PC's, with a very cheap
> (low-resolution) printer hanging on the side..

I agree entirely with your criticisms of Object Graphics, but I think you're
stretching it a bit to blame the inadequacies on the PC experience of the
developers.

I've always thought IDL's image/bitmap orientation resulted from its being
designed for Unix/X-Windows systems.

--
Mark Hadfield, m.hadfield@niwa.cri.nz http://www.niwa.cri.nz/~hadfield/
National Institute for Water and Atmospheric Research
PO Box 14-901, Wellington, New Zealand

Subject: Re: PostScript and IDL,

> Lars Hanson (larsh@magnet.drcmr.dk) writes:
> Hi, I'm having problems with PostScript generated by IDL...blah,blah

Thanks for good advice and interesting discusions on the subject.

David Fanning writes:
> Dick and I have been kicking around the idea of writing a class
> library of direct graphics objects that we could offer for
> sale. But unfortunately, it appears to be a shrinking
> market....

I'd certainly prefer to buy a package of routines, rather than a new disk for my too-large-to-handle-anyway plots. In this case, however, I think it is a problem for RSI to solve -- "screen-dumps are rarely suitable for publication" (Craig B. Markwardt). Fortunately now RSI seems to think so too.

David Fanning writes:
> The big issue for us is what tradeoffs are users willing
> to make in order to get scalable PostScript output.

I don't quite see why we need the tradeoffs. Is there a reason not to mix PostScript primitives and bitmaps in the same PS file? After all some graphics are well represented by bitmaps (e.g. bitmaps). Objects just need to be aware of the best way to print themselves.

Martin Schultz <mgs@io.harvard.edu> writes:

> E.g. I make a plot of some preliminary data, and of course it is nice
> to optimize this plot with the help of a few mouse clicks, i.e. in
> object graphics. But then I want to reproduce the exact same plot with
> the final data that comes in a few weeks/months later

For this reason, I used to generate plots of my IDL data by writing data to an appropriate XMGR template (good and free plotting program (isn't it free?? (If not, I'm really contributing to the "Free Advice" thread in a bad way)). XMGR then produces editable, saveable and printable graphs, much like we wan't IDL to do. (I'll send an example IDL procedure if anyone cares, but there is nothing to it).

I used to think that this was a bad solution, but it seems that for the moment, this is better than I thought (because other solutions are worse). Problem is that XMGR doesn't handle images well.

Thanks, Lars
---

larsh@magnet.drcmr.dk

Subject: Re: PostScript and IDL,
Posted by Mark Hadfield on Fri, 29 May 1998 07:00:00 GMT
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David Fanning writes

> The big issue for us is what tradeoffs are users willing
> to make in order to get scalable PostScript output. They
> will have to give up speed/memory/filesize or WYSIWYG to
> get the type of PS they are looking for....

Thanks David, this is the first indication I have seen of WHY Object Graphics printer output is done the way it is.

Many IDL users (eg myself) don't (yet) understand the issues here. Some of use spend most of our time in IDL generating flat line graphs, where these issues don't really arise. (We don't use IDL for this purpose because it's particularly good at generating flat line graphs, but because it's so good at generating numbers.) The message we want to get across to RSI technical and marketing staff is that we DO want scalable, embeddable Postscript output SOMEHOW.

Mark Hadfield, m.hadfield@niwa.cri.nz http://www.niwa.cri.nz/~hadfield/
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