
Subject: Z-Buffer question

Posted by [rew032](#) on Wed, 19 Feb 1997 08:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

Hello!

I have a question during using the Z-Buffer:

```
IDL> shade_surf, dist(20)
IDL> surface, dist(20), /noerase
IDL> a=tvrd()
IDL> set_plot, 'x'
IDL> tv, a
IDL>
```

This is an example, what I do. But the result is :(, because I get the surface-lines not all very clean, at some places, they are gone away.

Want I want to get is a picture, same as without using the z-buffer. There I can see all the lines from the surface very clear, without broken parts.

But because of other things, I have to use the 'awfull' z-buffer....

I read all the articles about the z-buffer contest, but I understand nothing... :((((
(I am a beginner user of IDL).

Can anybody help me?

Regards, Astrid Kuhr

--
Forschungszentrum Juelich GmbH

Subject: Re: Z-Buffer question

Posted by [Robert Moss](#) on Wed, 19 Feb 1997 08:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

David Fanning wrote:

>

> Astrid Kuhr writes:

>

>

>> This is an example, what I do. But the result is :(, because I get the

> surface-

>> lines not all very clean, at some places, they are gone away.

>> Want I want to get is a picture, same as without using the z-buffer.

> There I can

```
>> see all the lines from the surface very clear, without broken parts.
>
>> IDL> shade_surf, dist(20)
>> IDL> surface, dist(20), /noerase
>> IDL> a=tvrd()
>> IDL> set_plot, 'x'
>> IDL> tv, a
>> IDL>
>
> Well, let me say upfront that I don't believe there *is* a
> real solution to this.
```

Sorry David, but at least for this simple example there is a real solution. You'll probably kick yourself when I tell you what it is...

```
> I think the problem really has to do with
> "round-off" error in how the Z-buffer calculates what is in
> front of something else, when the two objects have the
> same value.
>
```

I suspect that this is true.

```
>
> So what I have done in the past in similar situations is
> incorporate a "fudge factor" into my code. (Physicists
> will understand this.)
```

I think this is an insult, but I'll let it slide :P

So, what is this "real solution" that I mentioned?
It's very simple... turn _off_ the Z buffering.

For this simple example, you'd do this:

```
thisDevice = !D.Name
colors = !D.N_Colors
SET_PLOT, 'Z'
DEVICE, Set_Resolution=[300,300], Set_Colors=colors, z_buffer=0
SHADE_SURF, DIST(20)
SURFACE, DIST(20), /NoErase
picture = TVRD()
SET_PLOT, thisDevice
WINDOW, XSize=300, YSize=300
TV, picture
```

Voila! The exact same output that you would have seen had you used the X device. The moral of the story is simple... if you don't specifically need 3D hidden line removal, don't use it.

--

Robert M. Moss, Ph.D. - mossrm@texaco.com - FAX (713)954-6911

This does not necessarily reflect the opinions of Texaco Inc.

Subject: Re: Z-Buffer question

Posted by [davidf](#) on Wed, 19 Feb 1997 08:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

Robert Moss writes:

- > So, what is this "real solution" that I mentioned?
- > It's very simple... turn `_off_` the Z buffering.

You wouldn't be a physicist would you, Robert?
I've seen this reductionist tendency before. But, of course, this doesn't go far enough. We could have left the whole Z-buffer completely out of it! :-)

The only *problem* with this line of reasoning, so far as I can see--but you understand I got a Ph.D. in Biochemistry--is that without the Z-buffer we don't have much of a question here. I just presumed there was some reason the guy was fooling around in there, but he wanted us to see the essential part of the problem.

- > Voila! The exact same output that you would have seen had you used
- > the X device. The moral of the story is simple... if you don't
- > specifically need 3D hidden line removal, don't use it.

Well, the other possible moral is that more of us should have paid attention during that *reductio absurdo* (I skipped the Latin class) lecture in Philosophy 101. :-)

I appreciate the correction though. As usual, you are absolutely right!

Cheers!

David

David Fanning, Ph.D.
Fanning Software Consulting
2642 Bradbury Court, Fort Collins, CO 80521
Phone: 970-221-0438 Fax: 970-221-4762
E-Mail: davidf@dfanning.com
Coyote's Guide to IDL Programming: <http://www.dfanning.com>

Subject: Re: Z-Buffer question
Posted by [brian.jackel](#) on Thu, 20 Feb 1997 08:00:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

Here's my (horrible) fix for the problem of lines not showing up (or being dashed) when using the Z-buffer.

Use THICK=3 when plotting the surface.

The result has lines just about everywhere that they're supposed to be, and doesn't look too smeared. THICK=4 or =5 makes all the lines show up, but it looks like it was drawn with a crayon, so that's not so hot.

Brian Jackel

Subject: Re: Z-Buffer question
Posted by [Struan Gray](#) on Thu, 20 Feb 1997 08:00:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

A.Kuhr, rew032@isr141.isr.kfa-juelich.de writes:

[SURFACE routine's z-buffer woes deleted]

> Can anybody help me?

I'm just putting the finishing touches to a surface plotting tutorial:

http://www.sljus.lu.se/stm/IDL/Surf_Tips/

which describes another way round this problem. The idea is to plot just the grid and then use that as a mask to overlay or extract information on/from other pictures.

See the web page for more detail.

Struan

Subject: Re: Z-Buffer question

Posted by [Robert Moss](#) on Fri, 21 Feb 1997 08:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

David Fanning wrote:

>
> I've seen this reductionist tendency before. But, of
> course, this doesn't go far enough. We could have
> left the whole Z-buffer completely out of it! :-)
>

We could have, but Kuhr wrote:

>I have a question during using the Z-Buffer:

> The only *problem* with this line of reasoning, so
> far as I can see--but you understand I got a Ph.D. in
> Biochemistry--is that without the Z-buffer we don't
> have much of a question here. I just presumed there
> was some reason the guy was fooling around in there,
> but he wanted us to see the essential part of the problem.
>

Well, just for the record, I based my "reductionist" answer on the following clue from Astrid Kuhr's original post:

Astrid Kuhr wrote:

>(I am a beginner user of IDL).

I took this to mean that Kuhr may not have been familiar with the Z_BUFFER keyword to the DEVICE routine.

Astrid Kuhr wrote:

>Want I want to get is a picture, same as without using the z-buffer.

Perhaps I assumed incorrectly that Kuhr may have been using the Z device simply to avoid using the screen (as in a batch process, for example).

> Well, the other possible moral is that more of us should
> have paid attention during that reductio absurdo (I skipped

> the Latin class) lecture in Philosophy 101. :-)
>

Well, the moral for me is to be sure not to specifically mention anyone when I post replies if I am going to post something that may be taken as some kind of criticism.

--

Robert M. Moss, Ph.D. - mossrm@texaco.com - FAX (713)954-6911

This does not necessarily reflect the opinions of Texaco Inc.

Subject: Re: Z-Buffer question

Posted by [Struan Gray](#) on Fri, 21 Feb 1997 08:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

David Fanning, davidf@dfanning.com writes:

> An excellent job, Struan. Thanks for letting us in on
> the secrets.

Thanks for the plug. I'll post a more complete announcement to the newsgroup when I've added the example code. For now the presentation of the ideas is complete but the only way to try them out in IDL is to cut and paste all code snippets from the pages in sequence. I welcome comments and bug reports (IDL or html) from people, but for the moment bear in mind that the pages are not quite finished. I'd of kept them quite for now but the original question seemed best answered by a page reference.

If anyone missed it, the URL is:

http://www.sljus.lu.se/stm/IDL/Surf_Tips/

Struan
