Subject: Re: Weiler Atherton Clipping Algorithm
Posted by Wox on Tue, 09 Sep 2008 11:35:43 GMT
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On Tue, 9 Sep 2008 01:46:21 -0700 (PDT), rogass@googlemail.com wrote:

> Hello,
> I need the Weiler-Atherton-Clipping algorithm within IDL. Can somebody
> submit any kind of ready-to-use code? I would really appreciate it. A
> good demonstration of the algorithm is shown here:
> http://research.cs.vt.edu/algoviz/Clip/clipping_applet.html
>
> Thank you and best regards
>
> Chris

Maybe not the same algorithm, but the result should be the same:
http://www.dfanning.com/graphics_tips/polygonclip.html

Subject: Re: Weiler Atherton Clipping Algorithm
Posted by rogass on Tue, 09 Sep 2008 12:32:35 GMT
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On Sep 9, 1:35 pm, Wox <nom...@hotmail.com> wrote:
> On Tue, 9 Sep 2008 01:46:21 -0700 (PDT), rog...@googlemail.com wrote:
>> Hello,
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>> Thank you and best regards
>
>> Chris
>
> Maybe not the same algorithm, but the result should be the
same:http://www.dfanning.com/graphics_tips/polygonclip.html

Thank you, but unfortunately the use algorithm cannot deal very good
with concave and complicated (self intersecting) polygons. Only Weiler-
Atherton and newer algorithms are able to solve this kind of problem.
The Algorithm is not so much complicated, but in terms of speed it is.
But maybe there are other algorithms like the Sutherland approach?

Thanks nad best regards

Chris

Subject: Re: Weiler Atherton Clipping Algorithm
Posted by wlandsman on Tue, 09 Sep 2008 13:40:31 GMT
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> But maybe there are other algorithms like the Sutherland approach?

As noted on David Fanning's webpage mentioned above there are IDL implementations of Sutherland-Hodgman polygon clipping from both JD Smith (http://turtle.as.arizona.edu/jdsmith/scraps.php) and Mark Hadfield. JD Smith also provides a C version polyclip.c which is 50 (!) times faster, and callable from IDL via call_external.

Since the Weiler-Atherton algorithm is even more computationally intensive than Sutherland-Hodgman, I suspect one would want a C version linked to IDL (or to convince ITTVIS to implement it natively!)

--Wayne

>
> Thanks nad best regards
>
> Chris

Subject: Re: Weiler Atherton Clipping Algorithm
Posted by rogass on Tue, 09 Sep 2008 16:03:11 GMT
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Yes, a native implementation would be the best. Unfortunately, there is still no solution. I have polygones with hundreds of vertices and now it's time for me to decide how to handle this. I tried Mati Merons Shape_overlap algorithm based on the Sutherland approach, which is fast enough, but Mati's version gives me the wrong results.

The c-Version from JD - I don't really know how to implement this in my program. Is there are a ready-to-use part, which can be directly used within IDL?

Isn't there any other algorithm which can handle clipping of difficult and concave polygones? I can't understand this, really! In my opinion, it is a basic task in image processing. I have written a very complex computation and the last step would be the comparison of the polygones. Now, missing implementations of those algorithms hinder me to fulfill my task.... It's very annoying...

Maybe, someone has written another polygon clipping algorithm to

handle the problems with concave and complex polygones? Maybe, someone
is able to give me a hint or where I could start?

Please, excuse my English, I'm not a native speaker.

Thanks and best regards

Chris

Subject: Re: Weiler Atherton Clipping Algorithm
Posted by David Fanning on Tue, 09 Sep 2008 16:39:11 GMT
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rogass@googlemail.com writes:

> Isn't there any other algorithm which can handle clipping of difficult
> and concave polygones? I can't understand this, really! In my opinion,
> it is a basic task in image processing. I have written a very complex
> computation and the last step would be the comparison of the
> polygones. Now, missing implementations of those algorithms hinder me
> to fulfill my task.... It's very annoying...

I'm always a little surprised to find scientists annoyed
when research problems present themselves. (My middle son
is experiencing similar problems with fire ants.) I would
have thought this kind of thing is sort of the *point*
of scientific research. At least it was in my day. :-)

Cheers,

David
--
David Fanning, Ph.D.
Coyote's Guide to IDL Programming (www.dfanning.com)
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Weiler Atherton Clipping Algorithm
Posted by wlandsman on Tue, 09 Sep 2008 17:10:44 GMT
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On Sep 9, 12:39 pm, David Fanning <n...@dfanning.com> wrote:

> I'm always a little surprised to find scientists annoyed
> when research problems present themselves. (My middle son
> is experiencing similar problems with fire ants.) I would

> have thought this kind of thing is sort of the *point*
> of scientific research. At least it was in my day. :-)

I think I agree more with Chris here. An extreme analogy might be the one's reaction if IDL did not have an built-in FFT. Now developing one's own FFT might be an interesting research problem, but one would expect a commercial image processing package to have one built-in and to be annoyed if it does not. Similarly one would expect an image processing package to have a built-in polygon clipping algorithm, and to be annoyed if it does not.

Having said that, my need for polygon-clipping has always been to render onto square pixels, and the Sutherland-Hodgman algorithm has sufficed.

The documentation included in JD's code polyclip.c describes how to make use of the IDL MAKE_DLL function to create a shareable library, and then use CALL_EXTERNAL to call the C polyclip program from IDL. Since you probably want the your Weiler-Atherton code in C anyway, and the algorithm is (supposedly) not that complicated, this is probably the way to go. --Wayne

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Subject: Re: Weiler Atherton Clipping Algorithm
Posted by David Fanning on Tue, 09 Sep 2008 17:26:12 GMT
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wlandsman writes:

> I think I agree more with Chris here. An extreme analogy might be
> the one's reaction if IDL did not have an built-in FFT. Now
> developing one's own FFT might be an interesting research problem, but
> one would expect a commercial image processing package to have one
> built-in and to be annoyed if it does not. Similarly one would
> expect an image processing package to have a built-in polygon clipping
> algorithm, and to be annoyed if it does not.

Maybe, although I've been doing image processing tasks for years without ever yet finding myself needing polygon clipping. I don't know if that is an indictment of my image processing abilities or if it indicates that maybe polygon clipping is not as mainstream as an FFT.

In any case, I suppose I can understand "surprise" or "disappointment". But "annoyance" annoys me. Or, at least it did this morning. :-)

Cheers,

David

--
David Fanning, Ph.D.
Coyote's Guide to IDL Programming (www.dfanning.com)
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Weiler Atherton Clipping Algorithm
Posted by rogass on Tue, 09 Sep 2008 18:59:06 GMT
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Dear David, dear Wayne,
I fully agree with both of you. Maybe the term 'annoying' was too strict, but nevertheless it is often not useful to script, code and develop all the things you need on your own to fulfill the given task.

However, I will try to script it on my own and will publish it here to get reviews and suggestions for improvements.

Thank you and best regards

Chris
