Subject: Re: about 3-Dimensional animation
Posted by Rick Towler on Tue, 07 May 2002 17:11:59 GMT
View Forum Message <> Reply to Message

> I want to look fantastic output

Don't we all.... I have dreams about fantastic output.

You may want to start with some literature. "Fundamentals of three-dimensional computer graphics" by Alan Watt is a little dated (1989) but provides a decent intro to some fundamental concepts in 3d graphics. IDL tries it's best to insulate you from these details but it helps to understand the concepts (mainly vertex manipulation and viewing systems)

A more advanced text, but one that may be worth perusing is "Advanced Animation and Rendering Techniques - Theory and Practice" by Watt and Watt. Specifically part IV on advanced animation.

For fantastic 3d animation your only real option in IDL is object graphics. To date there hasn't been a book published on Object Graphics but RSI has a training manual entitled "Advanced Application Development with Object Graphics". In the absence of another text, I highly recommend this book not because of the object graphics topics it covers but because of it's introduction to OO programming in IDL. I recommend contacting RSI and asking if they would be willing to sell you a copy. You will also want to get comfortable with the "Objects and Object Graphics" manual that ships with IDL.

After you have familiarized yourself with OO programming in IDL and object graphics, you may want to familiarize yourself with the computer hardware that is available. Fantastic animation with OG requires fantastic amounts of polygons. This will limit you to high end windows PC's or 3d Unix workstations (unless you are very patient). Linux based PC's don't have the driver support and decent 3d chipsets are just now starting to show up in Macs.

For my animations, I first create the "actors". My actors are all objects, sub-classes of the IDLgrModel object. We study the acoustic properties of fish in my lab, so I have an "echofish" object. The echofish object is a collection of IDLgrPolygon objects which contains the 3d representation of the fish, IDLgrImage objects which texture the fish, and a collection of other data that describes the actor. The point being that I have a single object which encapsulates all of the details of my actor and frees me from managing them during animation. Other actors may include scientific instruments, plants, water....

After I have the actors, I create a scene. For me that is a 3d bathymetric surface. For you that would probably be a topographical surface. I use my

scene to set the scale of my virtual world. For you, maybe 1 unit is one kilometer. Since a detailed surface can contain 10's to 100's of thousands of polygons, I start by creating a single flat polygon of the same dimensions as my final scene which I use while working out actor and camera movements.

Now that you have your virtual world, you'll need to animate it. For scientific visualizations this is usually the easiest part. We have data (or rules) that describe the behaviour of the actors, often in time series format. All you need to do is step thru your data, positioning your actors (or changing their attributes) accordingly.

At some point you'll need to record the individual frames and compile the animation file. For starters, you can use the built in IDLgrMPEG object. I DO NOT recommend this for producing a final product but it will get you started.

I have a couple of objects that are indispensable when doing full fledged 3d animation. My camera and quaternion objects can be found at: http://www.acoustics.washington.edu/~towler/

You may want to check the pages again in late July. I have a flightpath object which allows you to script actor or camera movement, a windows dlm for joystick and keyboard input that helps solve 3space navigation, and some results from video codec testing all of which I hope to clean up and make available.

Hopefully you have some time to create your fantastic output :)

Good luck!

-Rick

"Ho-yong,Jeong" <hyjeong@climate.snu.ac.kr> wrote in message news:1d7f3c52.0205070325.55e8592b@posting.google.com...
> I want to make 3-dim animation which deal with climatology data with idl.
> I found the example in noaa homepage.
> But i don't want to get fantastic results yet because i am beginner
> I want to get the advice about 3-d plot and 3-d animation from you
> I don't know how must I start about it .
> I want a good example...
> is it possible to realize 3-dim animaion with idl ?
> I want to look fantastic output

Subject: Re: about 3-Dimensional animation
Posted by David Fanning on Tue, 07 May 2002 17:45:31 GMT
View Forum Message <> Reply to Message

Rick Towler (rtowler@u.washington.edu) writes:

> Hopefully you have some time to create your fantastic output :)
>
> Good luck!

Yeah, good luck!

Cheers,

David

P.S. Let's just say this answer is a *whole* lot more
helpful than the big "SIGH..." I was going to write. :-)

--
David W. Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438, E-mail: david@dfanning.com
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Toll-Free IDL Book Orders: 1-888-461-0155

Subject: Re: about 3-Dimensional animation
Posted by Rick Towler on Tue, 07 May 2002 18:23:03 GMT
View Forum Message <> Reply to Message

"David Fanning" <david@dfanning.com> wrote

> P.S. Let's just say this answer is a *whole* lot more
> helpful than the big "SIGH..." I was going to write. :-)

It is somewhat self serving. The more people use IDL to generate "fantastic output" in OG, the greater the chance that elements on my wish list of feature requests will be implemented and I can create even more fantastic output!

-Rick
