JOURNAL OF OBJECT TECHNOLOGY

Online at www.jot.fm. Published by ETH Zurich, Chair of Software Engineering ©**JOT, 2009**

Vol. 8. No. 1, January-February 2009

First Person Shooter Game

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Abstract

3D game development is an exciting activity for many students. But getting a handle on 3D game development for novices may be a daunting task. We take this opportunity to present a quick introduction to 3D game development through a few tutorials. For the next few columns a set of tutorials for a 3D first person shooter game developed by graduate and undergraduate students under the guidance of a faculty member from the University of West Florida will be presented. These tutorials were developed with **3D game Studio** by *Conitec*. To follow along, download the software from www.conitec.com. These tutorials include all elements of game development such as modeling and animation, lighting, collision detection, sound and scripting. Each tutorial will focus on one or more of these aspects. This week we start out with creating a room and adding some objects to the room. The instructions for this are presented below.

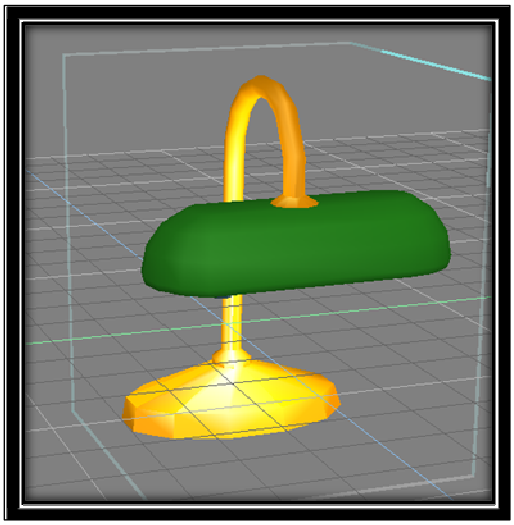
TEXTURING A MODEL

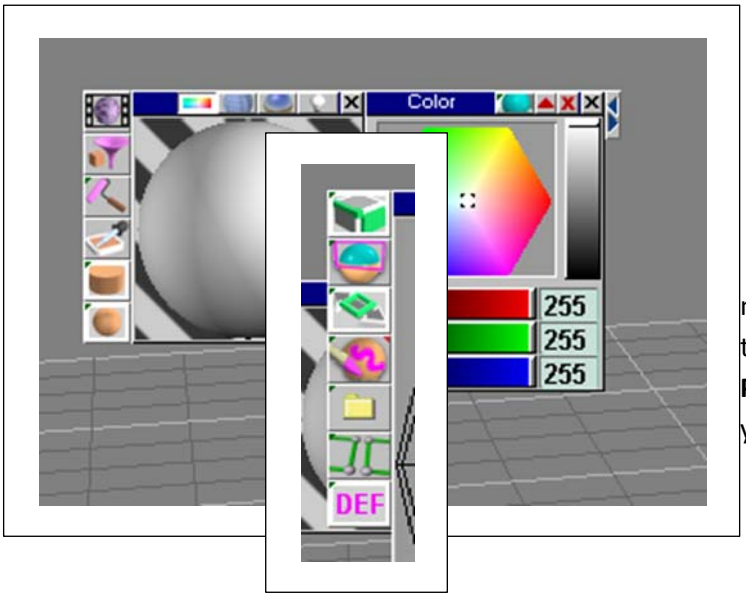
gameSpace is a 3D-modeling software package designed for game modelers. It has a good measure of tools for designing characters and other models. It is also fairly inexpensive for the full version and the "light" version is free.

Texturing is a very important part of modeling. Texturing not only gives the object meaning and life, but it can also take the place of modeling detail to increase the render time. There is a balance between model detail and texture detail – Finding this balance will often times yield a successful product.

Rex Cason II, Erik Larson, Jonathan Robertson, Jonathan Frisch, George Trice III, Dr. Lakshmi Prayaga: "First Person Shooter Game" in *Journal of Object Technology*, vol. 8, no. 1, January – February 2009, pp. 93-105 http://www.jot.fm/issues/issue_2009_01/column6/

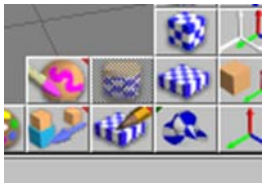
I will be using a lamp to show how texturing is accomplished by utilizing gameSpace. This lamp is included in the library – so feel free to follow along with the same model if you like.





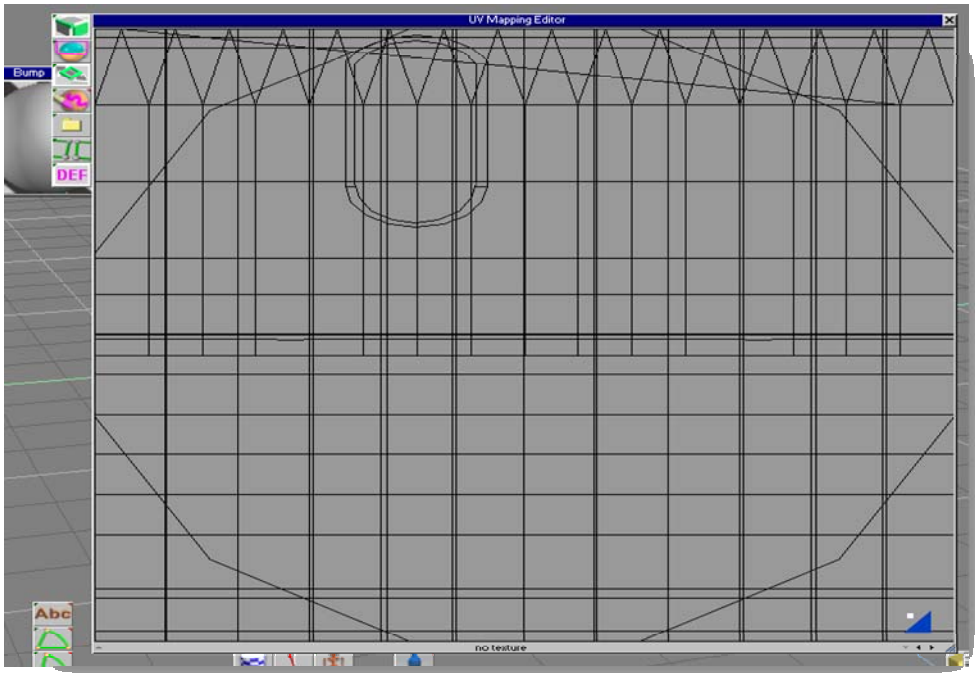
To set up for texturing, open the material editor and expand the box by clicking the blue-black arrow. You will need the "**Mat Preview**" box and the "**Color**" box visible – but you may close the others.

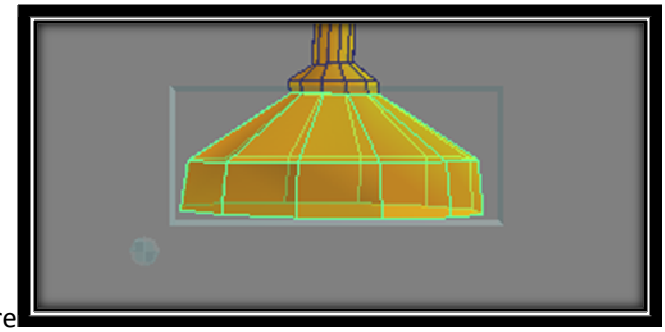
The **UV Mapping Editor Tool** is used to edit how the texture applies to the object



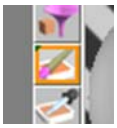
Be sure that you are in object mode before making changes to the UV map or the changes will not be applied.

On the left side of the window are the tools we will be using. On top is the **Selection Tool**, underneath that is the **Rectangular Select Tool**, and then we have the **Move Tool.** In the middle is the **Paint Brush**, below that is the **Export to Bitmap Tool**. We have the **Break Apart and Weld Tool**, and at the bottom is the tool that allows us to select the color used to notify us of the UV mesh.


UV Mapping Editor
Bump
DEF
Abc
no texture

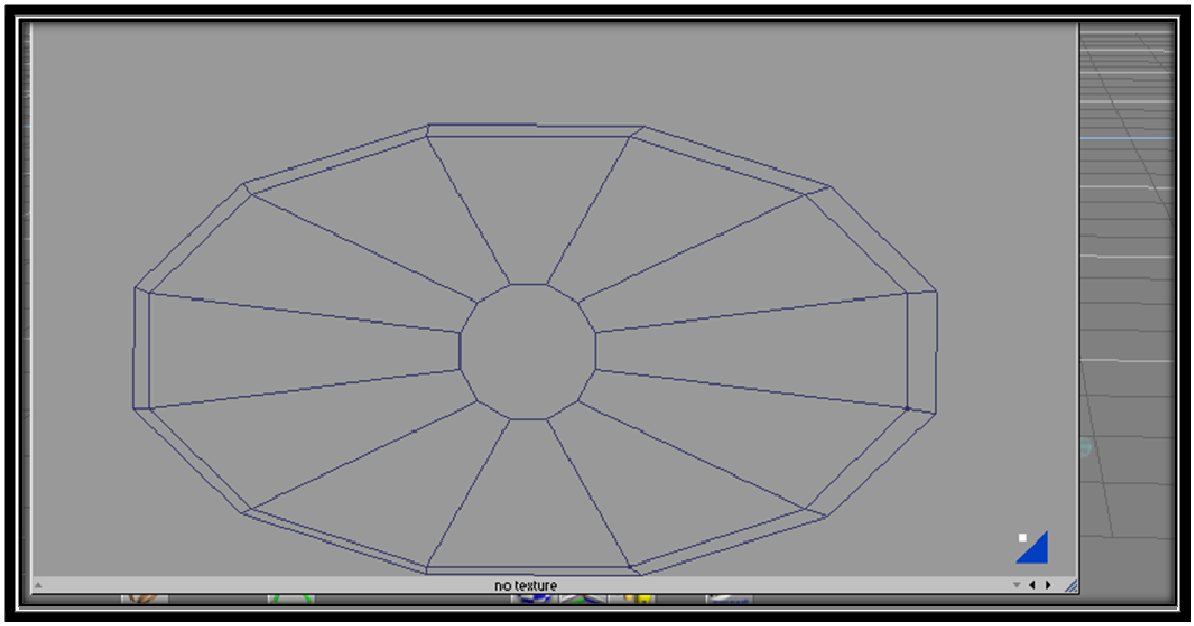
Close the "**UV Mapping Editor**" and after selecting the object, enter "**edit mode**". Now select the part of the object that is supposed to have the same texture 

Make a new color in the Material Editor and click on the "Paint Face" tool. This will apply a new color to the faces



Now open the UV Editor. By clicking the left and right arrows, you can move through the object and texture hierarchy. The blue triangle allows you to pan in the window

You will notice that there is a separate section for the part you recolored



You can edit the faces, vertices, and edges as you see necessary and then use the "**Export Bitmap**" command. After you do this for all sections, you can use these bitmaps as templates for the individual texture parts in your favorite paint program

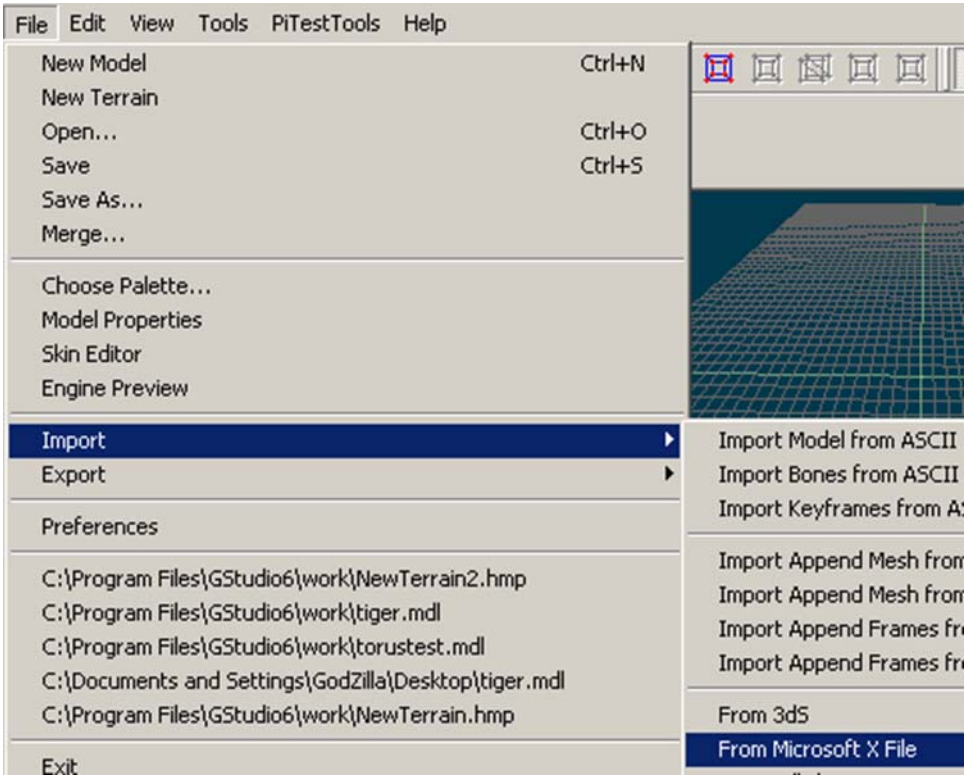
Once you make each of the texture parts, put them all together in one file and then apply this to your object. It will probably not look right, so open up the UV Mapping Editor and in the top most hierarchy (the one that has all the faces jumbled together), adjust the mesh so that everything is in the proper place. If two parts of the object are supposed to have the same texture (like each half of a jeep or aircraft), it may be easier to make one copy of the texture and overlap all the parts that use it. This technique will also cut down on the size of the model's file.

IMPORTING FROM DIRECTX AND SKINNING A MODEL

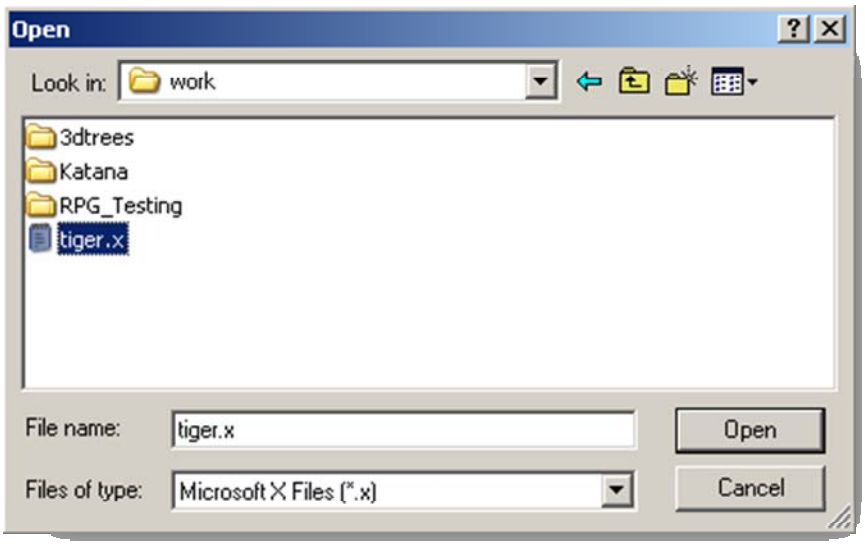
DirectX has been around for some time. Recently, there's been a steady push to begin development in DirectX 10 used by Windows Vista even though DirectX 9 is still used by many game developers today (year 2007). Because of this amazing longevity, many models have been created in the Microsoft DirectX format. These can be used by GameStudio developers because the MED application can convert them from their native ".x" file format to the MED ".mdl" format used by GameStudio

Provided to you is a small Microsoft file with the name "tiger.x". This is going to be the model that we will first convert then texture using the "tiger.bmp" file. *Begin by opening MED if you have not already done so*

Click on **File → Import → From Microsoft X File**

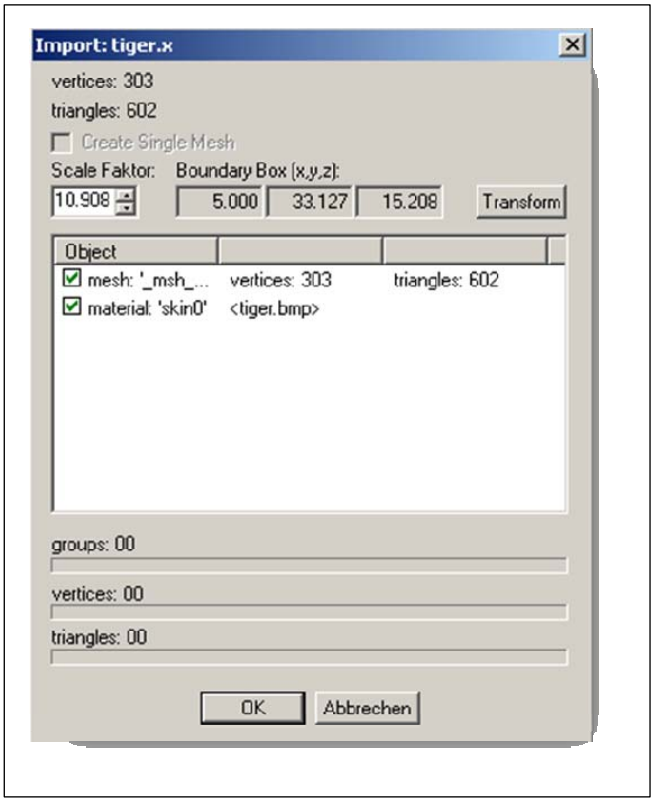


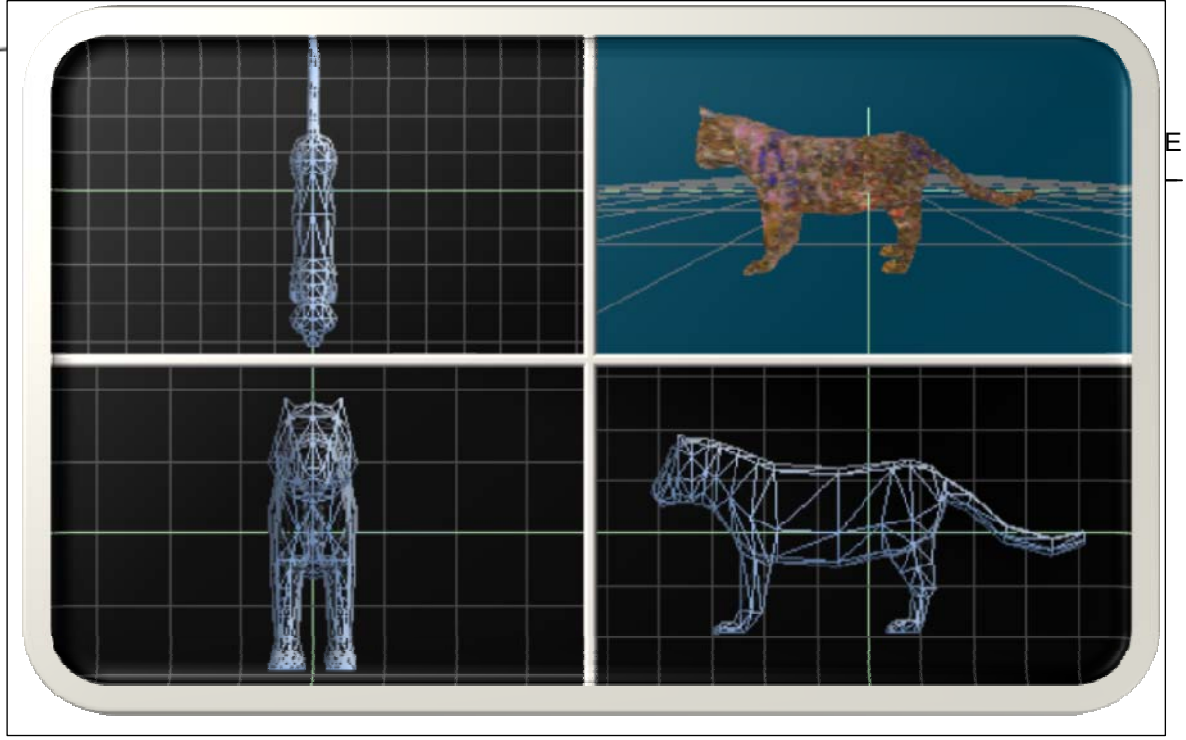
From there, a file open dialog box will open. Make sure that you select the “tiger.x” file from the appropriate drive/directory and then press “open”



Another dialog box with semi-Germanic script is displayed asking for an OK

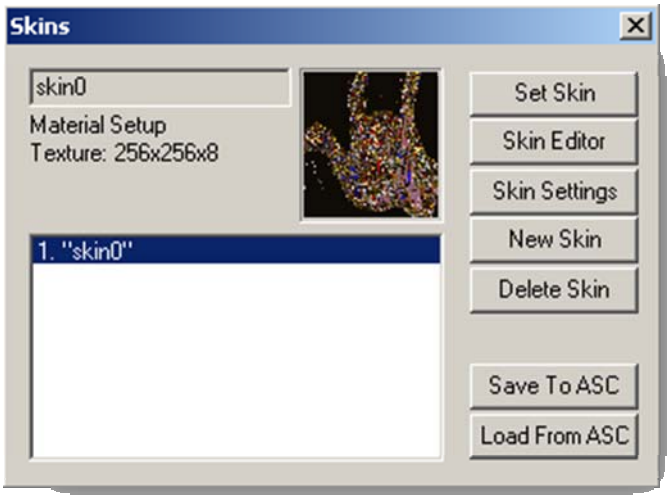
Press OK, then OK once more to close the box. *You should now see a tiger model loaded in the environment*





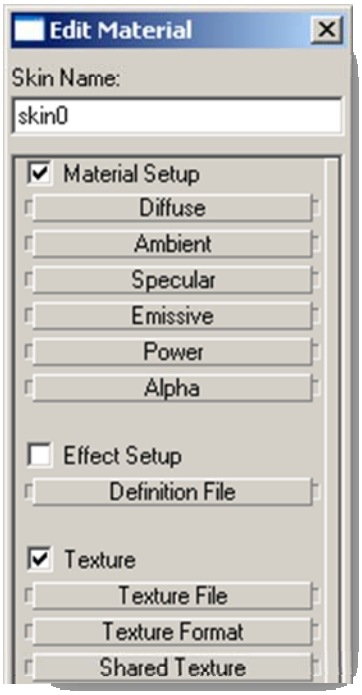
As you can see, the tiger isn't exactly very 'tigery.' Maybe a Leopard, or some sort of Zombie Cougar or something. That's because we now need to skin it. So get out your boot knife… what? You didn't bring your boot knife? Oh, right right… no weapons in school. OK. Plan B then

Click on **Edit → Manage Skins**



From here, select the "**Skin Settings**" button. A new window will open titled "**Edit Material**." This window can do a lot of things dealing with textures and material lighting effects.

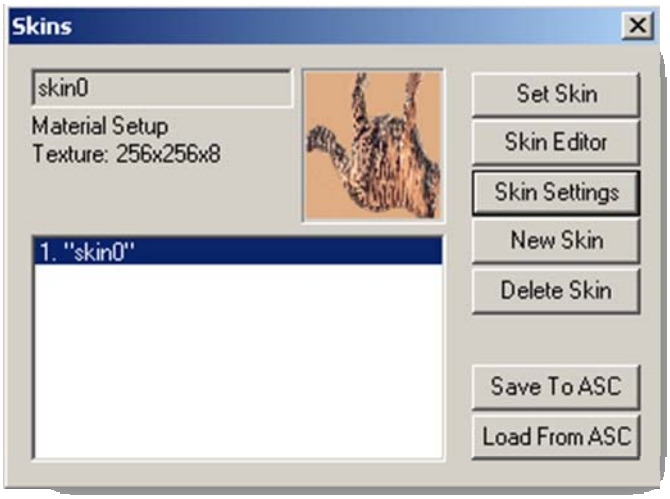
We won't do much in there this time, but at least you know where they are for future reference



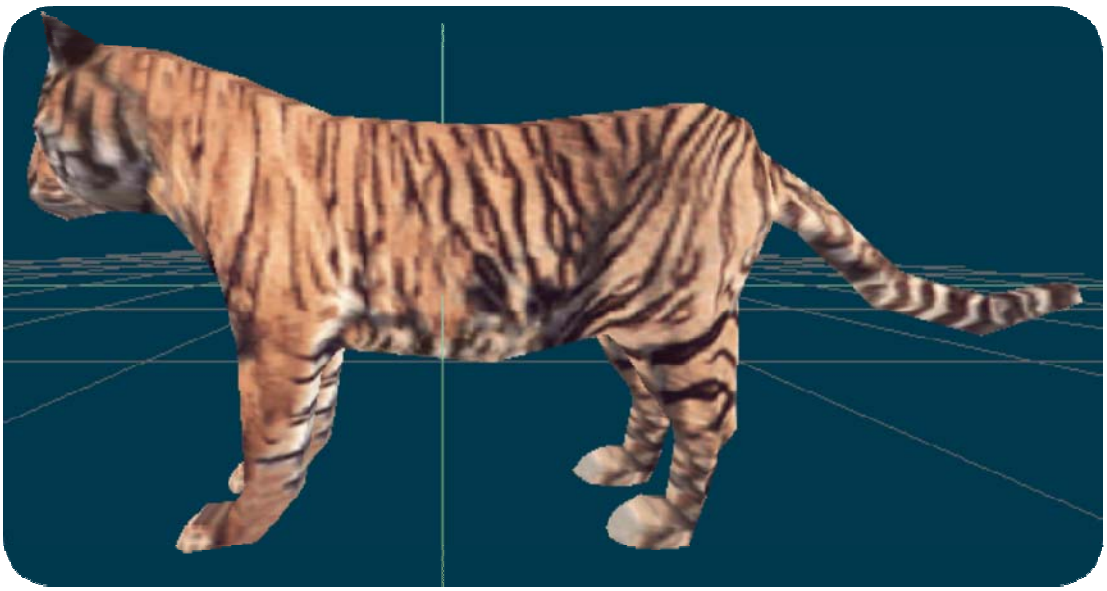
Click on the "**Texture File**" button to expand its properties

From here, just click on the little "…" button to open a file browser and then select the "tiger.bmp" file. Now we can close the "**Edit Material**" window and you can see that our skin is

much more ‘tigerish’ than before



Go ahead and press the “**Set Skin**” button and close the “Skins” window



We now have our tiger ready for saving. Go ahead “**Save As**” an “.mdl” file. Now you have it available for importing into GameStudio

Keep in mind that this beast isn't going to be anything more than a colored sculpture. This is because we do not have any animations in place yet. For more information about animation, you may look at Conitec's Model Design Tutorial which is available from their website (www.conitec.com/3dgs)

About the authors

Rex Cason II has been working with Dr. Prayaga in the UWF Game Department for the past few semesters. He currently possesses a Bachelor's degree in Computer Science and is working towards a Master's degree in Software Engineering at the University of West Florida. Rex is also an active member in the Association of Information Technology Professionals (AITP). In addition to his studies, Rex works part time at the Institute for Human and Machine Cognition (IHMC), where he is currently working on developing software to coordinate the actions of semi-autonomous robotic vehicles.

Erik Larson has been working with computers since he had purchased a cheap 386 IBM Compatible in 1995. In 1999, he entered the United States Marine Corps and pursued a specialization in computers. Today he is working towards a Master's degree in Software Engineering with the University of West Florida. He currently possesses Bachelor's degrees in Information Technology and Computer Information Systems with minors in Computer Science, Internet Technologies and e-Business also from the University of West Florida. He is a member of the Phi Kappa Phi, Gamma Beta Phi, and Upsilon Pi Epsilon Honors Societies.

Jonathan Robertson currently works at the Game Design Department in the University of West Florida. He hopes to one day have a career designing entertainment software with an emphasis on the quality and involvement of the story being told through the game.

Jonathan Frisch is working for a degree in Digital Media and studying animation/modeling itself and in games and movies. He hopes to get into the animation/modeling field of game development or movie production. His ultimate future goal is to be an independent film writer/director.

George Trice III is an Honors student double-majoring in Interdisciplinary Information Technology: Digital Media and Art with a Digital Specialization. His minor is in Communication Arts. He's been a gamer since age 5. Favorite game of all time: Super Mario World

Dr. Lakshmi Prayaga has recently completed her ED.d program from the University of West Florida. She has been actively working on the influence of games in education. In partnership with Escambia County in Florida, she was awarded a $1.5 million grant from the Florida department of education to develop serious games for 7th and 8th graders for mathematics and its relation to real life careers. These games will be implemented during this fall (2007). She is starting a gaming curriculum at the University of West Florida, and some of her students are working on the tutorials for a first person shooter game that will appear in the next few columns.