

Chukong Technologies

# Shaders and Materials

PC-3DMAX

Cocos3D Team

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# 1 Shaders and Materials

The \*.vsh/\*.fsh files are a way of defining how an object is rendered within the Cocos3D engine.

The \*.material files are meta-data files that contain artist-editable features, including shader file, shader properties, and texture references. ModelEditor can create and modify material files that can be assigned to mesh objects.。

## 2 Shader

Cocos3D ships with some commonly used shaders, which can be found in the Resources/3d/shaders folder.。

## 3 Material

```
material
{
    u_worldViewProjectionMatrix = WORLD_VIEW_PROJECTION_MATRIX
    u_inverseTransposeWorldMatrix = INVERSE_TRANSPOSE_WORLD_MATRIX
    u_worldMatrix = WORLD_MATRIX
    u_matrixPalette = MATRIX_PALETTE

    technique tech1
    {
        pass pas2
        {
            vertexShader = shaders/textured.vsh
            fragmentShader = shaders/textured.fsh

            defines = SKINNING_JOINT_COUNT 32

            u_diffuseColor = 1,1,1,1

            sampler u_diffuseTexture
            {
                path = demores/haigui/haigui.png
                mipmap = false
                wrapS = REPEAT
                wrapT = REPEAT
                minFilter = LINEAR
                magFilter = LINEAR
            }

            renderState
            {
                blend = true
                srcBlend = SRC_ALPHA
                dstBlend = ONE_MINUS_SRC_ALPHA
                cullFace = true
                depthTest = true
                depthWrite = true
            }
        }
    }
}
```

A material can contain multiple Techniques (for example, we can use one technique for normal rendering and another for shadow rendering); A technique can also contain multiple pass.。

Selected shader for current pass

Select macros for current shader

Uniform parameters for current shader

Render states for current pass

Tips: 1: Above, the basic structure supported by the Cocos3D engine material script, the parameters of the first blue region using the automatic assignment mechanism by the Cocos3D engine, Cocos3D also supports the following common values of automatic assignment::

```
// Binds a node's World matrix.
WORLD_MATRIX,

// Binds the View matrix of the active camera for the node's scene.
VIEW_MATRIX,

// Binds the Projection matrix of the active camera for the node's scene.
PROJECTION_MATRIX,

// Binds a node's WorldView matrix.
WORLD_VIEW_MATRIX,

// Binds the ViewProjection matrix of the active camera for the node's scene.
VIEW_PROJECTION_MATRIX,

// Binds a node's WorldViewProjection matrix.
WORLD_VIEW_PROJECTION_MATRIX,

// Binds a node's InverseTransposeWorld matrix.
INVERSE_TRANSPOSE_WORLD_MATRIX,

// Binds a node's InverseTransposeWorldView matrix.
INVERSE_TRANSPOSE_WORLD_VIEW_MATRIX,

// Binds the position (C3DVector3) of the active camera for the node's scene.
CAMERA_WORLD_POSITION,

// Binds the view-space position (C3DVector3) of the active camera for the node's scene.
CAMERA_VIEW_POSITION,

// Binds the matrix palette of C3DMeshSkin attached to a node's model.
MATRIX_PALETTE,

// Binds the total time and delat time.
TIME_PARAM,
```

2: Valid attributes and macros used by the material script depends on the shader's impliments.

## 4 Debug

Developers can use the model editor for material script debugging.

