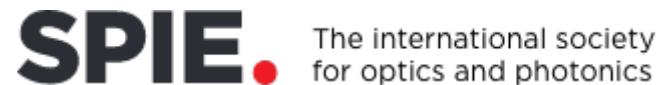


Real-Time Photorealistic Stereoscopic Rendering of Fire

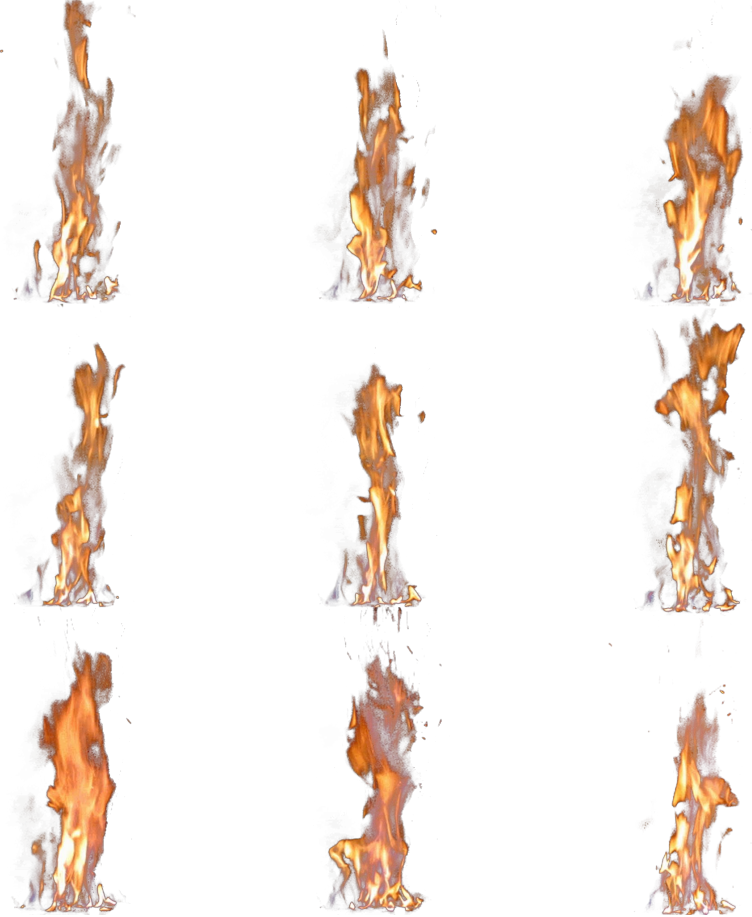
Benjamin M. Rose and David F. McAllister



2007 Conference: Stereoscopic Displays and Virtual Reality Systems XIV

DOI : 10.1109/cad/graphics.2011.26

Texture Atlas



Texture Atlas Code

```
int rows_loc = glGetUniformLocation(fireShader.ID, "numberOfRows");
glUniform1f(rows_loc, 3.0f);

int offset_loc = glGetUniformLocation(fireShader.ID, "offset");
fire.firePlane.textureIndex++;
fire.firePlane.textureIndex = fire.firePlane.textureIndex % 12;
glUniform2f(offset_loc, fire.firePlane.getTextureXOffset(), fire.firePlane.getTextureYOffset());
```

Vertex Shader Calculation:

```
TexCoord0 = (vertex_texture / numberOfRows) + offset;
```

Real Time Animation



Billboarding Solution



```
mat4 billboardView = camera.GetViewMatrix();  
billboardView.m[0] = 1;  
billboardView.m[1] = 0;  
billboardView.m[2] = 0;  
billboardView.m[4] = 0;  
billboardView.m[5] = 1;  
billboardView.m[6] = 0;  
billboardView.m[8] = 0;  
billboardView.m[9] = 0;  
billboardView.m[10] = 1;  
glUniformMatrix4fv(view_loc, 1, GL_FALSE, billboardView.m);
```

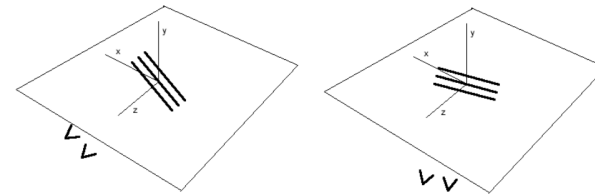


Figure 13. Billboard motion in response to viewer change in position.

Future Work

- Experiment with different versions of Billboarding
- Add depth using several planes
- Add Flickering Light
- Add Billboarded smoke
- Create comparison of different blending options

