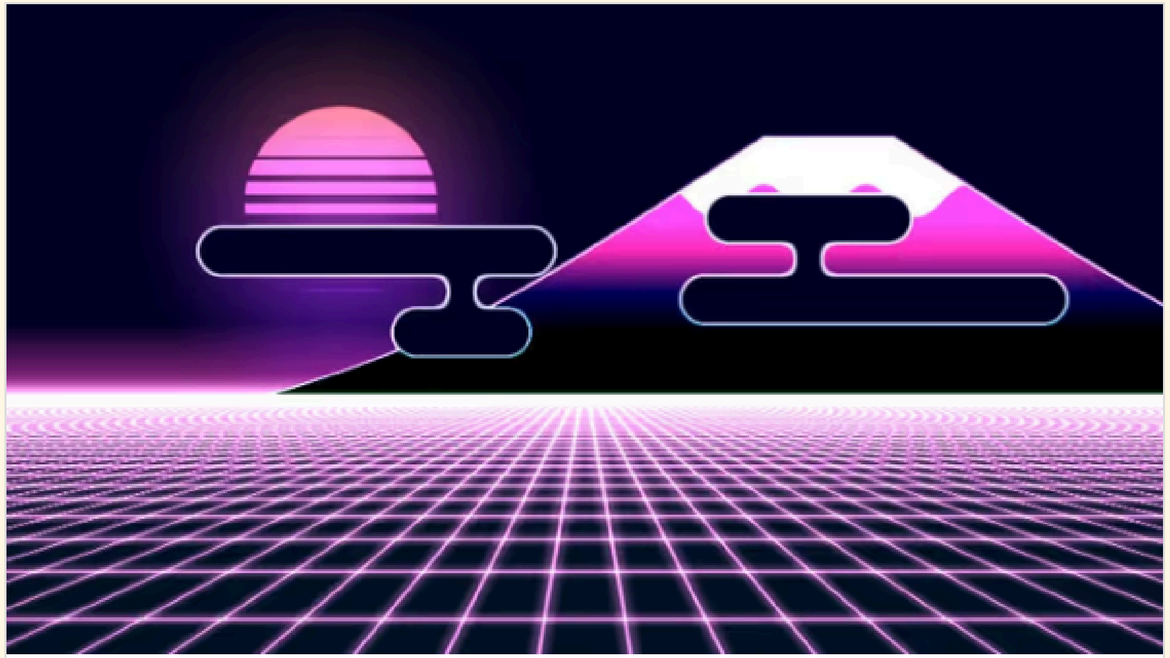
GLSL

OpenGL Shader Language

WHAT IS A SHADER?

A shader is code that will calculate positions and colors to determine the pixel color on a screen. In short, it is code to render an image.



Shadertoy

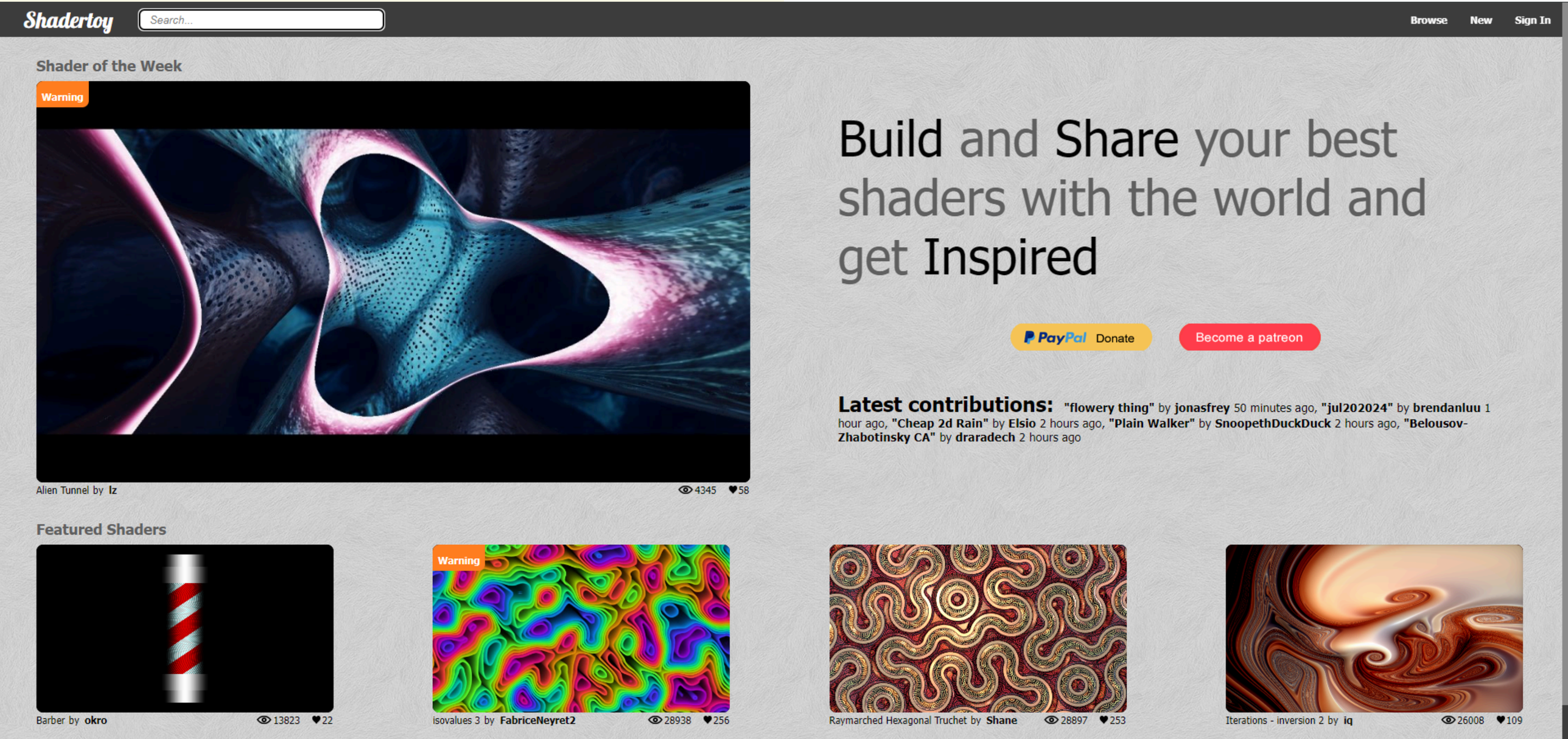
Build shaders, share them, and learn from the best community.

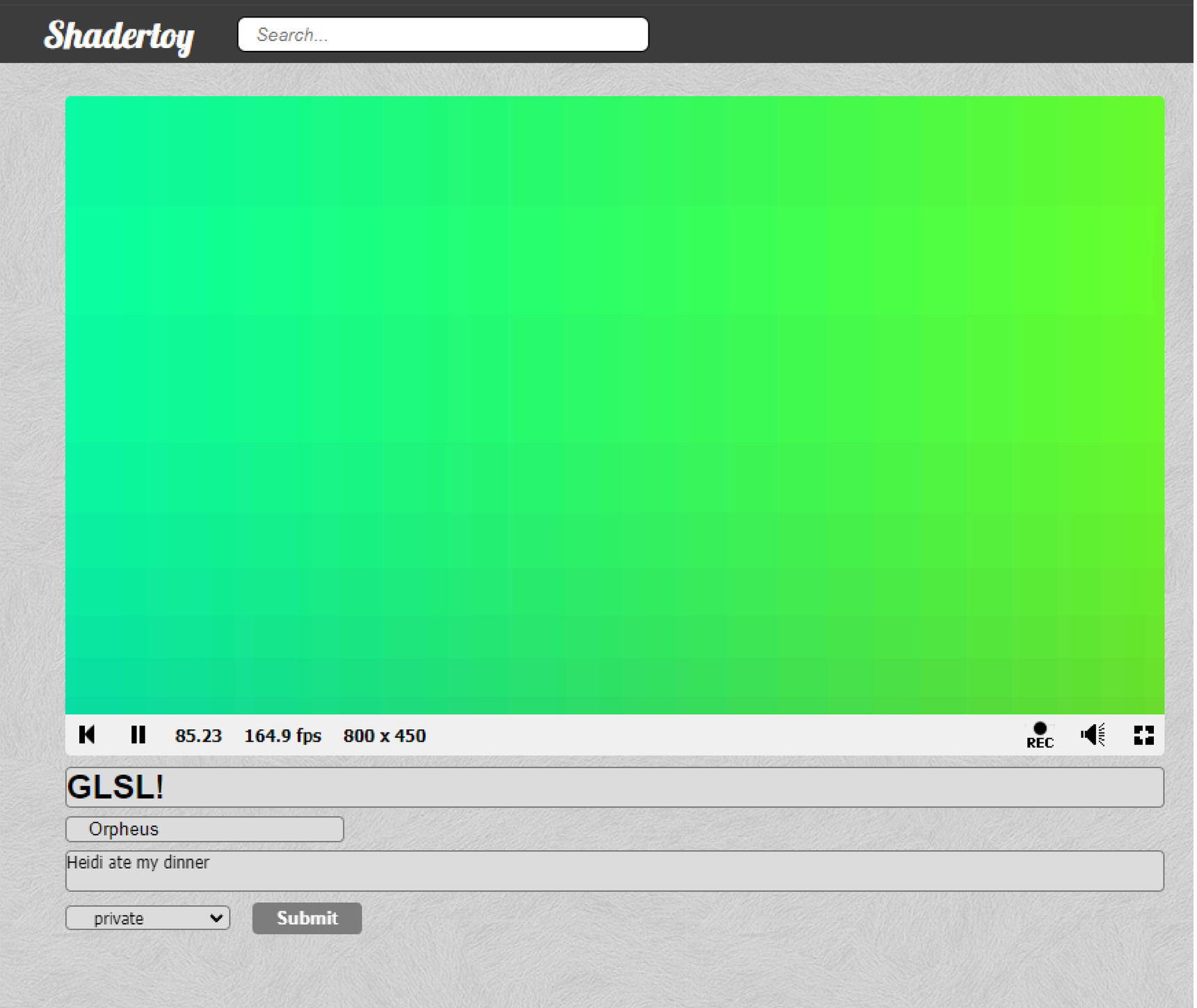
shadertoy.com /

Click me to learn more!

LETS MAKE A SHADER!

Let's start by making an account on ShaderToy.
https://www.shadertoy.com/





Create a new shader, give it a name, tag, and description! (Be creative...)

THIS IS WHAT YOU WILL SEE!

When dealing with shaders, we think in pixels. In this case, every pixel is calculated as a different color!

```
void mainImage( out vec4 fragColor, in vec2 fragCoord )
{
    // Normalized pixel coordinates (from 0 to 1)
    vec2 uv = fragCoord/iResolution.xy;

    // Time varying pixel color
    vec3 col = 0.5 + 0.5*cos(iTime+uv.xyx+vec3(0,2,4));

    // Output to screen
    fragColor = vec4(col,1.0);
}
```

LET'S START FROM THE BEGINNING

Delete everything inside void mainImage!

There are a couple parameters that we can see, vec4 is a vector with 4 different components, and vec2 is a vector with 2 different components. We can see that there is an input of fragCoord, and an output of fragColor. In this case, we are stating that the position of the fragment is the input, and we are going to write code to show the output of that fragment or pixel.

```
void mainImage( out vec4 fragColor, in vec2 fragCoord )
{

}
```