

Final Project

CS457

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1. Inspiration

Recalling previous project, I noticed that we have been playing with lighting, including surface normal and lighting calculation for a long time. Inspired by first three projects, I decided to create a geometry with features done in projects. Since I am a huge fan of The Avengers, I choose to create Captain American's Shield as the project theme. Of course, this is not a pure flat shield. It will be a 3D (look like 3D) metal, colored, and scratched shield. It may contain an animation.

2. Strategies

The first step to do is creating the plain circular sphere that is used to hold the texture. Then, the vertex shader will calculate surface normal for the project. Based on the user's choice, the vertex shader can do the displacement mapping and the animation. The fragment shader then plays with normal to do bump mapping with noise effects on the object. The scratch is part of the bump mapping. The scratches on the shield work as the valley on the terrain map. I will rotate normal vectors of the both sides of the scratch to create a deep illusion. Then, I will mix the surface color with black in a proper ratio to show that a sharp item scratch over the surface and leave a mark on that.

3. Results



Figure 1. Target Result

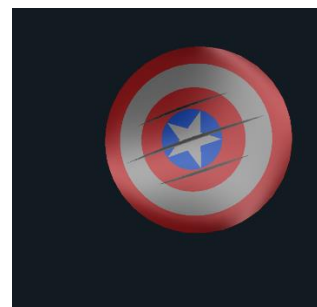


Figure 2. Rendered Result