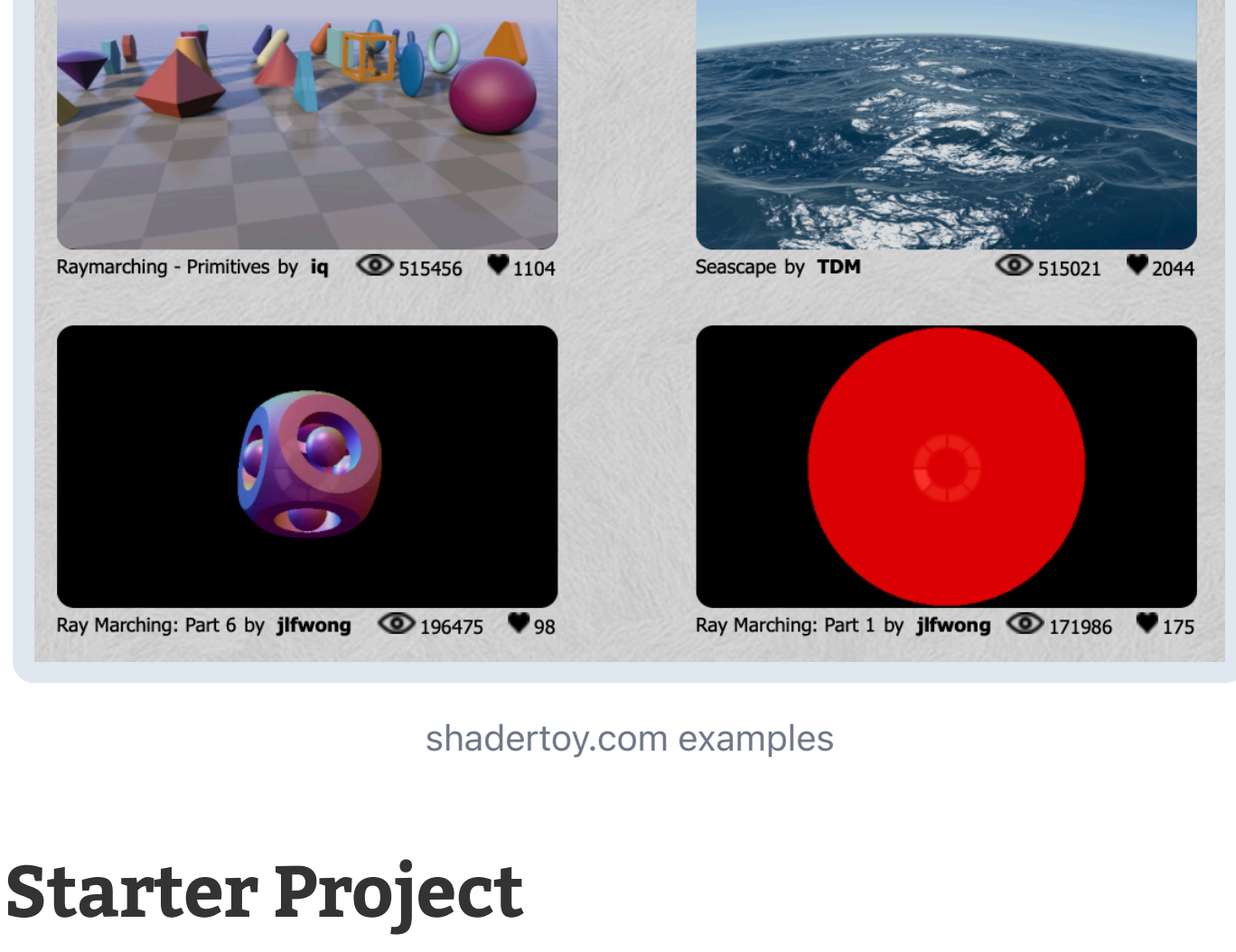
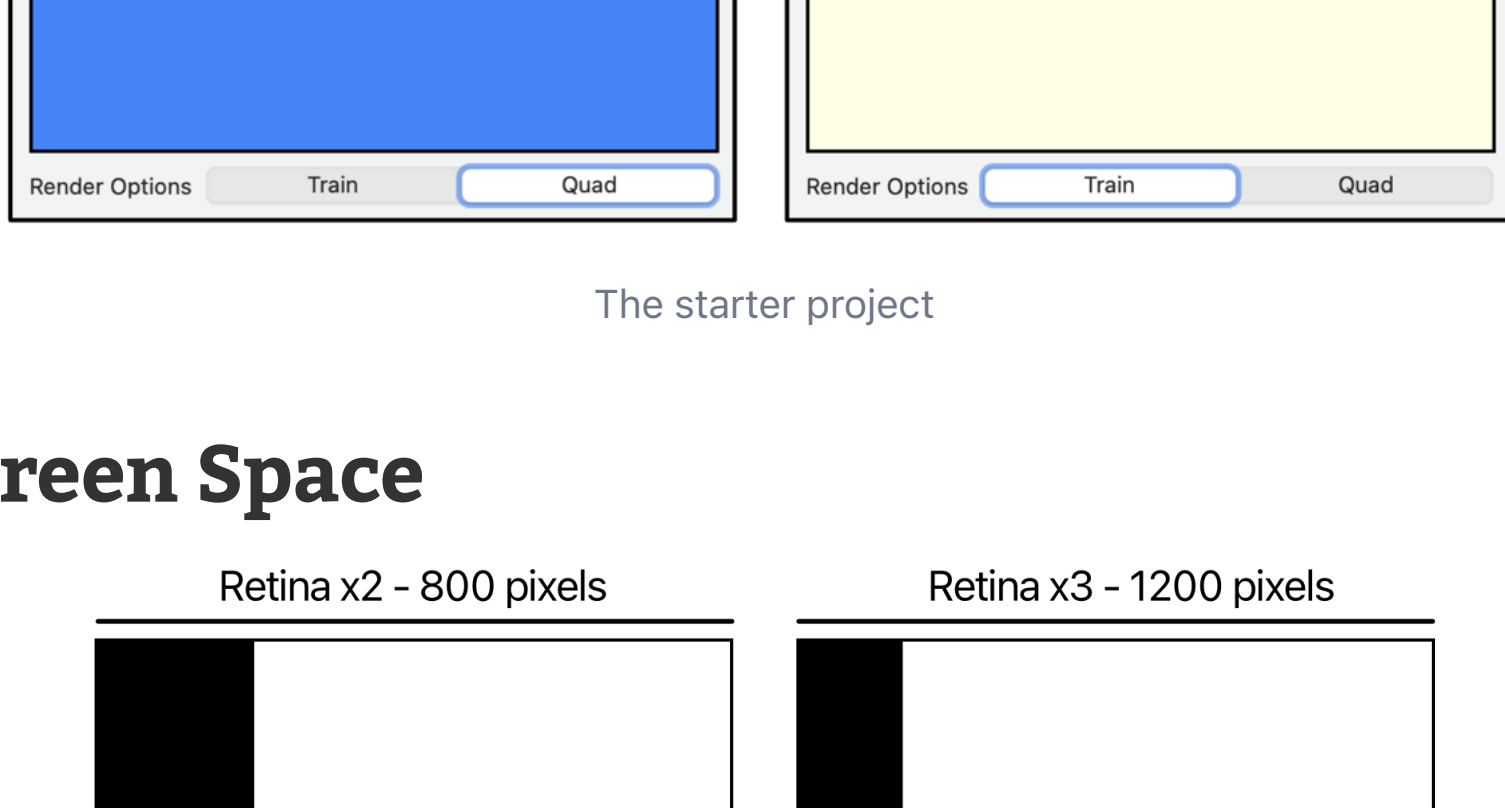


7 The Fragment Function



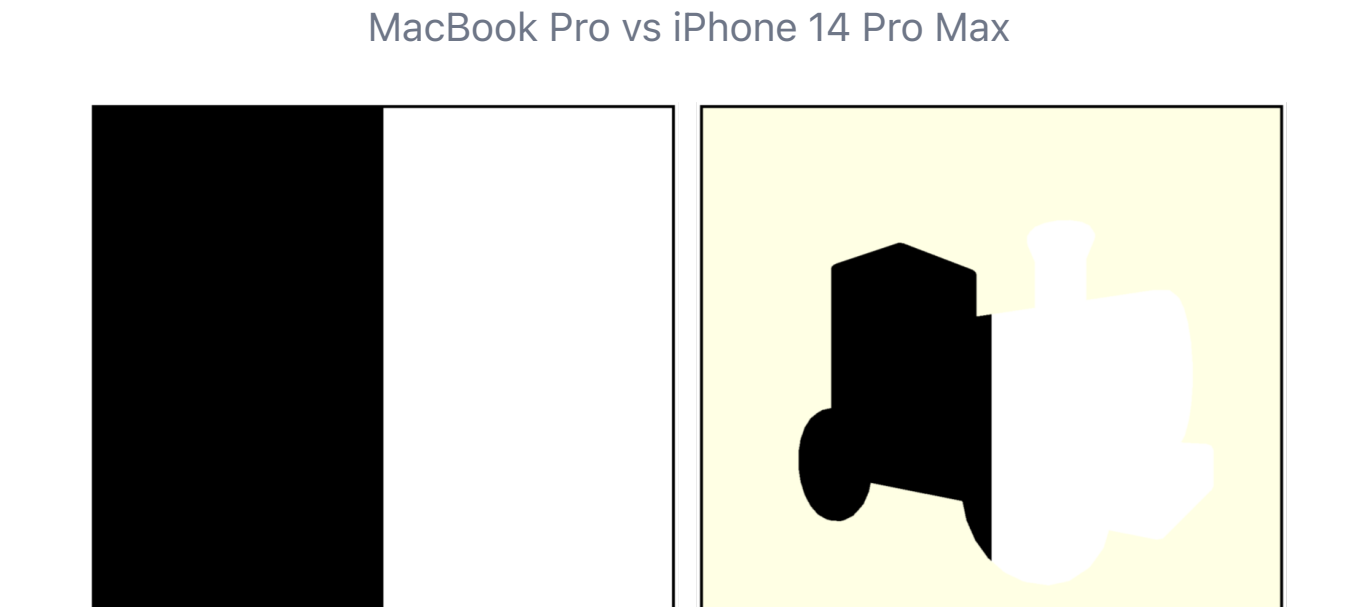
shadertoy.com examples

The Starter Project

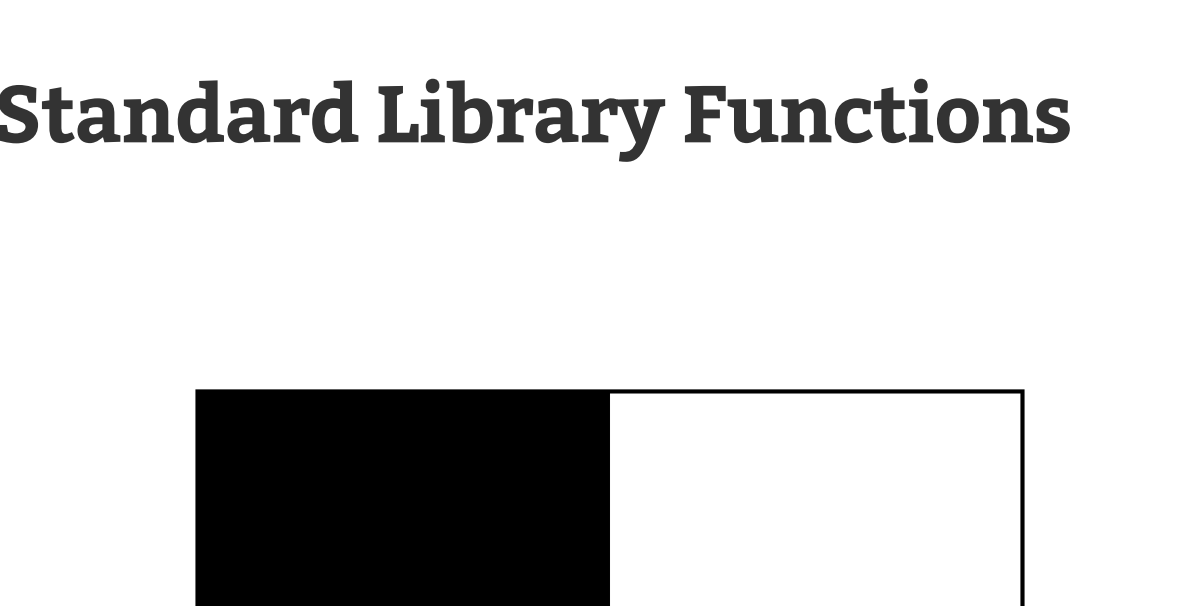


The starter project

Screen Space



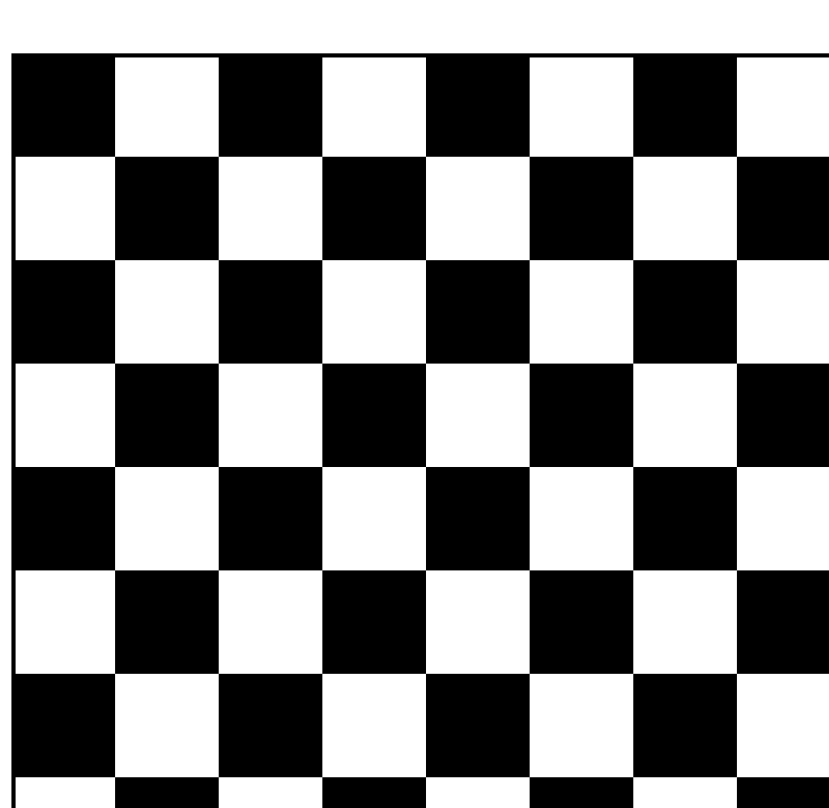
MacBook Pro vs iPhone 14 Pro Max



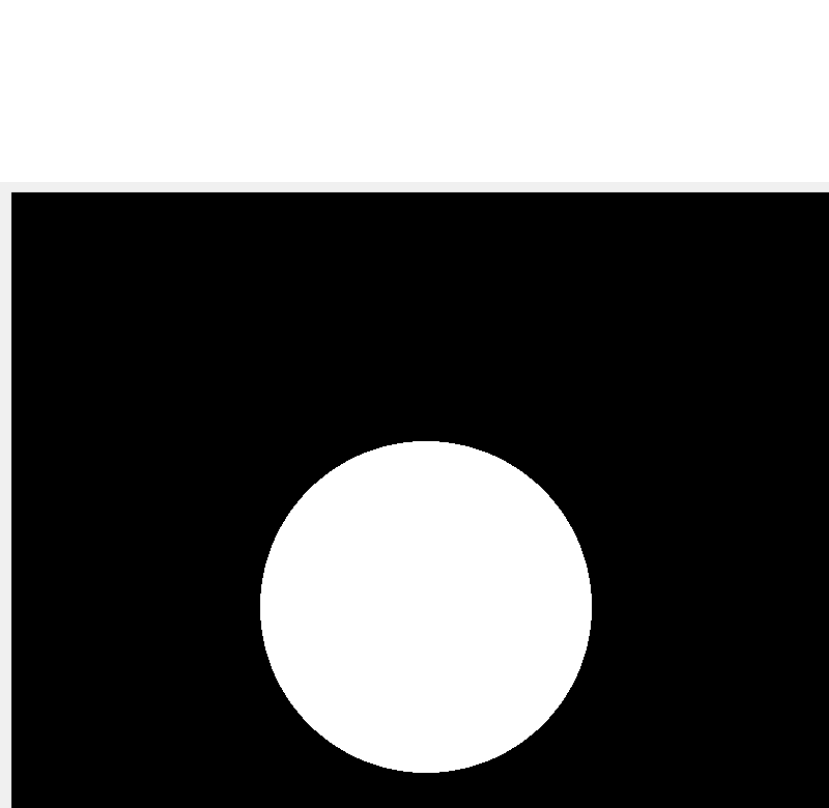
Corrected for retina devices

Metal Standard Library Functions

step

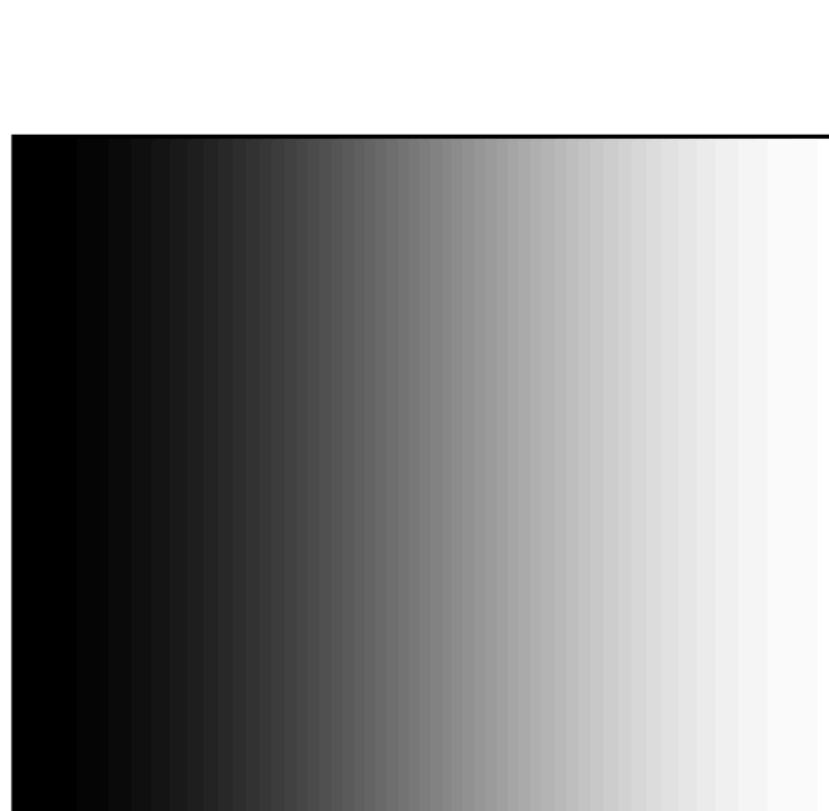


step



Checker board

length



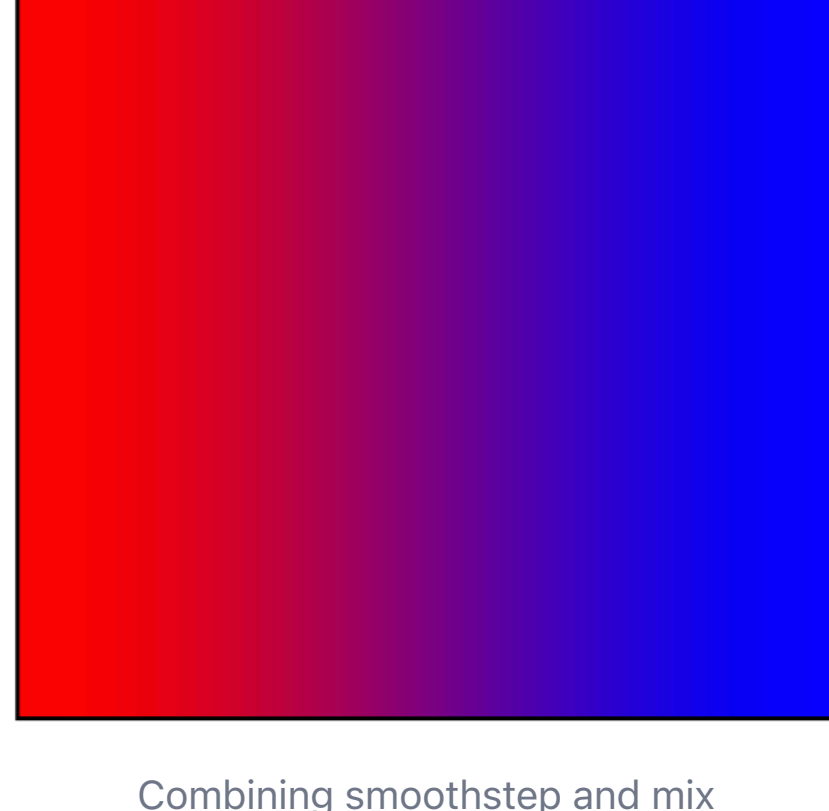
Circle

smoothstep

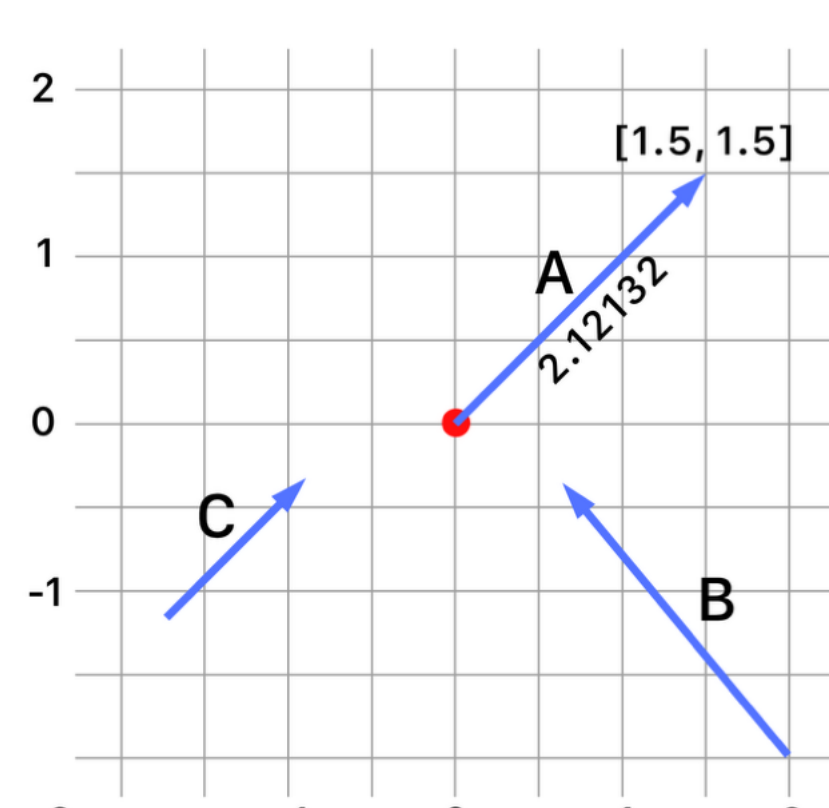


smoothstep gradient

mix

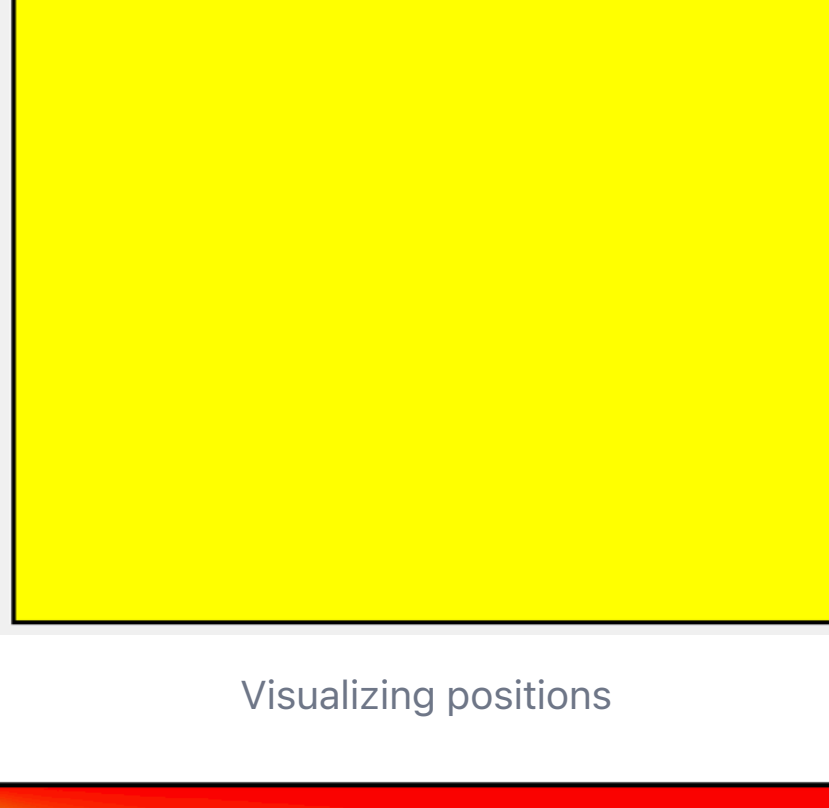


A blend between red and blue



Combining smoothstep and mix

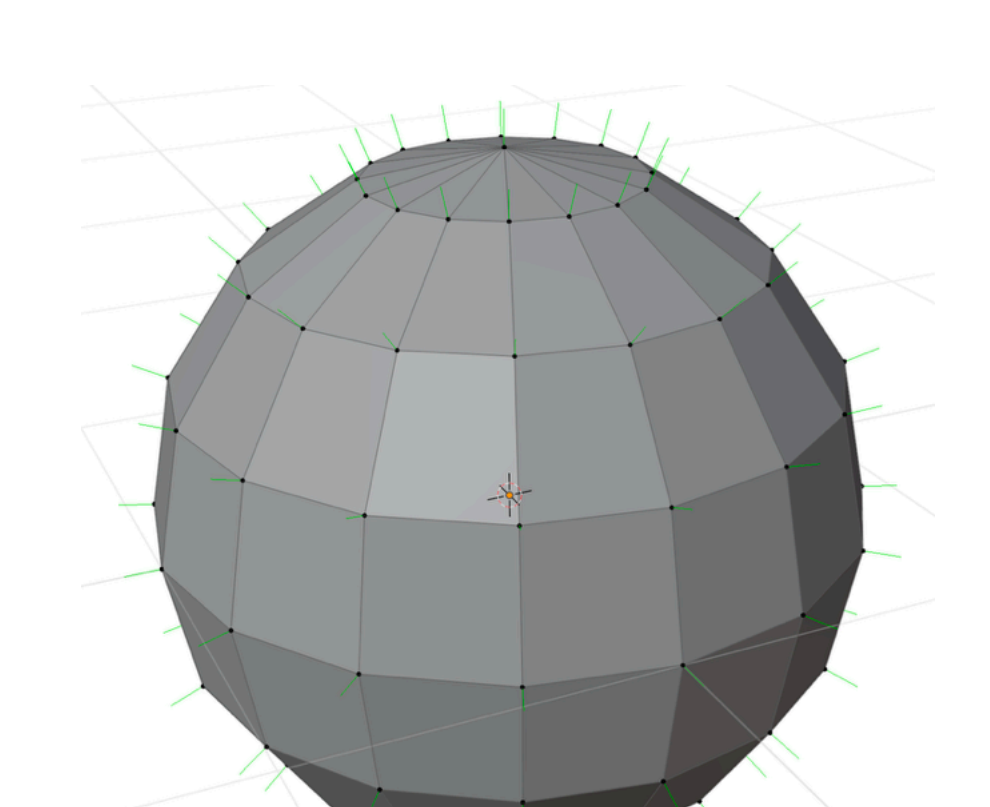
normalize



Vectors

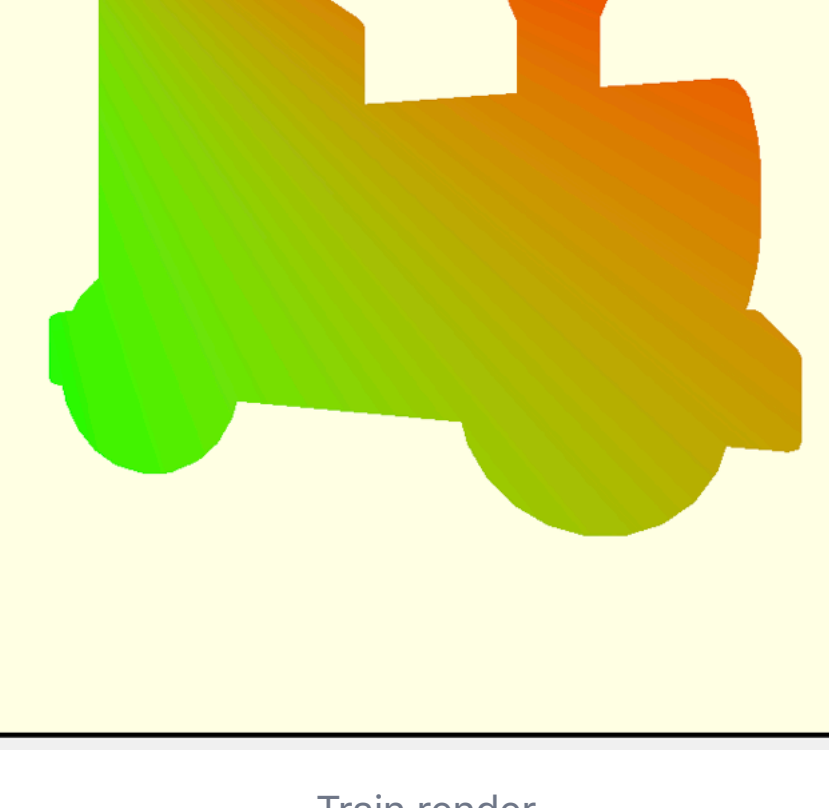


Visualizing positions

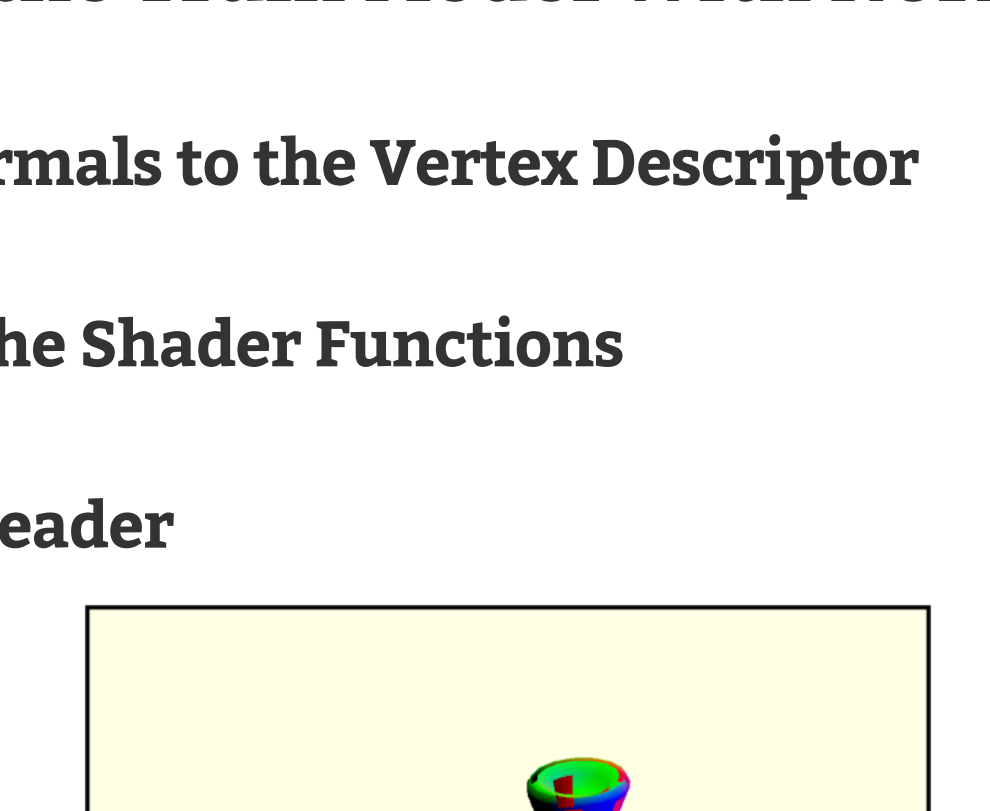


Normalized positions

Normals



Vertex normals



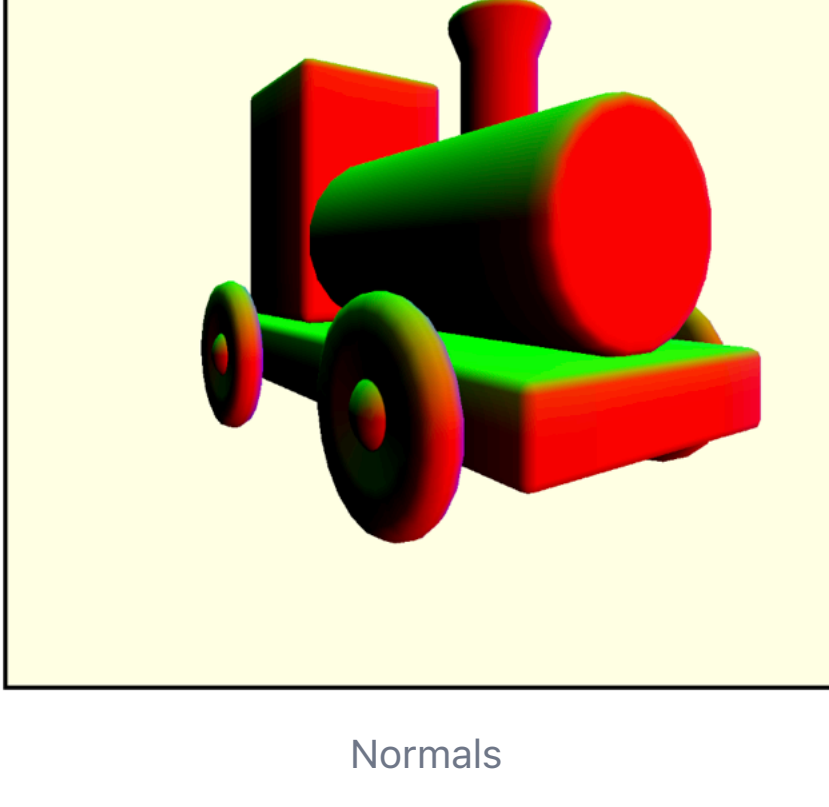
Train render

Loading the Train Model With Normals

Adding Normals to the Vertex Descriptor

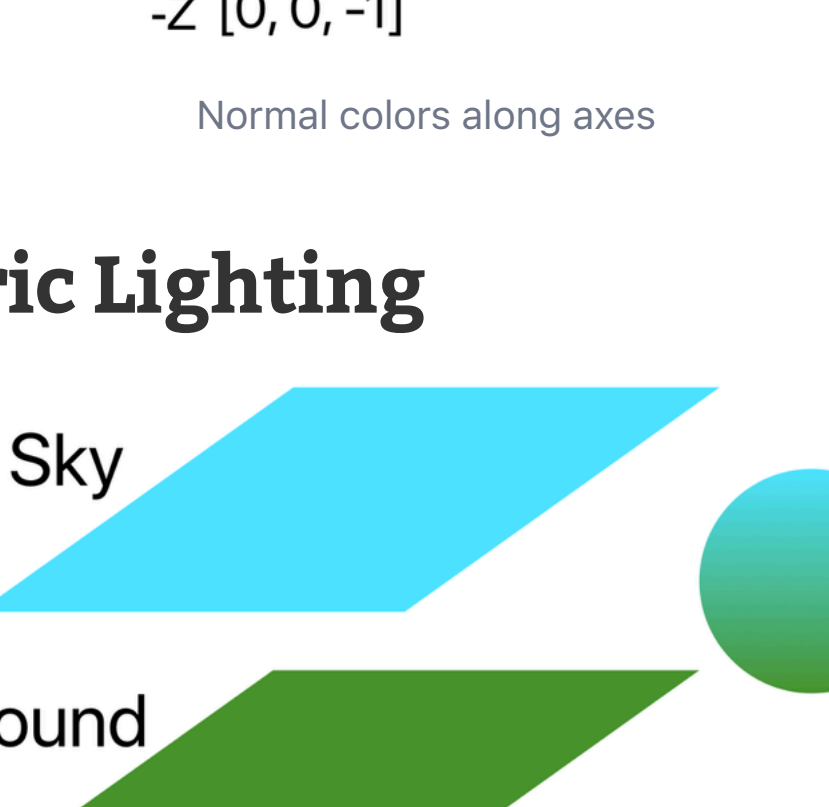
Updating the Shader Functions

Adding a Header

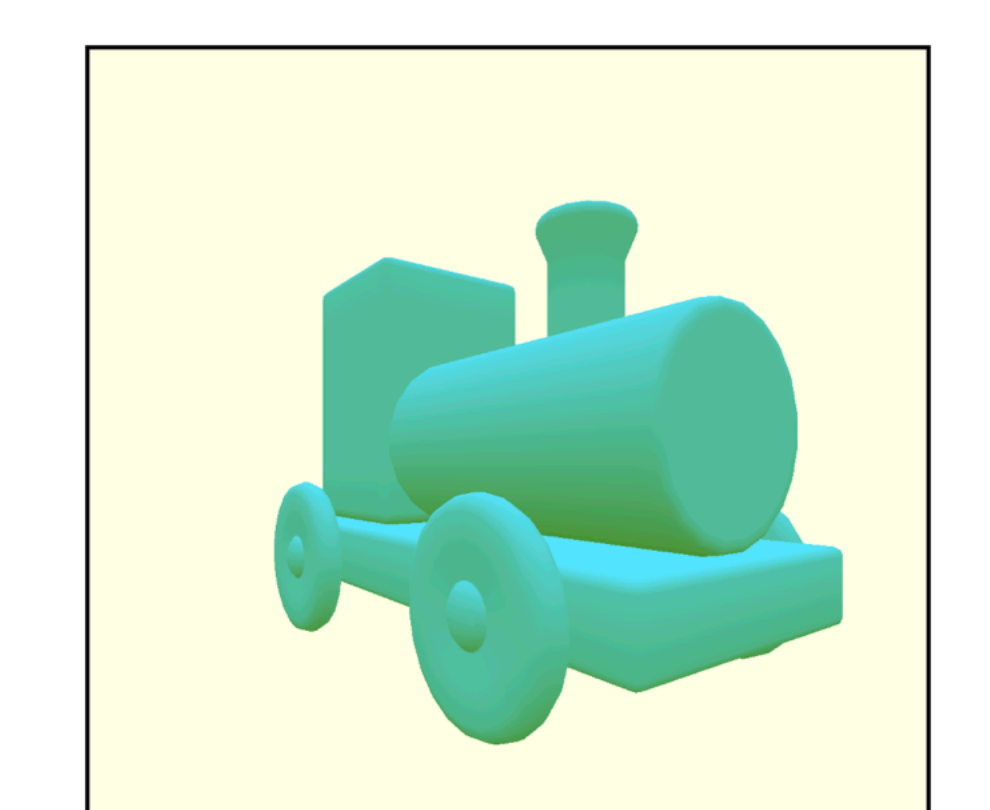


Normals with rendering weirdness

Depth



Normals



Normal colors along axes

Hemispheric Lighting

Hemispheric lighting

Hemispheric lighting