

INTRODUCTION TO PROGRAMMING SHADERS

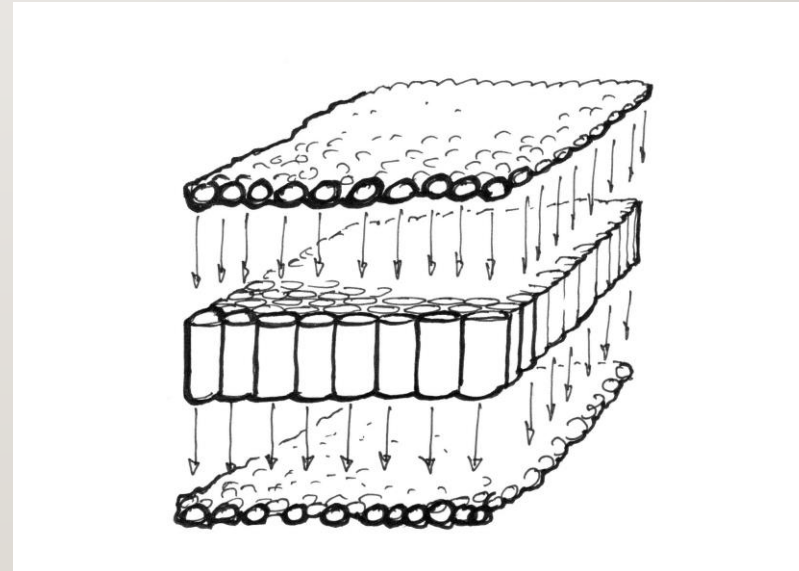
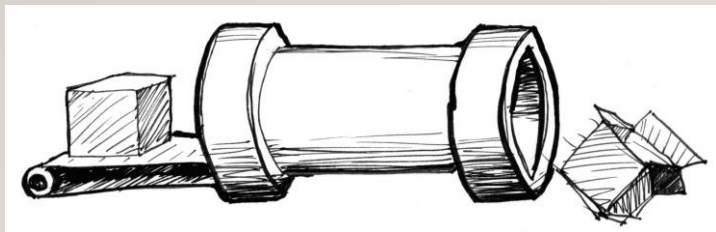
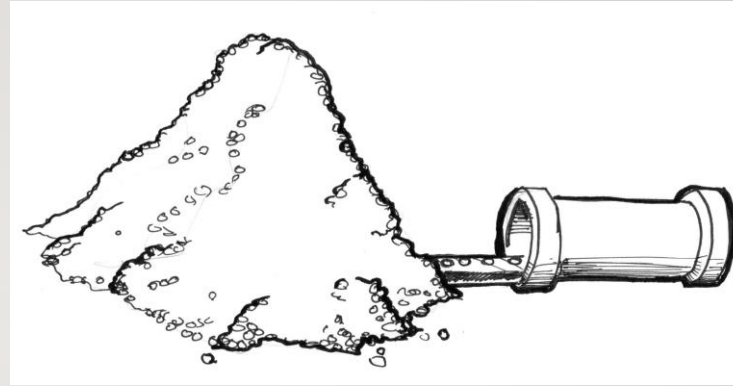
MARIANNA BUDNIKOVA



WHAT ARE SHADERS?

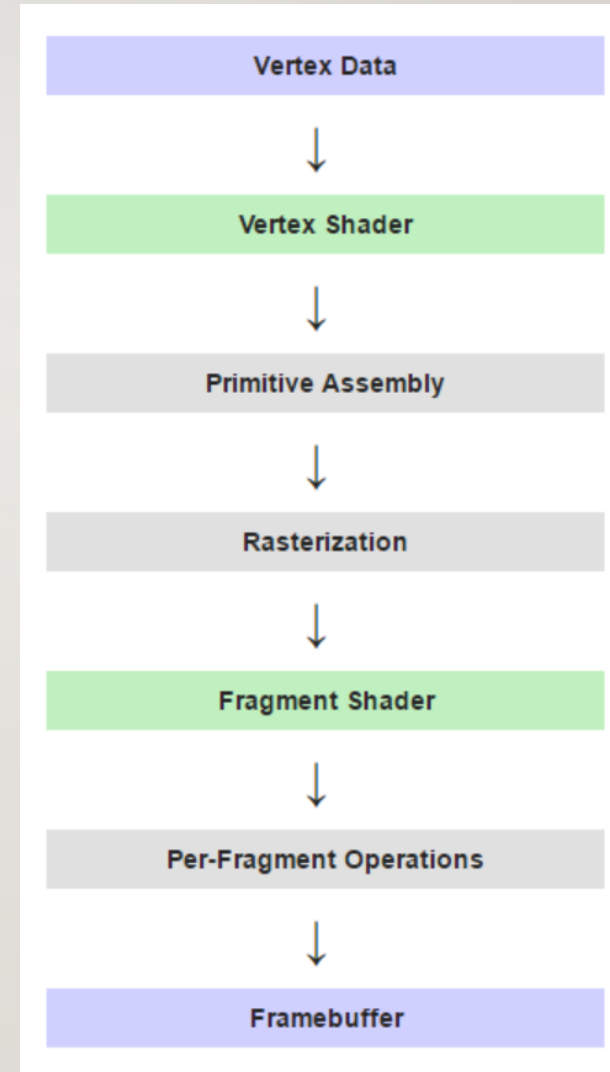


SPEED? = PARALLEL
PROCESSING ON GPU

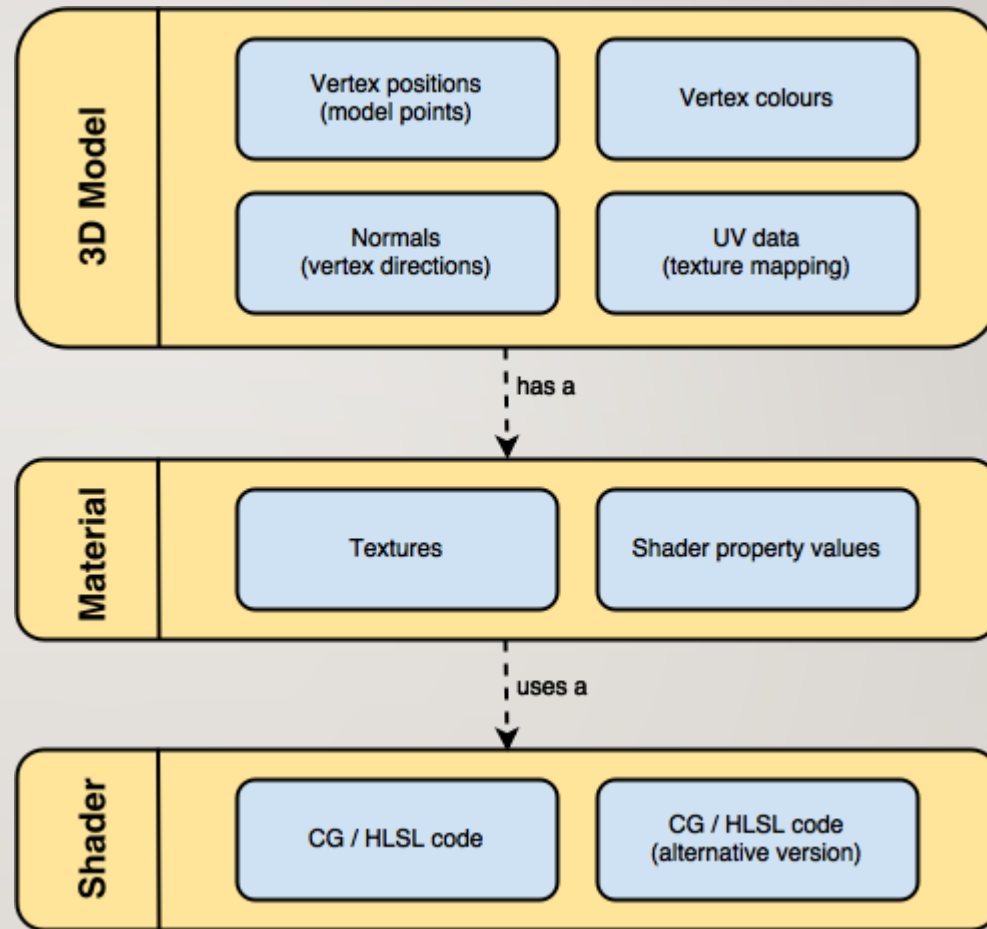


WHERE IS A SHADER IN THE GRAPHICS PIPELINE?

https://en.wikibooks.org/wiki/Cg_Programming/Programmable_Graphics_Pipeline



3D MODEL/SHADER RELATIONSHIP IN UNITY



WHAT WILL I BE USING TODAY?

- Unity
- Visual Studio
- CG Programming Language (C for Graphics)

HELLO WORLD SURFACE SHADER

Use case: material needs to be
affected by light in a realistic way

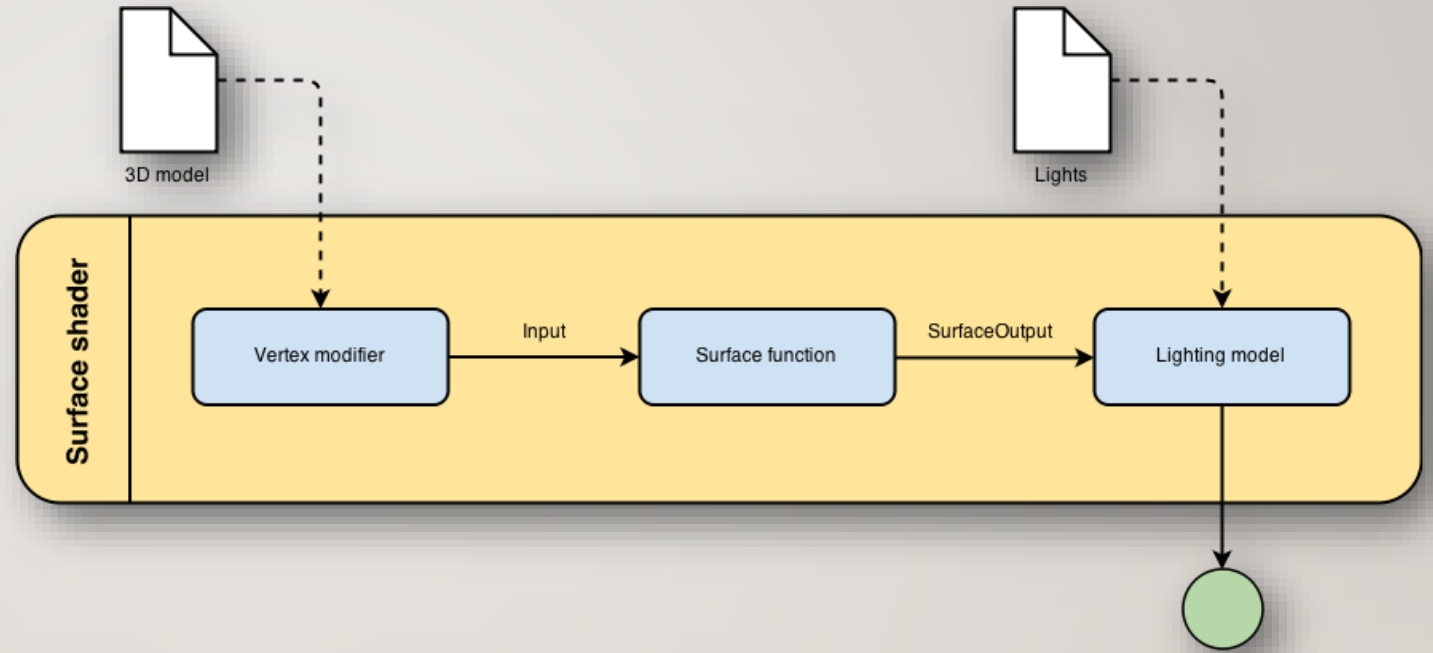


HELLO WORLD VERTEX AND FRAGMENT SHADER

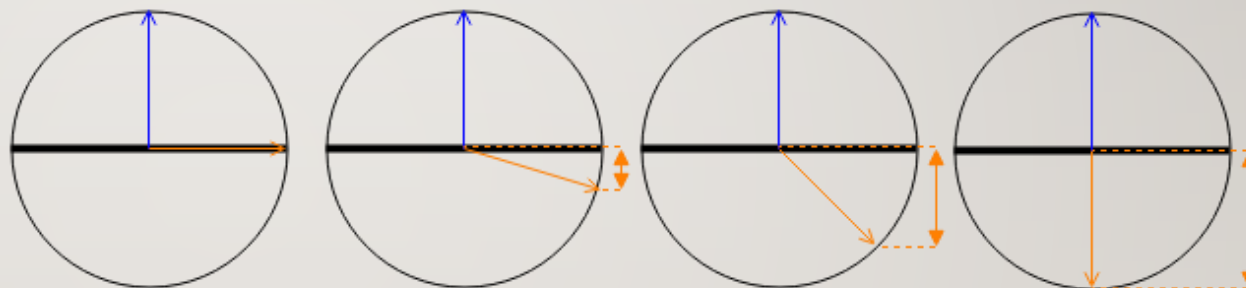
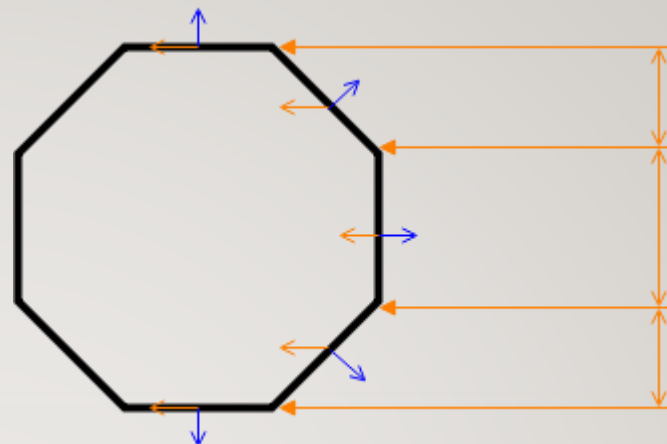
Use case: non-realistic materials, 2D
graphics, post-processing effects



SURFACE SHADER



DIFFUSE LIGHTING MODEL



$$I = \|L\| \cos\alpha = \cos\alpha$$

TOON SHADER



CIRCLE SHADER



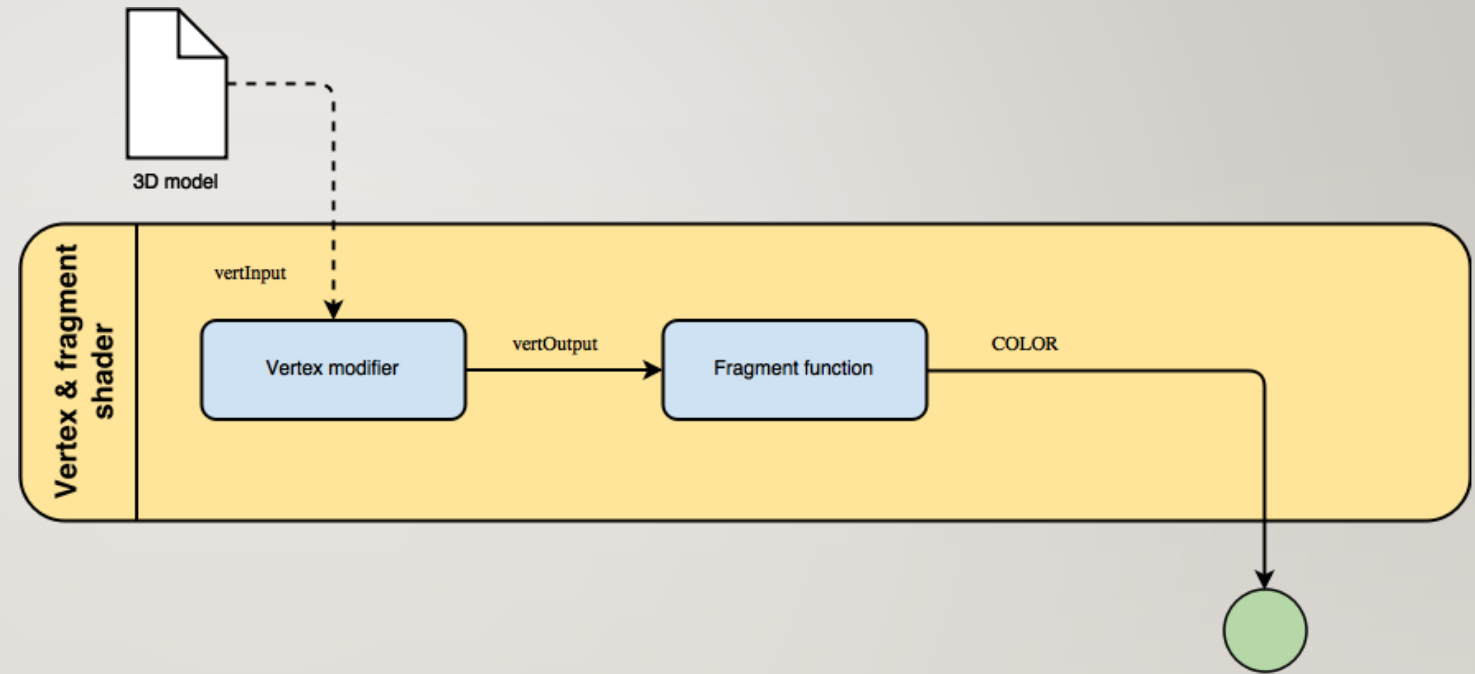
SNOW SHADER



PLUMP/SKINNY SHADER



GOING LOW LEVEL: VERTEX AND FRAGMENT SHADER



POST-PROCESSING
EFFECT: BLACK AND
WHITE



CONCLUSION OR WHERE TO NOW?

- Alan Zucconi's Shaders in Unity Tutorial:
<http://www.alanzucconi.com/2015/06/10/a-gentle-introduction-to-shaders-in-unity3d/>
- *The Book of Shaders*:
<http://patriciogonzalezvivo.com/2015/thebookofshaders/>