OpenGL

Open Graphics Library

History

OpenGL 1.0 (1992)

Basic Features for all Graphics Cards

OpenGL 1.0 (1992)

Want support for your graphics card feature?
Write Extensions!!!

OpenGL 1.1 (1997)

Texture Objects

What is Texture then?

What is Texture then?

Nothing better than christmas chocolates to explain #UVmapping to your kids #CGI #3D #material #texture

OpenGL 1.2 (1998)

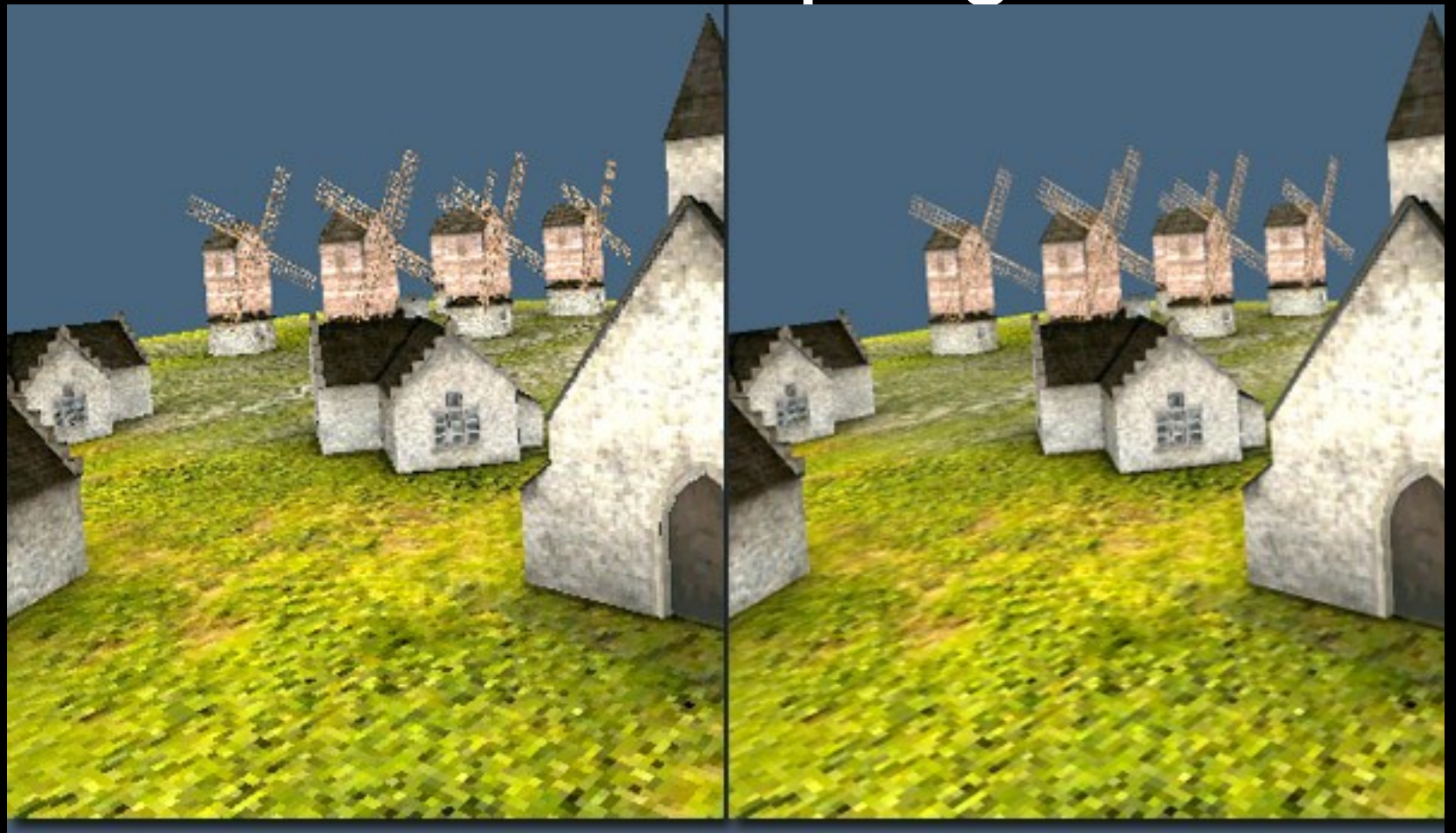
“Image Subset” for image processing

OpenGL 1.3 (2001)

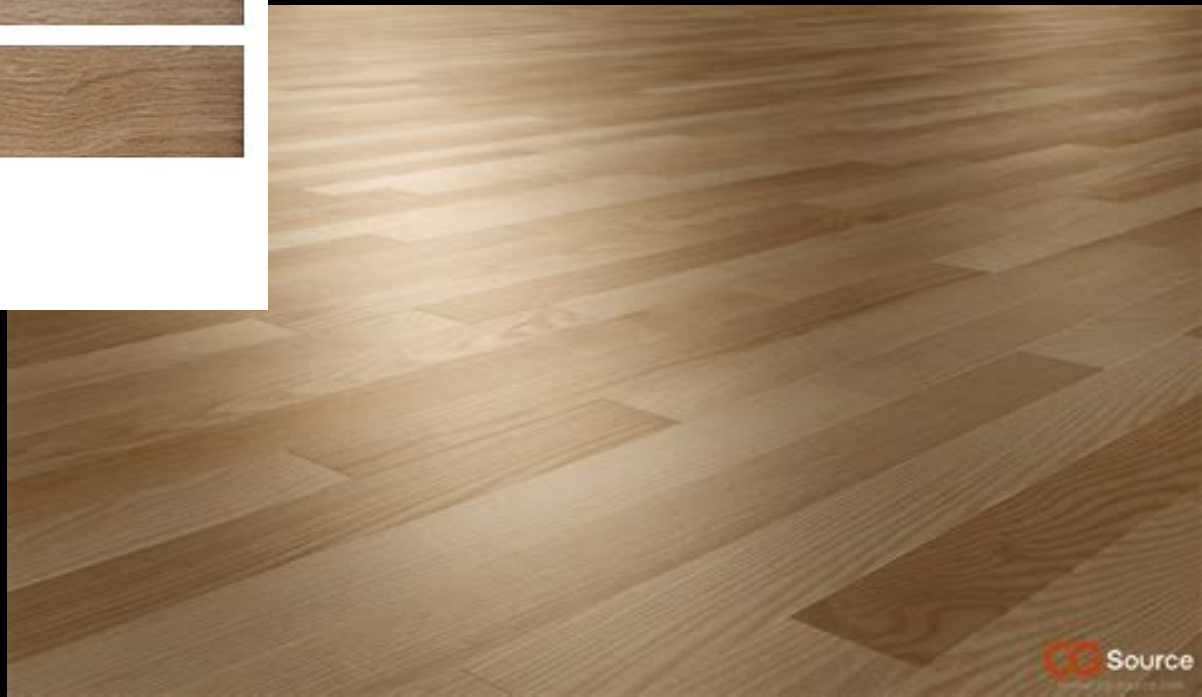
More Texturing Features

- Texture Compression
- Multisampling
- Multitexturing

Multisampling



Multitexturing



OpenGL 1.5 (2003)

- GLSL (OpenGL Shading Language)

OpenGL 2.0(2004)

- C-like GLSL

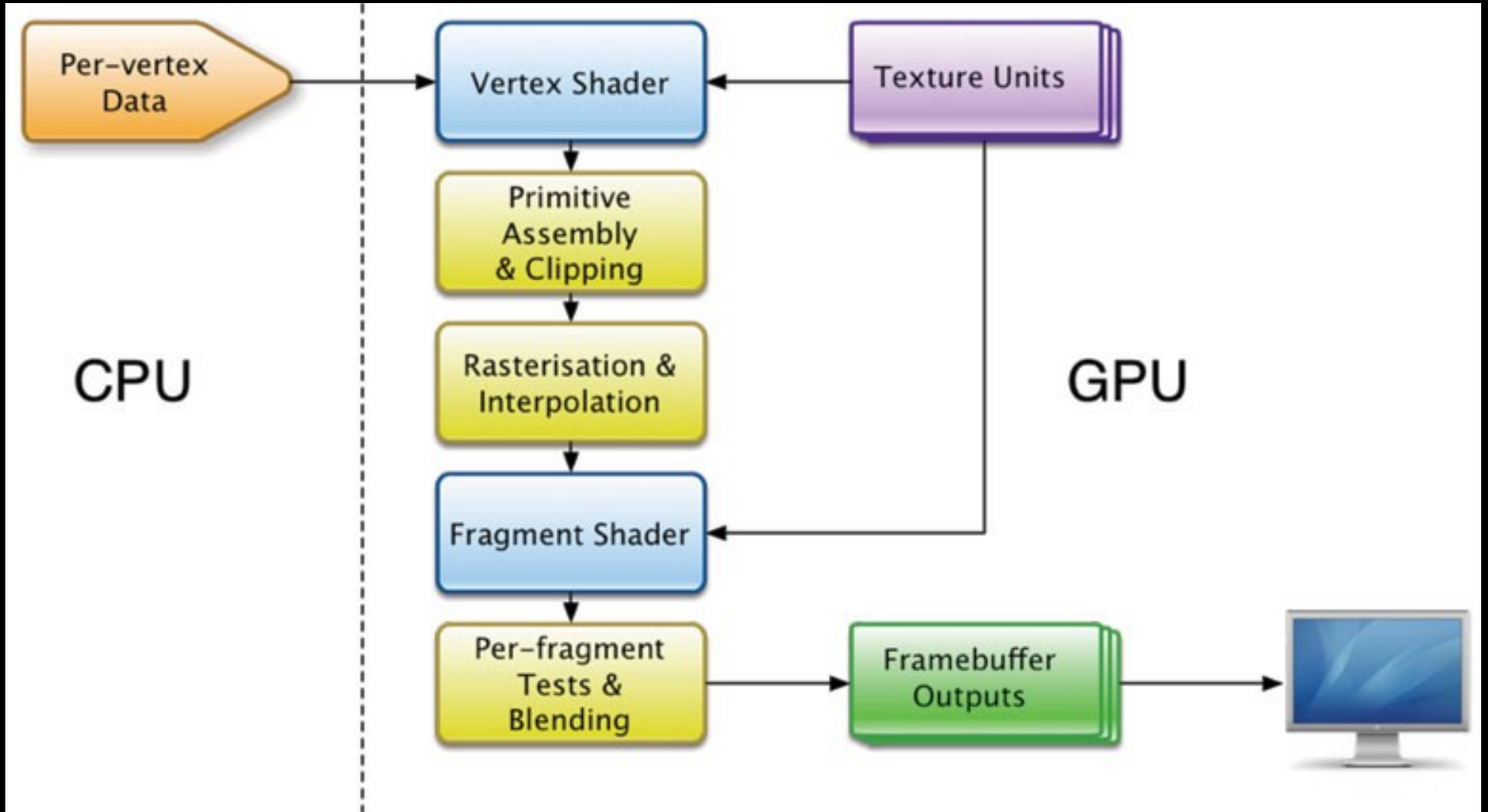
OpenGL 3.0 (2008)

- Deprecating Features
  - Fixed Functions
  - glBegin and glEnd
  - GLSL v1.1 and v1.2

older <- 3.0 VS 3.1 -> newer

- Traditional (Fixed ☹)
  - 1. glBegin
  - 2. Give data to GPU
  - 3. glEnd
- NEW! (programmable)
  - VAO & VBO
  - Vertex Shader!!!!
  - Fragment Shader!!!!
  - And So much Fun!

Simple Graphics Pipline



Demo Time!

https://www.shadertoy.com

What is Mingw ?

Not related to OpenGL

What is Mingw ?
Minimalist GNU for Windows

So I can only do OpenGL stuffs in Mingw?

GUI System

- Win32 (legacy)
- QT Framework (old but has nice features)
- GTK+
- GLUT or FreeGLUT
- GLFW

What about Android and IOS?

OpenGL ES!!!

OpenGL ES 1.0 (2003)

- It only supports Fixed Function Pipeline
- Features are same as OpenGL 1.3

OpenGL ES 2.0 (2007)

- Same features as Destop’s OpenGL 2.0
- But with Programmable Pipeline
  - Vertex Shader
  - Fragment Shader

OpenGL ES 3 (2012-2014-2015)

- Acceleration for advanced visual effects
- Ericsson Texture Compression (ETC2)
- Enhanced Texturing
- Easier to write portable applications
- Geometry and Tessellation Shaders

GLES 2.0 vs GLES 3.*

Which one is better?

OpenGL ES 3.0 and 3.1 and 3.2 and..?

- Bad Implementations
- Not Optimized
- Poor mobile support (drivers)

https://godotengine.org/news/5

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Maintenance release: Godot 3.0.2

By: Hein-Pieter van Braam Mar 04 - 2018

We've found [illegible] regressions in Godot 3.0.1. This maintenance release addresses [illegible] and also a[illegible]tures for our C# users.

Moving to Vulkan (and ES 2.0) instead of OpenGL ES 3.0

By: Juan Linietsky Feb 26 - 2018

The rationale for the OpenGL ES 3 renderer was having a single codebase for targeting all platforms. This sounds really good in theory and we could say it *almost* works, but...

Maintenance release: Godot 3.0.1

https://godotengine.org/article/abandoning-gles3-vulkan-and-gles2

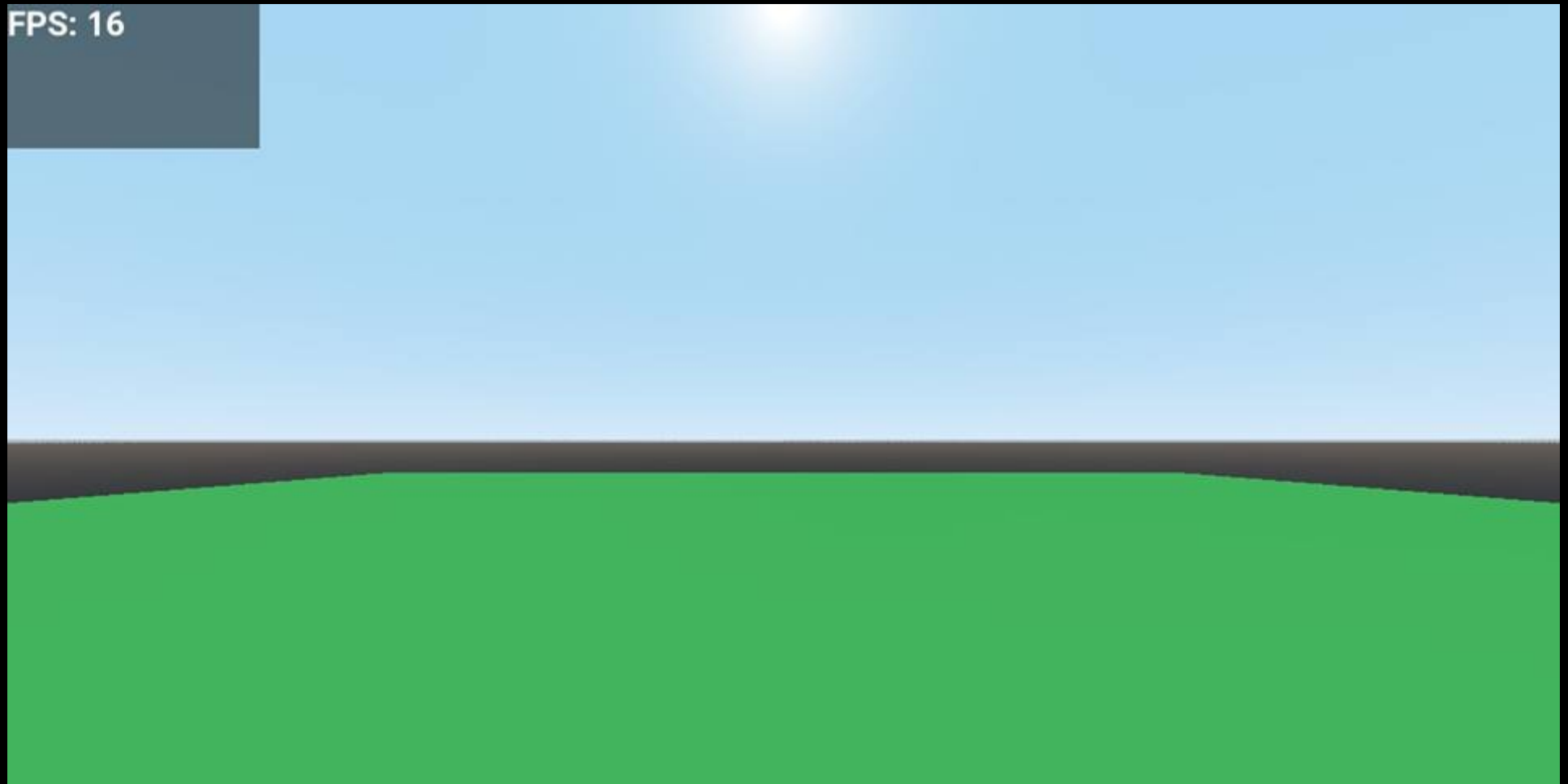
Radu Bolovan

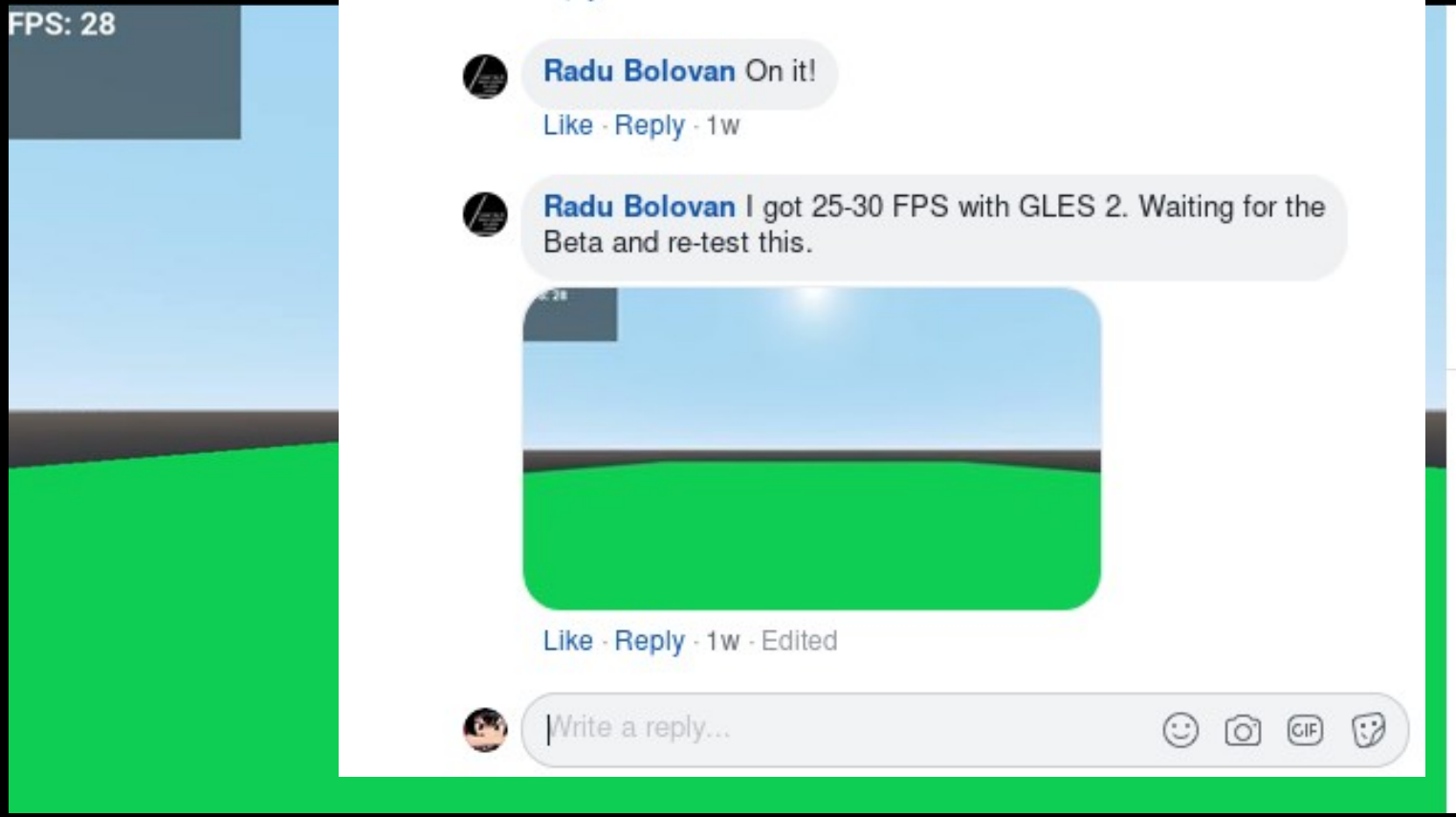
January 6 at 8:10 AM

Testing 3.1 alpha 5:
3D project exported to Android with GLES 3.
The project contains:
- a plane
- a camera
- a directional light with shadows enabled
- a sprite + a label as debug info

Phone details: LG K10 (2017), Android 8.1.0, 2GB RAM, OpenGL ES 3.2.
The result: 15-17 FPS. Please see screenshot for details. Is this normal?

https://www.facebook.com/groups/godotengine/permalink/1455540687915854/


FPS: 16



Dylan Warlus Use GLES2 1

Like · Reply · 1w

Radu Bolovan On it!

Like · Reply · 1w

Radu Bolovan I got 25-30 FPS with GLES 2. Waiting for the Beta and re-test this.

Like · Reply · 1w · Edited

Write a reply...

Radu Bolovan

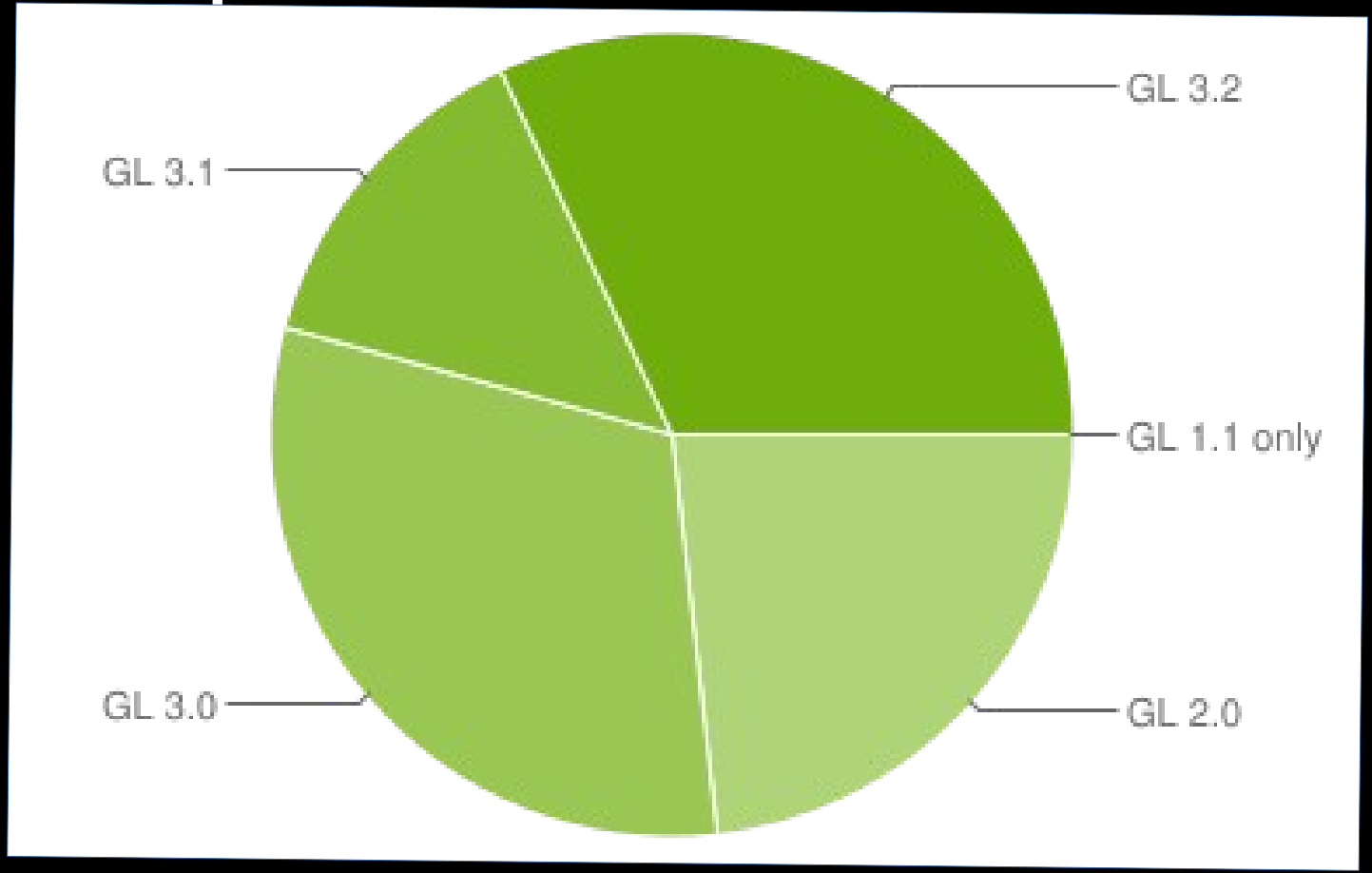
January 6 · Edited

I got 25-30 FPS with GLES 2. Waiting for the Beta and re-test this.

Like

https://www.facebook.com/groups/godotengine/permalink/1455540687915854/

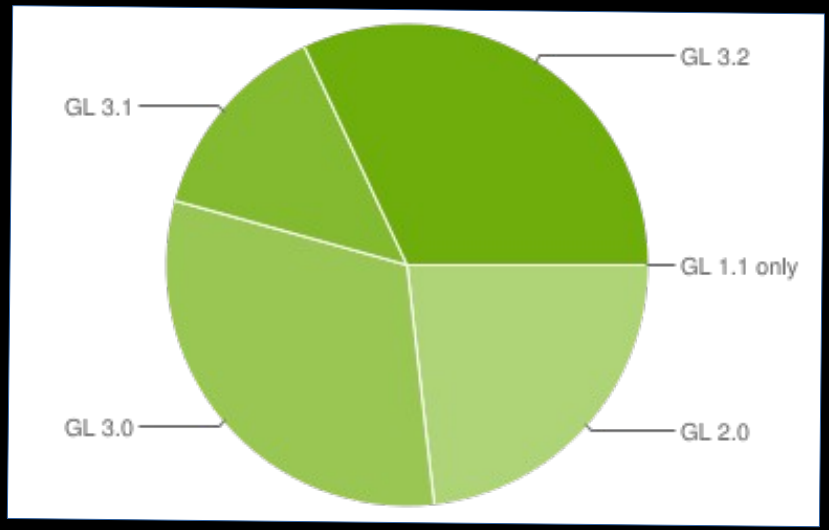
OpenGL ES for Android



https://developer.android.com/about/dashboards/#OpenGL

OpenGL ES 3.* for Android

- Supported but not runnable
- Can be run only on a handful of high-end devices.

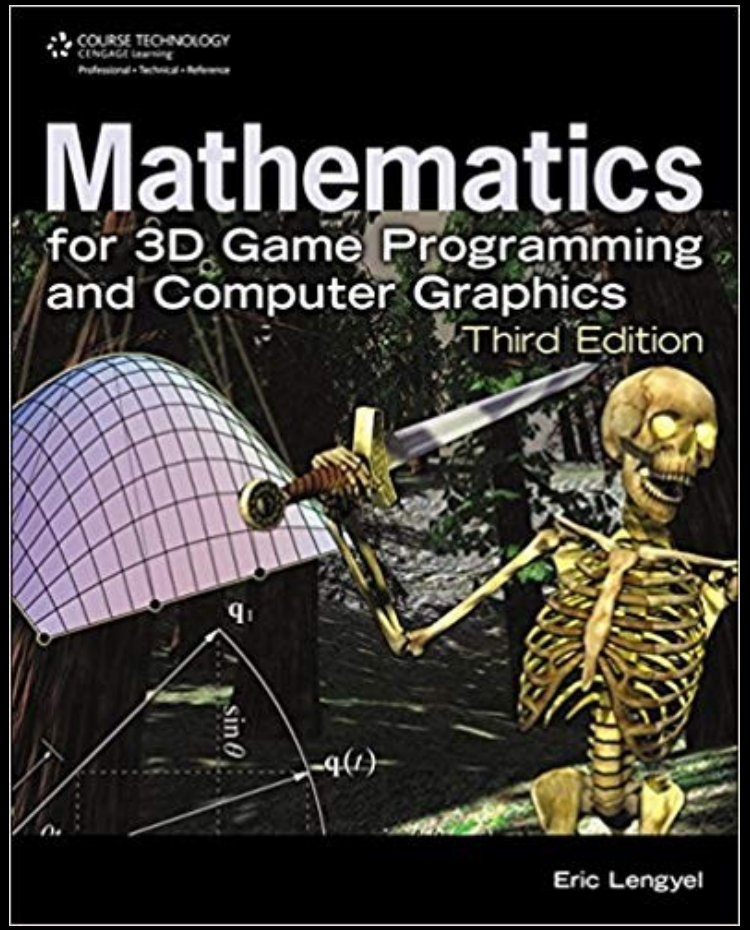


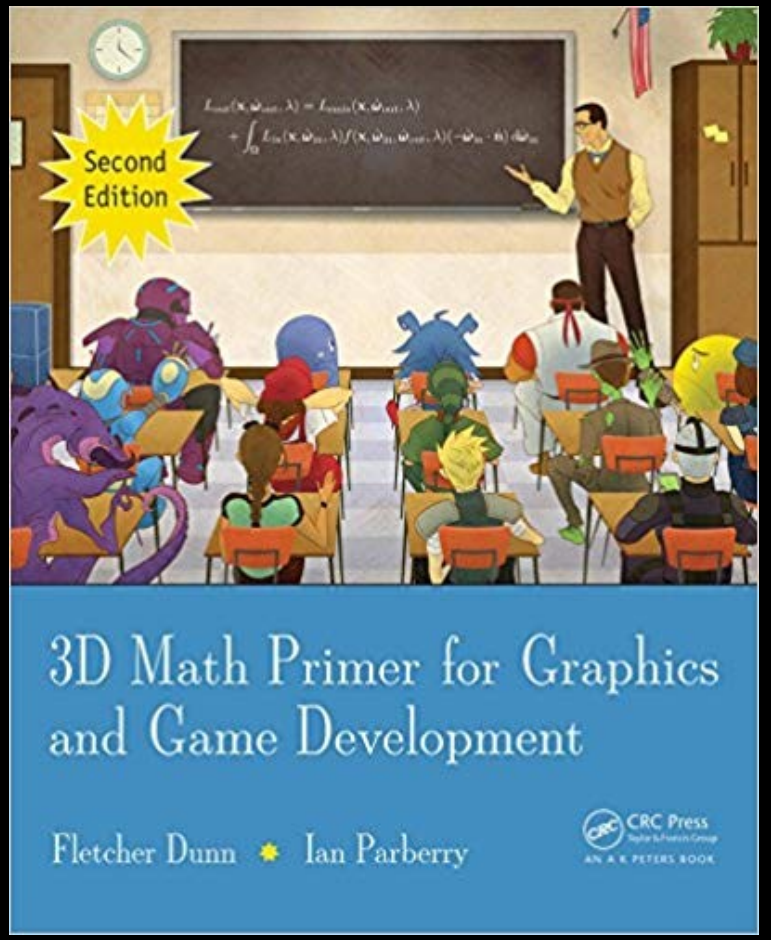
Alternatives To OpenGL

- DirectX (Only Windows and Xbox…. Not really)
  - https://store.steampowered.com/linux
  - https://store.steampowered.com/steamos
- Metal (Apple)
- Vulkan (new)

Are you book worm?

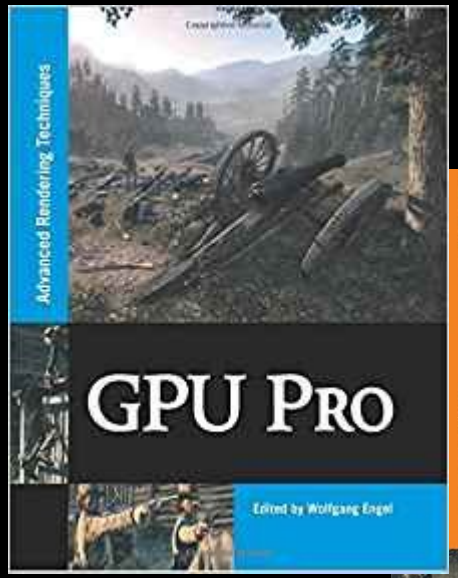
Beginner

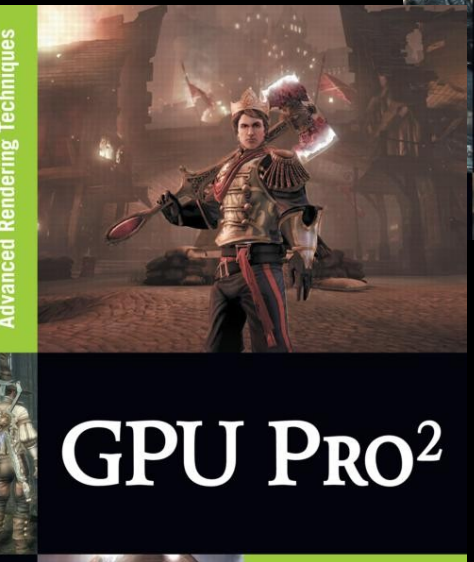


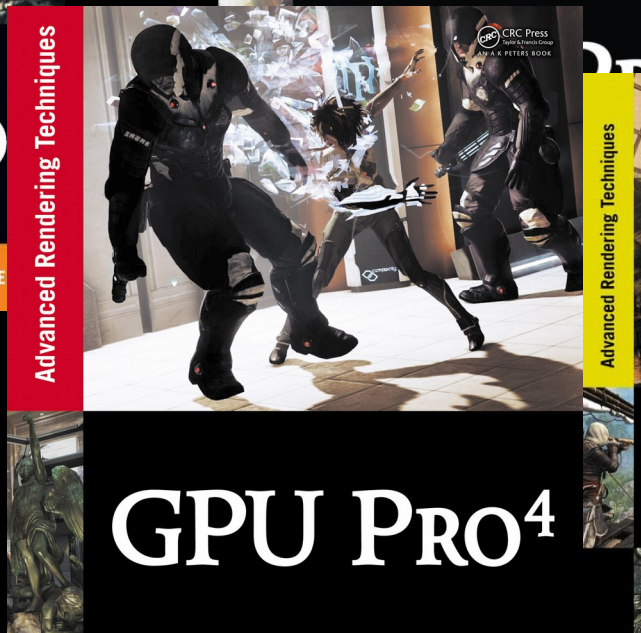


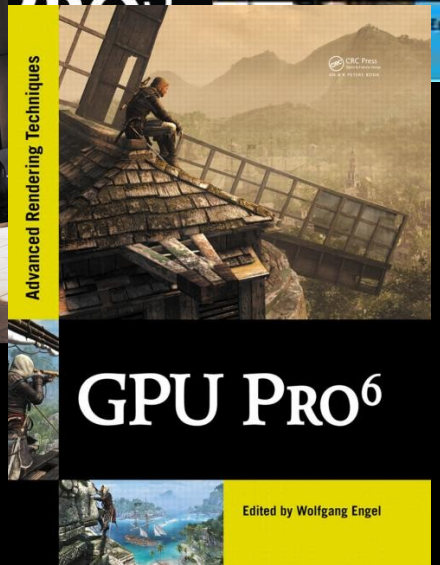
Are you book worm?

For Shaders!!

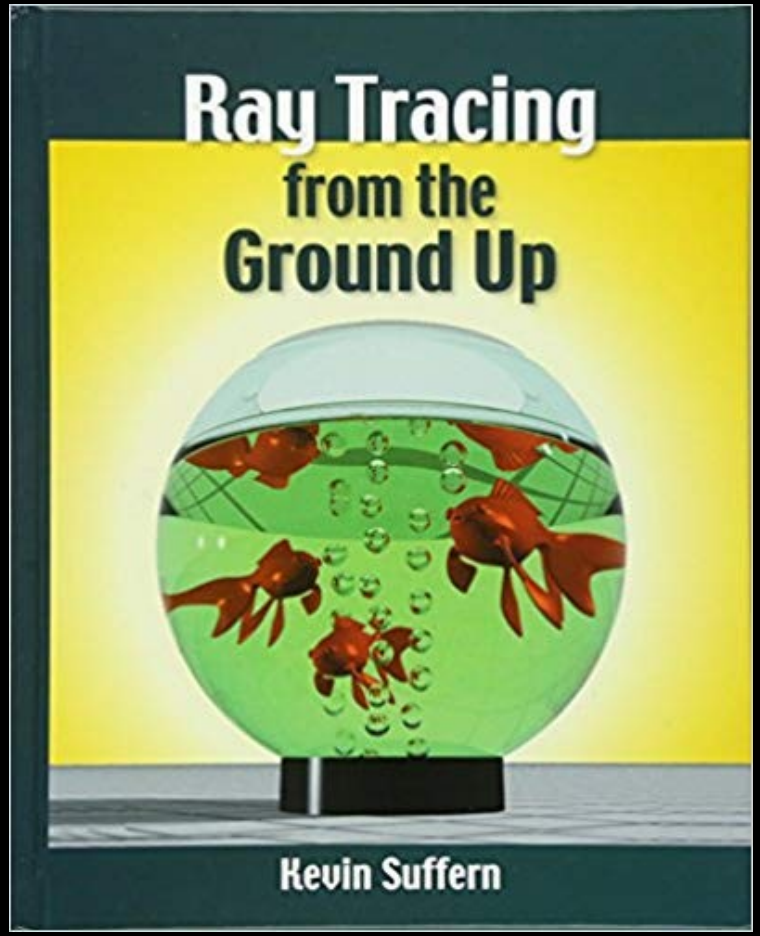




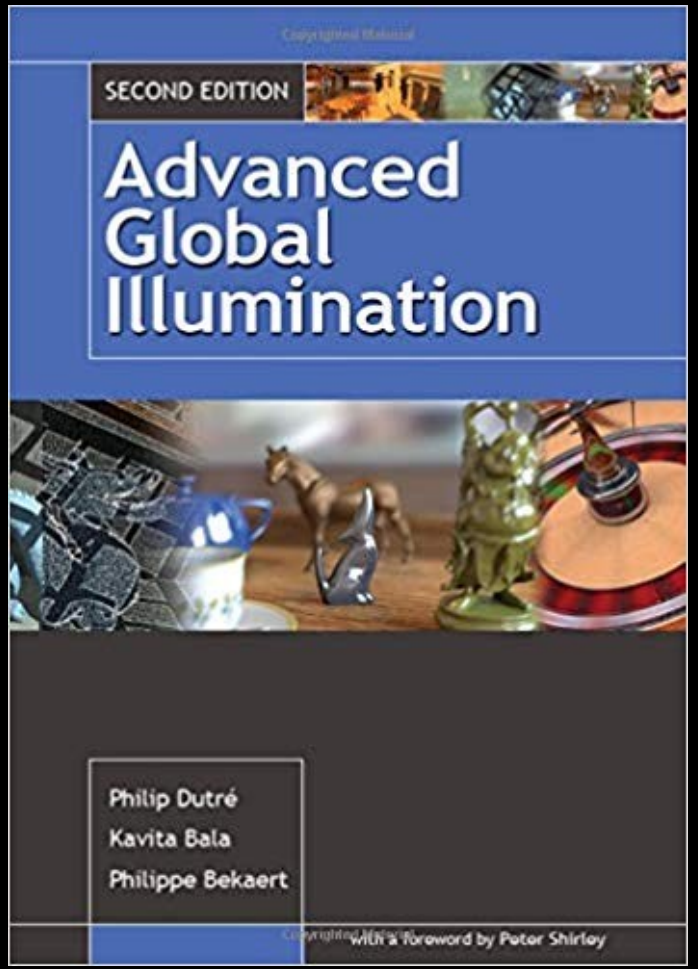




Are you book worm?



Advanced!!



We are …..

- Venom

We are …..

- Satt Paing Phyoe
- Si Thu Myo
- Lin Htet Moe
- Khant Myat Min
- Phone Pyae Kyaw
- Tun Nanda Aung
- Myat Kaung Khant

Thanks

Now go make some cool stuffs