DEVELOPER TOOLS FOR MOBILE PLATFORMS

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AGENDA

Introducing NVIDIA® Tegra Graphics Debugger 2.0

Profiling UE4 SumTemple Demo

Introducing Tegra System Profiler
NVIDIA DEVELOPER TOOLS

BUILD. DEBUG. PROFILE.

IDE INTEGRATION
- Visual Studio
- eclipse

STANDALONE TOOLS
- Windows
- Linux
- Mac

HARDWARE SUPPORT
CPU AND GPU DEBUGGING & PROFILING
- NVIDIA GPUs
- NVIDIA SHIELD
- Android devices
- CPUs

Microsoft DirectX, OpenGL, NVIDIA CUDA, OpenGL ES, Android, GNU C/C++
NVIDIA® Tegra Graphics Debugger

Accelerating Visual Computing Development on Mobile Platforms

- Supports cutting edge OpenGL
- Debug and profile graphics workloads
- Live capture of a single rendering frame
- Automatic GPU bottleneck analysis
- Advanced timings for draw calls
- Standalone tool on Windows/Mac/Linux

NVIDIA®
TEGRA
GRAPHICS
DEBUGGER

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NEW IN VERSION 2.0

- Supports OpenGL ES 3.1 and OpenGL 4.5
- Support Android 5.0 and Android TV
- Support arm 32bit/64bit Android
- Serialize captured frame
- Target HUD
PROFILING UE4 SUNTEMPLE DEMO
PROFILING UE4 DEMO

- GPU buys is 80%
- Highly correlated to shader unit busy
- Texture unit is not so busy 30%

CPU is 80% loaded
Single core is utilized
QUICK EXPERIMENTS

Toggle Null Fragment Shader

What?
GPU is still busy?
Shader unit is still busy?
Answer: Compute shader is used!!!
CAPTURE A FRAME
INSPECT EXPENSIVE APIs

Most expensive API is compute shading!

No parallel GPU workload at all!
Almost all shader bottleneck
SERIALIZE A FRAME

Almost all shader bottleneck
OPEN THE SOLUTION FILE

VS2010
VS2012
VS2013
Make sure you installed Nsight Tegra!
COMPILE AND RUN
BENEFITS WITH GENERATED SOURCE

- You are denominating everything from bottom to top
- Modify source and re-compile.
- All CPU overhead is removed.
- Add/remove/modify draw calls.
- Change rendering state on the air.
TEGRA SYSTEM PROFILER

- Identify critical functions by sample count
- Call stack analysis
- Standalone tools on Windows/Linux/Mac.
- Support arm 32bit/64bit android
TEGRA SYSTEM PROFILER

Select package to profile
TEGRA SYSTEM PROFILER
TEGRA SYSTEM PROFILER

CPU/Threads activity view

Function level profiling info
NVIDIA GAMEWORKS™

Links...

Web: http://gameworks.nvidia.com
Latest info and download options

YouTube: https://www.youtube.com/user/nvidiaGameWorks
Tools, effects, and game integration videos

Twitter: https://twitter.com/nvidiadeveloper
Catch up on up to the minute happenings

THANK YOU